



Foundation for Success



2016 ANNUAL REPORT

OUR COMPANY

TriMas is a diversified manufacturer of engineered products that serve a variety of industrial, commercial and consumer end markets worldwide. Our family of businesses provides customers with innovative product solutions that reflect the Company's commitment to market leadership, innovation and operational excellence. Through intellectual property, long-term customer relationships and our well-recognized brands, TriMas differentiates itself from its peers. Headquartered in Bloomfield Hills, Michigan, TriMas shares are listed on NASDAQ under the ticker symbol TRS.

OUR BUSINESSES

Our businesses share several key attributes, including:

- ▶ Well-established brands
- ▶ Leading market positions in niche markets
- ▶ Barriers to entry through product innovation and customer qualifications
- ▶ Proprietary products and processes
- ▶ Opportunities for growth and margin expansion
- ▶ Well-positioned to take advantage of operating leverage with even modest volume improvements

At TriMas, we are focused on driving strong cash flow, enhanced returns and operational excellence, all with a commitment to operate in a culture of the highest ethical standards, while improving the safety in our work areas, our communities and the environment.

TO OUR SHAREHOLDERS

A TRANSITIONAL YEAR

After joining TriMas as its President and Chief Executive Officer in late July, we immediately began taking additional steps to improve operational and financial performance throughout the Company. We renewed our sense of urgency by leveraging fact-based decisions and accelerated the process of correcting production matters. We also implemented a new TriMas Business Model (TBM) with enhanced business connectivity and improved analytics. We continue to identify and assess the range of possible opportunities for our businesses. We believe that this renewed focus, as well as the refinement of our businesses' strategies, have positioned TriMas for future growth and enhanced performance.

Since we continued to experience softness in certain of our end markets, most notably in our energy-facing and industrial end markets, we stepped up our initiatives to drive changes in our businesses most impacted by these macroeconomic challenges. Our realignment efforts included facility rationalization, manufacturing improvements and organizational changes. These continuous improvement actions are core to our TBM.

2016 HIGHLIGHTS

TriMas succeeded in mitigating much of the impact of market challenges throughout the year, as well as positioned the Company for the future, as highlighted here:

- ▶ Offset much of the impact of an 8% market and currency sales decline through the implementation of aggressive cost savings programs;
- ▶ Achieved sales growth of 4%, net of currency exchange, in our Packaging segment as a result of our business development focus;
- ▶ Decreased total debt nearly 11% to \$375 million as of December 31, 2016, as compared to \$420 million as of December 31, 2015, by generating \$80 million of cash flow from operating activities;
- ▶ Proactively reduced costs and our manufacturing footprint in our energy-facing businesses which were impacted by lower oil-related activity;
- ▶ Transitioned and supplemented several leadership roles.

We remain focused on taking actions to generate profitable growth, enhancing profitability, optimizing capital and resource allocation, increasing our cash flow and returns, and striving to be a great place for our employees to work. We believe the actions taken in 2016, as well as the actions we will continue to take, will drive long-term earnings expansion, and in turn, provide improved returns to our shareholders.

OUR VISION AND CORE VALUES

We launched our TriMas Vision and Core Values, which embrace who we are as a Company. Our vision is to *provide innovative products of exceptional performance and*



Rieke, part of the Packaging segment, is committed to being an innovative, world-class manufacturer of closures and dispensing systems for the global market.



TriMas Aerospace provides its customers with precision-engineered fasteners and components that reflect the Company's commitment to market leadership and innovation.

value through market-leading brands. We will achieve this vision by engaging our employees and exemplifying our core values of:

- ▶ Customer-focused
- ▶ Results-driven
- ▶ Teamwork
- ▶ Continuous improvement
- ▶ Integrity

These core values are an integral part of the foundation for our success.

TRIMAS BUSINESS MODEL

With the implementation of our TBM, we enhanced our commitment to our core values by providing a framework of engagement and standardization across TriMas. Our TBM also provides the foundation for determining our priorities, assessing and modifying our growth and productivity initiatives, and allocating resources.

We focus on the following areas:

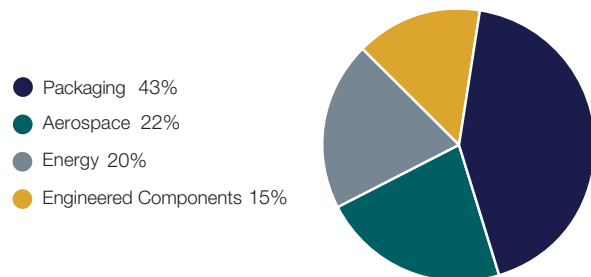
- ▶ Environmental, health and safety;
- ▶ Annual strategic planning and goal setting with monthly business reviews;
- ▶ Flawless product and plant launches;
- ▶ A commitment to Kaizen; and
- ▶ Talent development.

We believe by focusing on these fundamental concepts, all based upon a commitment to operational excellence, we will be able to unleash untapped value within TriMas.

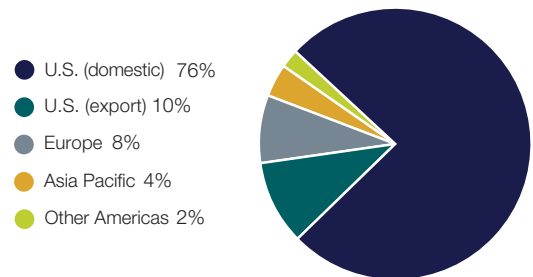
2016 FINANCIAL PERFORMANCE IN REVIEW

TriMas reported 2016 net sales of \$794 million, a decrease of approximately 8 percent as compared to 2015. Sales from a recent acquisition and organic growth were more than offset by lower sales related to the oil and gas and general industrial end markets, and currency exchange.

2016 Net Sales by Segment
(Percent)



2016 Sales by Geography
(Percent)



We reported a 2016 loss from continuing operations of \$40 million, or \$0.88 per diluted share, primarily as a result of non-cash goodwill and indefinite-lived intangible asset impairment charges in our Aerospace segment. Excluding the impact of Special Items⁽¹⁾, including these impairment charges and additional severance and business restructuring costs, 2016 income from continuing operations would have been \$58 million, or \$1.26 per diluted share. Despite the year-over-year sales level decline, TriMas held 2016 operating profit margin relatively flat, excluding Special Items, by successfully implementing cost savings initiatives.

TriMas generated approximately \$73 million in Free Cash Flow⁽²⁾, or approximately 126 percent of income from continuing operations, excluding Special Items, while continuing to invest in new capital, future growth and productivity programs. We ended the year with approximately \$375 million in total debt, an 11 percent reduction compared to approximately \$420 million at December 31, 2015. Our leverage ratio was 2.6 times at year end and we had \$147 million of cash and aggregate availability under our credit facilities.

OUR FUTURE

As we begin 2017, we believe we are positioned to generate solid earnings growth, with a continued focus on generating cash flow. We sense that our most challenging end markets are stabilizing, and are confident we will benefit from the realignment actions taken to date.

We will focus on executing our 2017 operating plan and continue to make necessary adjustments to deliver improved profitability and returns for the benefit of our shareholders.

At TriMas, we believe the future is bright. We have many fundamental strengths to build upon, including:

- ▶ Well-recognized brands and leading positions in the niche markets they serve;
- ▶ Products that are defendable through high barriers of entry, either through innovation or customer approvals and qualifications;
- ▶ Solid overall cash flow and continued focus on improving our cash yield;
- ▶ The potential to unlock further value through our focus on improvement actions currently underway; and
- ▶ Strong positioning to take advantage of even modest recoveries in the areas of general industrial and crude exploration spending.

We are excited about TriMas' future and believe there are many opportunities for sales and earnings expansion, and in turn, increasing shareholder value. We have a strong foundation to build upon, and are excited about the opportunities in front of us.

We would like to thank our employees for their continued commitment and contributions throughout the year, and we thank our shareholders for your continued support and confidence as we build upon this foundation to drive success.



Thomas A. Amato

President and Chief Executive Officer



Thomas Amato joined TriMas in July 2016.

“We are excited about TriMas’ future, particularly given the proactive steps we have taken and will continue to take. We have excellent brands in the market niches they serve, and talented employees that are dedicated to our long-term success.”

(1) Please see Appendix I: Additional Information Regarding Special Items Impacting Reported GAAP Financial Measures in our earnings release dated February 28, 2017 for a detailed schedule of Special Items.

(2) Free Cash Flow is defined as Net Cash Provided by Operating Activities of Continuing Operations, excluding the cash impact of Special Items, less Capital Expenditures.

OUR SEGMENTS



Our Packaging segment, which consists primarily of the Rieke® brand, develops and manufactures specialty, highly-engineered dispensing and closure applications for the health, beauty and home care, food and beverage, and industrial markets. These high performance, value-added products are designed to enhance our global customers' ability to store, transport, process and dispense various products. Rieke's products include plastic closure and dispensing systems, such as foamers, pumps and specialty sprayers, as well as steel and plastic closure caps and drum closures.



Our Aerospace segment, which is comprised of the Monogram Aerospace Fasteners™, Allfast Fastening Systems®, Mac Fasteners™ and Martinic Engineering™ brands, is focused on designing, qualifying and manufacturing precision fasteners and machined products for commercial aircraft companies, distributors, suppliers and the U.S. military. Aerospace's products include highly-engineered, customer-specific blind bolts, solid and blind rivets, temporary fasteners, and precision-machined components for auxiliary power, electrical, hydraulic and pneumatic systems.



Our Energy segment, which consists of the Lamons® brand, designs, manufactures and distributes industrial sealing products, including metallic and non-metallic gaskets and fasteners, for the petrochemical, petroleum refining, oil field and other industrial markets. Lamons provides gaskets and complementary fasteners to both maintenance repair operations and industrial original equipment manufacturers.



Our Engineered Components segment consists of the Norris Cylinder™ and Arrow® Engine Company brands. Norris Cylinder designs and manufactures a full range of highly-engineered high-pressure and low pressure acetylene steel cylinders used for the transportation, storage and dispensing of compressed gases. Arrow Engine develops and manufactures a variety of natural gas powered engines and parts, and gas compressors for use within the oil and gas markets.

FINANCIAL HIGHLIGHTS

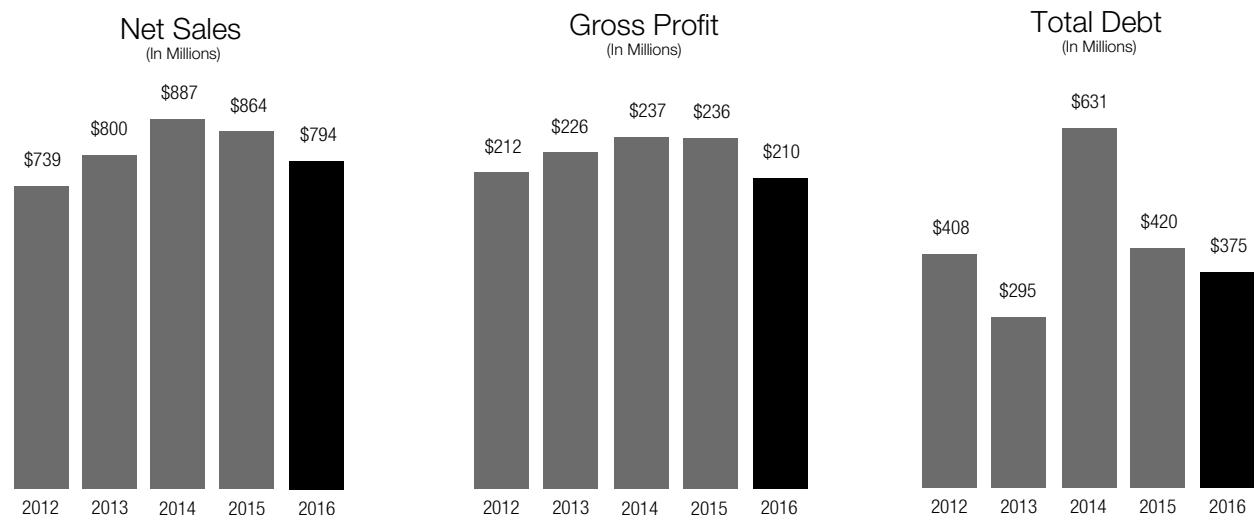
Financial data for continuing operations for the periods provided

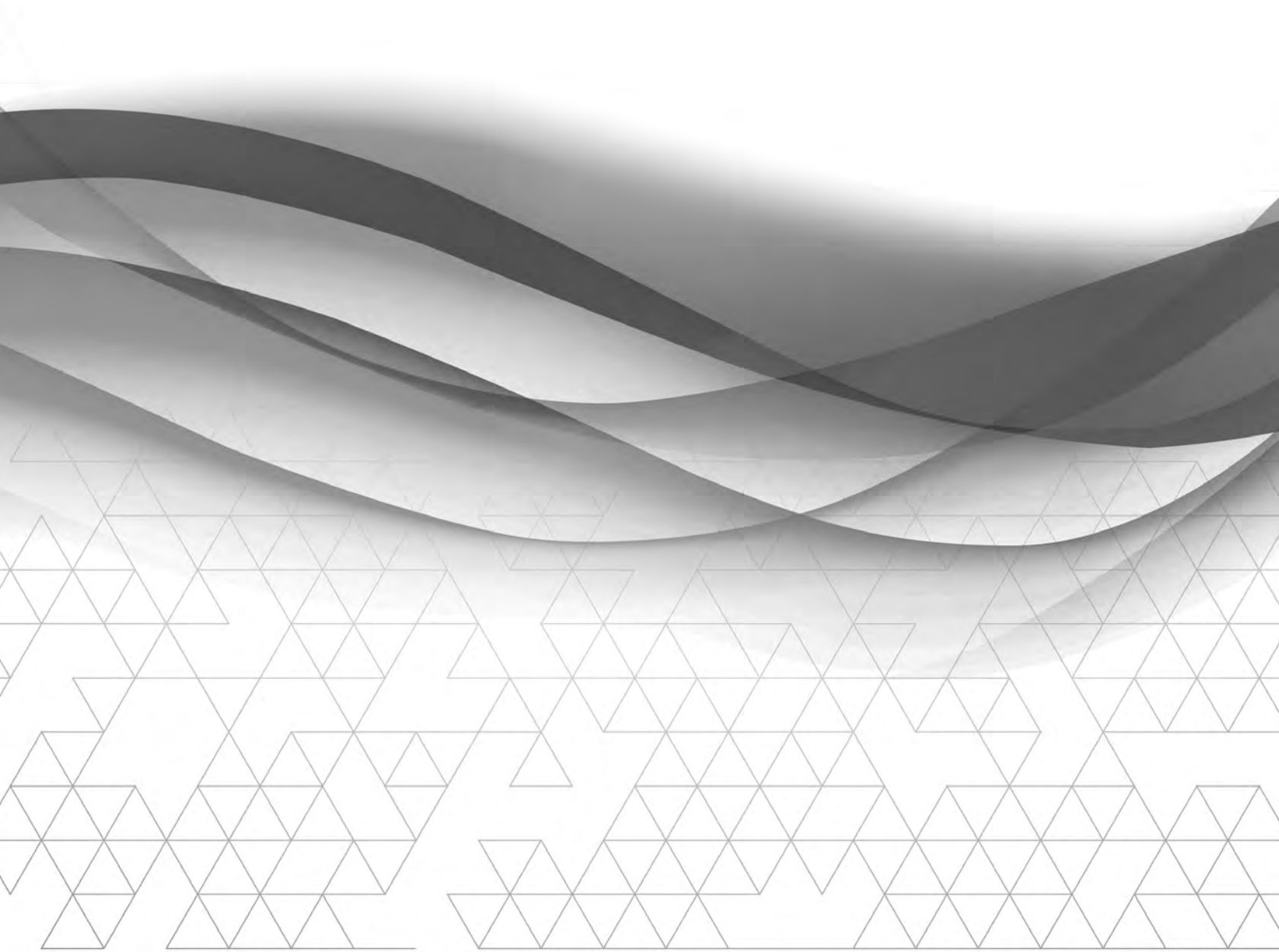
(amounts in millions, except per share amounts)

	<u>2016</u>	<u>2015</u>
Net Sales	\$794.0	\$864.0
Operating Profit (Loss)	(\$ 44.0)	(\$ 4.3)
Income (Loss) ⁽¹⁾	(\$ 39.8)	(\$ 28.7)
Special Items, after tax ⁽¹⁾	\$ 97.5	\$ 87.3
Diluted Earnings (Loss) Per Share	(\$ 0.88)	(\$ 0.64)
Special Items Per Share ⁽¹⁾	\$ 2.14	\$ 1.93
Diluted Earnings Per Share, excluding Special Items ⁽¹⁾	\$ 1.26	\$ 1.29
Free Cash Flow ⁽²⁾	\$ 72.8	\$ 50.8
Cash and Cash Equivalents	\$ 20.7	\$ 19.5
Total Debt	\$374.7	\$419.6
Weighted Average Shares, diluted	45.4	45.1

⁽¹⁾ Please see *Appendix I: Additional Information Regarding Special Items Impacting Reported GAAP Financial Measures* in our earnings release dated February 28, 2017. In 2016, adjustments included \$0.01 of dilutive impact of outstanding equity awards. 2016 also included Special Items, after tax, of \$67.9 million of impairment of goodwill and indefinite-lived intangible assets, and \$29.6 million in severance and business unit restructuring costs. In 2015, adjustments included \$0.01 of dilutive impact of outstanding equity awards. 2015 also included Special Items, after tax, of \$64.3 million of impairment of goodwill and indefinite-lived intangible assets, \$21.8 million in severance and business unit restructuring costs, and \$1.2 million in debt financing and extinguishment costs.

⁽²⁾ Free Cash Flow is defined as Net Cash Provided by Operating Activities of Continuing Operations, excluding the cash impact of Special Items, less Capital Expenditures.





2016 Form 10-K



UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington D.C. 20549

Form 10-K

(Mark One)



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

For the fiscal year ended December 31, 2016

Or



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

For the transition period from _____ to _____

Commission file number 001-10716

TRIMAS CORPORATION

(Exact Name of Registrant as Specified in Its Charter)

Delaware
(State or Other Jurisdiction of Incorporation or
Organization)

38-2687639
(IRS Employer Identification No.)

39400 Woodward Avenue, Suite 130
Bloomfield Hills, Michigan 48304
(Address of Principal Executive Offices, Including Zip Code)

(248) 631-5450
(Registrant's telephone number, including area code)

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

Title of Each Class:	Name of Each Exchange on Which Registered:
Common stock, \$0.01 par value	NASDAQ Stock Market LLC

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

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

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

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

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

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

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

Large Accelerated Filer

Accelerated Filer

Non-accelerated Filer

Smaller Reporting Company

(Do not check if a smaller reporting company)

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

The aggregate market value of the voting common equity held by non-affiliates of the Registrant as of June 30, 2016 was approximately \$799.9 million, based upon the closing sales price of the Registrant's common stock, \$0.01 par value, reported for such date on the NASDAQ Global Select Market. For purposes of this calculation only, directors, executive officers and the principal controlling shareholder or entities controlled by such controlling shareholder are deemed to be affiliates of the Registrant.

As of February 21, 2017, the number of outstanding shares of the Registrant's common stock, \$0.01 par value, was 45,520,289 shares.

Portions of the Registrant's Proxy Statement for the 2017 Annual Meeting of Stockholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein.

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Forward-Looking Statements

This report may contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 about our financial condition, results of operations and business. These forward-looking statements can be identified by the use of forward-looking words, such as “may,” “could,” “should,” “estimate,” “project,” “forecast,” “intend,” “expect,” “anticipate,” “believe,” “target,” “plan” or other comparable words, or by discussions of strategy that may involve risks and uncertainties.

These forward-looking statements are subject to numerous assumptions, risks and uncertainties which could materially affect our business, financial condition or future results including, but not limited to: the Company's leverage; liabilities imposed by the Company's debt instruments; market demand; competitive factors; supply constraints; material and energy costs; risks and uncertainties associated with intangible assets, including goodwill or other intangible asset impairment charges; technology factors; litigation; government and regulatory actions; the Company's accounting policies; future trends; general economic and currency conditions; the potential impact of Brexit; various conditions specific to the Company's business and industry; the Company's ability to identify attractive acquisition candidates, successfully integrate acquired operations or realize the intended benefits of such acquisitions; potential costs and savings related to facility consolidation activities; future prospects of the Company; and other risks that are discussed in Part I, Item 1A, "*Risk Factors*." The risks described in this report are not the only risks facing our Company. Additional risks and uncertainties not currently known to us or that we currently deemed to be immaterial also may materially adversely affect our business, financial position and results of operations or cash flows.

The cautionary statements set forth above should be considered in connection with any subsequent written or oral forward-looking statements that we or persons acting on our behalf may issue. We caution readers not to place undue reliance on the statements, which speak only as of the date of this report. We do not undertake any obligation to review or confirm analysts' expectations or estimates or to release publicly any revisions to any forward-looking statement to reflect events or circumstances after the date of this report or to reflect the occurrence of unanticipated events.

We disclose important factors that could cause our actual results to differ materially from our expectations implied by our forward-looking statements under Part II, Item 7, "*Management's Discussion and Analysis of Financial Condition and Results of Operations*," and elsewhere in this report. These cautionary statements qualify all forward-looking statements attributed to us or persons acting on our behalf. When we indicate that an event, condition or circumstance could or would have an adverse effect on us, we mean to include effects upon our business, financial and other conditions, results of operations, prospects and ability to service our debt.

PART I

Item 1. Business

We are a global designer, manufacturer and distributor of engineered products for commercial, industrial and consumer markets. Most of our businesses share important characteristics, including leading market positions, strong brand names, broad product offerings in focused markets, established distribution networks, relatively high operating margins, relatively low capital investment requirements and growth opportunities. We use a common operating model across our businesses. The TriMas Business Model is the framework that provides, wherever possible given the diverse nature of our businesses, commonality and consistency across TriMas, and drives how we plan, budget, measure, review, incent and reward our people. It provides the foundation for determining our priorities, executing our growth and productivity initiatives, and allocating capital and resources. We believe that a majority of our 2016 net sales were in markets in which our products enjoy the number one or number two market position within their respective product categories.

Our Reportable Segments

Our operations are in four reportable segments which had net sales and operating profit for the year ended December 31, 2016 as follows: Packaging (net sales: \$341.3 million; operating profit: \$77.8 million), Aerospace (net sales: \$174.9 million; operating loss: \$90.8 million), Energy (net sales: \$159.0 million; operating loss: \$13.8 million) and Engineered Components (net sales: \$118.8 million; operating profit: \$15.3 million). For information pertaining to the net sales and operating profit attributed to our reportable segments, refer to Note 19, "*Segment Information*," included in Item 8, "*Financial Statements and Supplementary Data*," within this Form 10-K.

During the second half of 2015 and throughout 2016, organic sales and profit levels within our Aerospace business significantly declined, primarily as a result of: 1) lower demand from distribution customers, as a result of reduced investment in inventory levels; 2) manufacturing inefficiencies and lower fixed cost absorption associated with lower distributor sales, plus scheduling and production challenges in the Monogram Aerospace Fasteners facility, which resulted in higher costs to generate the sales; and 3) a less favorable product sales mix, as a result of a higher percentage of sales generated by lower margin product lines. We implemented recovery plan actions to address production inefficiencies and to align operating costs consistent with production requirements to meet current demand levels. However, given the currently lower than expected Aerospace growth and profitability, and lowered near-term future sales and profit expectations, we recorded pre-tax, non-cash goodwill and indefinite-lived intangible asset impairment charges totaling \$98.9 million in the fourth quarter of 2016.

During the fourth quarter of 2015, due to a significant decline in current and expected profitability levels in our Energy reportable segment and our Arrow Engine business within our Engineered Components reportable segment, and a decline in our stock price and resulting market capitalization, we recorded pre-tax goodwill impairment charges of approximately \$70.9 million and \$3.2 million, respectively. For information pertaining to these impairment charges, refer to Note 7, "*Goodwill and Other Intangible Assets*," included in Item 8, "*Financial Statements and Supplementary Data*," within this Form 10-K.

In addition to our reportable segments as presented, we have discontinued certain lines of businesses over the past three years as follows, the results of which are presented as discontinued operations for all periods presented in the financial statements attached hereto:

- On June 30, 2015, we completed the spin-off of our Cequent businesses, comprised of the former Cequent Americas and Cequent Asia Pacific Europe Africa ("Cequent APEA") reportable segments, creating a new independent publicly traded company, Horizon Global Corporation ("Horizon"), through the distribution of 100% of the Company's interest in Horizon to holders of the Company's common stock.
- During the third quarter of 2014, we ceased operations of our NI Industries business. NI Industries manufactured cartridge cases for the defense industry and was party to a U.S. Government facility maintenance contract. We received approximately \$6.7 million for the sale of certain intellectual property and related inventory and tooling.

Each of our reportable segment has distinct products, distribution channels, strengths and strategies, which are described on the following pages.

Packaging

We believe Packaging is a leading designer, manufacturer and distributor of specialty, highly-engineered closure and dispensing systems for a range of end markets, including steel and plastic industrial and consumer packaging applications. We believe that Packaging is one of the largest manufacturers of steel and plastic industrial container closures and dispensing products in North America, with a significant presence in Europe, Asia and other geographic markets. Packaging manufactures high-performance, value-added products that are designed to enhance its customers' ability to store, transport, process and dispense various products for the industrial, food and beverage, and health, beauty and home care markets with bespoke designs that enable its customers' products to stand out in their markets. Packaging's products include steel and plastic closure caps, drum enclosures, and specialty plastic closure and dispensing systems, such as foamers, pumps and specialty sprayers.

Packaging is dual headquartered in the United Kingdom and Indiana. We believe our Packaging brands, which include Rieke®, Arminak & Associates®, Englass®, Innovative Molding™ and Stolz®, are well established and recognized in their respective markets.

Packaging's specialty closure portion of the business designs and manufactures industrial closure products under the Rieke and Stolz brands in North America, Europe and Asia. We believe Rieke has significant market share for many of its key products, such as steel drum enclosures, plastic drum closures, plastic pail dispensers and plugs and plastic enclosures for sub-20 liter-sized containers.

The specialty dispensing portion of the business designs and manufactures products sold as Rieke, Arminak & Associates, Englass and Innovative Molding brands serving two primary markets:

- In the health, beauty and home care market segments, the products include foamers, lotion pumps, fine mist sprayers and other packaging solutions for the cosmetic, personal care and household product markets in North America, Europe, Asia, Latin America, Middle East, Australia and Africa, and pharmaceutical and personal care dispensers sold in Europe and Asia.
- In the food and beverage markets, the products include specialty plastic closures for bottles and jars, and dispensing pumps for North America, Europe, Asia and Australia.

Competitive Strengths

We believe Packaging benefits from the following competitive strengths:

- *Strong Product Innovation.* We believe that Packaging's research and development capability and new product focus is a competitive advantage. For nearly 100 years, Packaging's product development programs have provided innovative and proprietary product solutions, such as the Visegrip® steel flange and plug closure, and the all-plastic, environmentally safe, self-venting FlexSpout® flexible pouring spout. Recent examples of innovation within specialty dispensing include a range of products designed to meet the requirements of the high-growth e-commerce retail sector, a measured-dose dispenser which provides exact doses of highly-concentrated liquids in the health and beauty market, and customized product solutions for customers in the global automotive aftermarket sector. Packaging continues to expand the capabilities of its Global Innovation Center located near Delhi, India as well as its centers in the United Kingdom and United States. These teams are focused on driving innovation across Packaging's broad range of dispensing and closure solutions for its customers in the industrial, food and beverage, and health, beauty and home care markets. Packaging's emphasis on highly-engineered packaging solutions and research and development has yielded numerous issued and enforceable patents, with many other patent applications pending. We believe that Packaging's innovative product solutions have evolved our product applications to meet existing customers' needs, as well as attract new customers in a variety of consumer end markets such as beverage, cosmetic, food, medical, nutraceutical, personal care and pharmaceutical.

- *Customized Solutions that Enhance Customer Loyalty and Relationships.* A significant portion of Packaging's products are customized designs for end-users, that are developed and engineered to address specific customer technical, branding and marketing, and sustainability needs thereby enabling our customers to stand out from their competitors. Packaging provides extensive in-house design, development and technical staff to provide solutions to customer requirements for closures and dispensing applications. For example, the customization of specialty plastic caps and closures including branding, unique colors, collar sizes, lining and venting results in substantial customer loyalty. The substantial investment in flexible manufacturing cells allows Packaging to offer both short lead times for high volume products and extensive customization for low order volumes, which provides significant advantages to our consumer goods customer base. In addition, Packaging provides customized dispensing solutions including unique pump design, precision metering, unique colors and special collar sizes to fit the customer's bottles. Packaging has also been successful in promoting the sale of complementary products in an effort to create preferred supplier status.
- *Leading Market Positions and Global Presence.* We believe that Packaging is a leading designer and manufacturer of plastic closure caps, drum enclosures, and dispensing systems, such as pumps, foamers and specialty sprayers. Packaging maintains a global network of manufacturing and distribution sites, to serve its increasingly global customer base. Packaging's global customers often desire supply chain capability and a flexible manufacturing footprint close to their end markets providing shorter supply chains, reduced carbon footprint and better sustainability. To serve our customers in Asia, we have manufacturing capacity and offer highly engineered dispensing solutions through locations in China, India and Vietnam, and increased our Asian market coverage. Additionally, Packaging opened a new facility in San Miguel de Allende, Mexico, to replace an older facility in Mexico and provide additional manufacturing capacity to support growth. The majority of Packaging's manufacturing facilities around the world have technologically advanced injection molding machines required to manufacture engineered dispensing and closure solutions, as well as automated, high-speed flexible assembly equipment for multiple component products.

We believe Packaging has significant opportunities to grow, including:

- *Innovate New Products and New Applications.* Packaging has focused its research and development capabilities on consumer applications requiring special packaging forms, stylized containers and dispensing systems requiring a high degree of functionality and engineering, as well as continuously evolving its industrial applications. Many new product innovations take years to develop. Packaging has a consistent pipeline of new products ready for launch. For example, 34 patents were filed in 2016 and 52 patents were issued. Other recent examples include a range of products for the high-growth e-commerce retail sector, as well as various foamers, pumps and sprayers.
- *Globalize Product Opportunities.* Packaging successfully globalizes its products by localizing its expertise in product customization to meet regional market requirements. Our global network of manufacturing and distribution sites ensures customers have a global product standard manufactured locally resulting in shorter lead-time to provide products and support where our customers require. Our sales teams are focused to serve customers in the industrial, food and beverage, and health, beauty and home care markets, successfully selling products across the Packaging group. We believe that, as compared with our competitors, Packaging is able to offer a wider variety of products to our global customers with enhanced service and tooling support. We have entered into supply agreements with many of these customers based on our broad product offering.
- *Increase Global Presence.* Over the past few years, Packaging has increased its international manufacturing and sales presence, with advanced manufacturing capabilities in China, India, Vietnam and Mexico. We have also increased our sales coverage in Europe, China and India. By maintaining a presence in international locations, Packaging is focused on developing new markets and new applications for our products which capitalize on our global design and manufacturing strength.

Marketing, Customers and Distribution

Packaging employs an internal sales force in North America, Europe and Asia. Packaging focuses its business and sales organization into the industrial, food and beverage, and health, beauty and home care end markets to better provide the breadth of its product portfolio and solutions to its customers. Packaging also uses third-party agents and distributors in key geographic markets, including Europe, South America and Asia. Packaging's agents and distributors primarily sell directly to container manufacturers and to users or fillers of containers. While the point of sale may be to a container manufacturer or bottle filling business, Packaging, via a "pull through" strategy, calls on the container user or filler and suggests that it specify that our product be used on its container.

To support its "pull-through" strategy, Packaging offers more attractive pricing on products purchased directly from us and on products in which the container users or fillers specify Packaging's products. Users or fillers that utilize or specify our products include agricultural chemical, food, industrial chemical, paint, personal care, petroleum, pharmaceutical and sanitary supply chemical companies such as BASF, BMW/Mini, Gechem GmbH, McDonald's, Mercedes, Pennzoil Quaker State, Reckitt Benckiser (UK) Healthcare and Sherwin-Williams, among others.

Packaging's primary end customers include Colgate, Conagra Brands, Dial Corporation, Ecolab, L'Oreal, Mast Global (Bath & Body Works and Victoria Secret), Method, Nestle, Purna Pharmaceuticals, PZ Cussons, RB (formerly known as Reckitt Benckiser), Starbucks, Thornton & Ross and Unilever. We also supply major container manufacturers around the world such as Berenfield, Berlin Packaging, BWAY, Cleveland Steel Container, Greif, North Coast Container and Tricorbrown. Packaging maintains a customer service center that provides technical support as well as other technical assistance to customers to reduce overall production costs.

Competition

Since Packaging has a broad range of products in both closures and dispensing systems, there are competitors in each of our product offerings. We do not believe that there is a single competitor that matches our entire product offering.

Depending on the product and customers served, Packaging's competitors include Aptar, Albea, Bericap, West Rock, Berry Plastics, Greif, Phoenix Closures, Technocraft and TKPC.

Aerospace

We believe Aerospace is a leading designer and manufacturer of a diverse range of products for use in focused markets within the aerospace industry. In general, Aerospace's products are highly-engineered, customer-qualified product applications with few competitors.

Aerospace's brands include Monogram Aerospace Fasteners™, Allfast Fastening Systems® , Mac Fasteners™ and Martinic Engineering™, which we believe are well established and recognized in their markets.

- *Monogram Aerospace Fasteners.* We believe Monogram Aerospace Fasteners ("Monogram") is a leader in permanent blind bolts and temporary fasteners used in commercial, business and military aircraft construction and assembly. Certain Monogram products contain patent protection, with additional patents pending. We believe Monogram is a leader in the development of blind bolt fastener technology for the aerospace industry, specifically in high-strength, rotary-actuated blind bolts that allow sections of aircraft to be joined together when access is limited to only one side of the airframe, providing cost efficiencies over conventional two piece fastening devices.
- *Allfast Fastening Systems.* We believe Allfast Fastening Systems ("Allfast") is a leading brand of solid and blind rivets, blind bolts, temporary fasteners and installation tools for the aerospace industry with content on substantially all commercial, defense and business aviation platforms in production and in service. Certain Allfast products contain patent protection.
- *Mac Fasteners.* The Mac Fasteners brand consists of alloy and stainless steel aerospace fasteners, globally utilized by original equipment manufacturers ("OEMs"), aftermarket repair companies, and commercial and military aircraft producers.
- *Martinic Engineering.* The Martinic Engineering ("Martinic") brand consists of highly-engineered, precision machined, complex parts for commercial and military aerospace applications, including auxiliary power units, as well as electrical hydraulic and pneumatic systems.

Competitive Strengths

We believe Aerospace benefits from the following competitive strengths:

- *Broad Product Portfolio of Established Brands.* We believe that Aerospace is a leading designer and manufacturer of fasteners and other complex, machined components for the aerospace industry. The combination of the Monogram, Allfast and Mac Fasteners brands enables Aerospace to offer a broad range of fastener products covering a broad scope of complexity and price ranges, as well as providing scale to customers who continue to rationalize their supply base and prefer to deal with fewer, broader-ranged suppliers. In several of the product categories, including rotary actuated blind bolts and blind and solid rivets, Aerospace has a meaningful market share with well-known and established brands.

- *Product Innovation.* We believe that Aerospace's engineering, research and development capability and new product focus is a competitive advantage. For many years, Aerospace's product development programs have provided innovative and proprietary product solutions. We believe our customer-focused approach which will provide effective technical solutions for our customers, drive the development of new products and create new opportunities for growth.
- *Leading Manufacturing Capabilities and Processes.* We believe that Aerospace is a leading manufacturer of precision engineered components for the aerospace industry. As a result of regulations and customer requirements for Aerospace, products need to be manufactured within tight tolerances and specifications, often out of hard-to-work-with materials including titanium, inconel and specialty steels. Many of Aerospace's products, facilities and manufacturing processes are required to be qualified and/or certified. Key certifications in Aerospace include: AS9100:2009 Revision C; ISO9001:2008; TSO; and NADCAP for non-destructive testing, heat treatment, wet processes and materials testing. While proprietary products and patents are important, having proprietary manufacturing processes and capabilities makes Aerospace's products difficult to replicate. We believe Aerospace's manufacturing processes, capabilities and quality focus create a competitive strength for the business.

Strategies

We believe the Aerospace segment has significant opportunities to grow and improve profitability, based on the following strategies:

- *Increase Margins.* The Aerospace segment is focused on expanding margins through a variety of initiatives, including, but not limited to, improved manufacturing efficiencies and throughput and executing on profitable growth strategies. Increasing sales over the existing fixed cost structure, implementing price improvement strategies, and adding higher margin products to the product portfolio will all improve margins. In addition, Aerospace is focused on improving productivity, cycle times and on-time delivery, while reducing its variable costs to manufacture and overall fixed cost structure.
- *Develop New Products.* The Aerospace segment has a history of successfully creating and introducing new products and there are currently new product initiatives underway. We focus on expanding our current products into new applications on the aircraft, as well as securing qualified products onto new programs. Aerospace products contain patent protection, with additional patents pending, as well as proprietary manufacturing processes and "know-how." Monogram has developed new fastener products that offer a flush break upon installation, a new Composi-Lite™ derivative affording significant installed weight savings in concert with fuel efficient aircraft designs, and is developing and testing other fasteners designs which offer improved clamping characteristics on composite structures. Aerospace has also expanded its fastener offerings to include existing fastening product applications, including a suite of collar families used in traditional two-sided assembly. Our close working relationship between our sales and engineering teams and our customers' engineering teams is key to developing future products desired and required by our customers.
- *Leverage Strengths and Integrate Across the Aerospace Brands.* The combined product sets of Monogram, Allfast and Mac Fasteners uniquely position us to benefit from platform-wide supply opportunities. In addition, our aerospace platform should benefit from leveraging combined purchasing activities and indirect labor, joint commercial and product development efforts, and sharing of better practices between previously separate businesses. Aerospace customers will benefit from a combined product portfolio of proprietary products and product development efforts. The addition of Allfast, Martinic and Mac Fasteners products to the portfolio over the past several years enables this segment to reach additional customers, including tier one suppliers to airframe OEMs and aftermarket repair companies, respectively. Monogram and Allfast can also cross-sell products into each other's legacy set of customers.

Marketing, Customers and Distribution

Aerospace's customers operate primarily in the aerospace industry, serving both OE and aftermarket customers on a wide variety of platforms. Given the focused nature of many of our products, the Aerospace segment relies upon a combination of direct sales forces and established networks of independent distributors with familiarity of the end-users. Although the markets for fasteners and complex machine components are highly competitive, we provide products and services primarily for specialized markets, and compete principally on technology, quality and service. Aerospace's products are sold to manufacturers and distributors within the commercial, business and military aerospace industry, both domestic and foreign. While products are sold to manufacturers, distributors, tier one suppliers and aftermarket repair companies, Aerospace works directly with aircraft manufacturers to develop and test new products and improve existing products. Aerospace's OEM, distribution, tier one supplier and other customers include Adept Fasteners, Airbus, Boeing, Embraer, Hamilton Sunstrand (United Technologies Corp.), KLX, Inc., Parker-Hannifin, Peerless Aerospace Fasteners, Spirit Aero Systems, Wesco Aircraft Hardware and the United States government.

Competition

This segment's primary competitors include Ateliers de la Haute Garonne (AHG), Alcoa Fastening Systems, Cherry Aerospace (Precision Castparts Corp.) and LISI Aerospace. We believe that we are a leader in the blind bolt market with significant market share in all blind fastener product categories in which we compete. Our aerospace companies generally supply highly engineered, non-commodity, customer-specific products to markets supplied by a limited number of competitors.

Energy

We believe Energy is a leading manufacturer and distributor of metallic and non-metallic gaskets, bolts, industrial fasteners and specialty products for the petroleum refining, petrochemical, oil field and industrial markets. With operations principally in North America and additional locations in Europe and Asia, Energy supplies gaskets and complementary fasteners to both maintenance repair operations ("MRO") and industrial OEMs. We offer these products under our Lamons[®] brand.

Competitive Strengths

We believe Energy benefits from the following competitive strengths:

- *Comprehensive Product Offering.* We offer a full suite of gasket and bolt products to the petroleum refining, petrochemical, oil field and industrial markets. Over the years, Energy has expanded its product offering to include custom-manufactured, specialty bolts of various sizes and made-to-order configurations and other CNC-machined components, isolation gasket kits, capabilities to produce high quality sheet jointing used in the manufacture of soft gaskets, and PTFE for its chemical customers. While many competitors manufacture and distribute either gaskets or bolts, supplying both provides us with an advantage to customers who prefer to deal with fewer suppliers.
- *Established and Extensive Distribution Channels.* Our business utilizes an established hub-and-spoke distribution system whereby our primary manufacturing facilities supply products to our own branches and a highly knowledgeable network of worldwide distributors and licensees, which are located in close proximity to our primary customers. Our primary manufacturing facility is in Houston, Texas with company-owned branches strategically located around the world to serve our global customer base. Enabled by its branch network and close proximity to its customers, Energy's ability to provide quick turn-around and customized solutions for its customers provides a competitive advantage. This established network of branches, enhanced by third-party distributors, allows us to add new customers in various locations and to increase distribution to existing customers. Our experienced in-house sales support teams work with our global network of distributors and licensees to create a strong market presence in all aspects of the oil, gas and petrochemical refining industries.
- *Leading Market Positions and Strong Brand Name.* We believe we are one of the largest gasket and bolt suppliers to the global energy market. We believe that Lamons is known as a quality brand and offers premium service to the industry. We also believe that our facilities have the latest proprietary technology and equipment to be able to produce urgent requirement gaskets and bolts locally to meet our customers' demands.

Strategies

The Energy segment has been faced with several market challenges including a reduction of its upstream business as a result of the decline in oil prices, as well as downstream business postponement of refinery shutdowns and customer capital expenditures. We believe Energy has opportunities to improve its margins, while maintaining its market leadership, including:

- *Optimizing its Footprint to Drive Lower-Costs.* Over the past 18 months, we have continued to work through reducing our cost structure through ongoing manufacturing, overhead and administrative productivity initiatives, global sourcing and selectively shifting manufacturing capabilities to our lower cost locations. We have performed a comprehensive review of our physical footprint and have closed or consolidated locations to reduce our and realign fixed cost structure with recent demand levels. We have also moved a portion of our gasket and fastener operations from our Houston facility to a facility in Reynosa, Mexico, and we will continue to evaluate costs, lead-times and service levels to customers to determine where certain products should be manufactured. We have also reconfigured our Houston facility to increase efficiency and lower costs, allowing for incremental capacity. In addition to our core domestic manufacturing facility in Houston, we have sourcing capabilities in China. We believe expanding our new Matrix® product will further increase profitability, as we manufacture our own sheet product compared to reliance on comparable products from our competitors.
- *Improve Operational Efficiency at all Locations.* We believe that there are additional opportunities to improve our operational efficiency through continued implementation of lean-based manufacturing initiatives. Through improved planning, inventory management, pricing and processes, Energy expects to improve its margins, while reducing product lead-times and increasing customer fill-rates.
- *Expand Engineered and Specialty Products Offering.* Over the past few years, we have launched several new highly-engineered and specialty products and have broadened our specialty bolt offering. Examples of new products include: WRI-LP gaskets, a hydrofluoric acid gasket solution; inhibitor gaskets designed to prevent corrosion in offshore platform flanges; IsoTek™ Gaskets, an engineered sealing solution for flanged pipe connections; hose products; and intelligent bolts which provide more reliable load indication. In addition to providing revenue growth opportunities, specialty products tend to have higher margins than their standard counterparts.

Marketing, Customers and Distribution

Energy relies upon a combination of direct sales forces and established networks of independent distributors and licensees with familiarity of our end user customers. Gaskets and bolts are supplied directly to major customers through our sales and service facilities in major regional markets, or through a large network of independent distributors/licensees. The sales and distribution network's close proximity to the customer makes it possible for Energy to respond to customer-specific engineered applications and provide a high degree of customer service. Our overseas sales are made either through our newer sales and service facilities, licensees or through our many distributors. Significant Energy customers include BP, Corpus Christi Gasket, Dow Chemical, ExxonMobil, DNOW, MRC and Valero.

Competition

Energy's primary competitors include ERIKS, Flexitallic Group, Garlock (EnPro), GHX, Klinger and Lone Star. Most of Energy's competitors supply either gaskets or bolts. We believe that providing both gaskets and bolts, as well as our hub-and-spoke distribution model, provides us a competitive advantage with many customers. We believe that our broader product portfolio and strong brand name enables us to maintain our market leadership position as one of the largest gasket and bolt suppliers to the energy market.

Engineered Components

We believe Engineered Components is a leading designer, manufacturer and distributor of high-pressure and acetylene cylinders for the transportation, storage and dispensing of compressed gases, as well as a variety of natural gas powered engines and parts, gas compressors, gas production equipment, meter runs, engine electronics and chemical pumps all engineered for use in oil and natural gas production. In general, these products are highly-engineered, customer-specific items that are sold into focused markets with few competitors.

Engineered Components' brands include Arrow[®] Engine and Norris Cylinder[™] which we believe are well established and recognized in their respective markets.

- *Arrow Engine.* We believe that Arrow Engine is a leading provider of natural gas powered engines and parts. Arrow Engine also provides gas compressors, gas production, meter runs, engine electronics and chemical pumps, all engineered for use in oil and natural gas production and other industrial and commercial markets. Arrow Engine distributes its products through a worldwide distribution network with a particularly strong presence in the United States and Canada. Arrow Engine owns the original equipment manufacturing rights to distribute engines and replacement parts for four main OEM engine lines and offers a wide variety of spare parts for an additional six engine lines, which are widely used in the energy industry and other industrial applications. Arrow Engine has developed a new line of products in the area of industrial engine spare parts for various industrial engines not manufactured by Arrow Engine, including selected engines manufactured and sold under the Caterpillar[®], Waukesha[®] and Ajax[®] brands. Arrow Engine has expanded its product line to include compressors and compressor packaging, gas production equipment, meter runs and other electronic products.
- *Norris Cylinder.* Norris Cylinder is a leading provider of a complete line of large, intermediate and small size, high-pressure and acetylene steel cylinders for the transportation, storage and dispensing of compressed gases. Norris Cylinder's large high-pressure seamless compressed gas cylinders are used principally for shipping, storing and dispensing oxygen, nitrogen, argon, helium and other gases for industrial and health care markets. In addition, Norris Cylinder offers a complete line of acetylene steel cylinders used to contain and dispense acetylene gas for the welding and cutting industries. Norris Cylinder markets cylinders primarily to major domestic and international industrial gas producers and distributors, welding equipment distributors and buying groups, as well as equipment manufacturers.

Strategies

We believe the businesses within the Engineered Components segment have opportunities to grow, based on the following:

- *Strong Product Innovation.* The Engineered Components segment has a history of successfully creating and introducing new products and there are currently several significant product initiatives underway. Arrow Engine continues to introduce new products in the area of industrial engine spare parts for various industrial engines not manufactured by Arrow Engine, including selected engines manufactured and sold under the Caterpillar[®], Waukesha[®] and Ajax[®] brands. Arrow Engine has also launched an offering of customizable compressors and gas production and meter run equipment, which are used by existing end customers in the oil and natural gas extraction markets, as well as development of a natural gas compressor used for compressed natural gas (CNG) filling stations. Norris Cylinder developed a process for manufacturing ISO cylinders from higher tensile strength steel which allows for a lighter weight cylinder at the same gas service pressure. Norris Cylinder was the first to gain United Nations certification by the US Department of Transportation for its ISO cylinders, and as such remains the first manufacturer approved to distribute ISO cylinders domestically. Norris Cylinder has also created new designs for seamless acetylene applications in marine and international markets
- *Entry into New Markets and Development of New Customers.* Engineered Components has opportunities to grow its businesses by offering its products to new customers, markets and geographies. Norris Cylinder is the only manufacturer of steel high-pressure and acetylene cylinders in North America. Norris Cylinder is selling its cylinders internationally into Europe, South Africa, and South and Central America, as well as pursuing new end markets such as cylinders for use as hydrogen fuel cells in storage (cell towers) and transport (fork trucks), in breathing air applications and in fire suppression. Arrow Engine continues to expand its product portfolio to serve new customers and new applications for oil and natural gas production in all areas of the industry, including shale drilling. Arrow Engine is also expanding international sales, particularly in Mexico, Indonesia and Venezuela.
- *Manage Capacity to Reflect Expected Demand Levels.* Norris Cylinder has deployed previously acquired assets in both its Huntsville, Alabama and Longview, Texas facilities to improve efficiency, mitigate risk and support its future expected growth, increasing its capacity for both large and small high pressure cylinders. Norris Cylinder is in process of installing equipment in an effort to produce higher volume cylinders more efficiently, while allowing higher technology products to be produced on the current forge asset. Norris Cylinder also flexes its costs in coordination with movements in demand. Arrow Engine has been unfavorably impacted by reductions in drilling activity driven by the decline in oil prices. In response, Arrow Engine has been focused on right-sizing its business to reflect the current demand levels by lowering costs and maximizing resources until the end market recovers. Where possible, Arrow Engine is variablizing the cost structure to respond quickly to end market changes and enhance flexibility, driving low cost sourcing efforts, and focusing on additional productivity and Lean initiatives.

Marketing, Customers and Distribution

Engineered Components' customers operate in the oil, gas, industrial and commercial industries. Given the focused nature of many of our products, the Engineered Components segment relies upon a combination of direct sales forces and established networks of independent distributors with familiarity of the end-users. In many of the markets this segment serves, its companies' brand names are virtually synonymous with product applications. The narrow end-user base of many of these products makes it possible for this segment to respond to customer-specific engineered applications and provide a high degree of customer service. Engineered Components' OEM and aftermarket customers include Airgas, Air Liquide, Chesapeake, Kidde-Fenwal, Natural Gas Compression Systems, Praxair and Total Operations and Production Services (TOPS). In years with higher levels of drilling activity, DNOW and Weatherford were larger customers of engines, parts and compressor products.

Competition

Arrow Engine tends to compete against natural gas powered, lower horsepower, multi-cylinder engines from manufacturers such as Caterpillar, Chevy, Cummins and Ford industrial engines and electric motors. Norris Cylinder competes against Worthington, Beijing Tianhai Industry Co., Faber and Vitkovice Cylinders. In May 2012, the U.S. International Trade Commission made a unanimous final determination that Norris Cylinder had been materially injured by imports of DOT high pressure steel cylinders that were being subsidized by the Government of China, as well as being dumped in the U.S. market by producers in China. As a result, antidumping and countervailing duties were imposed on the subject imports to create a fairer competitive environment in the United States, which expire in 2017, but are subject to renewal. Engineered Components' companies supply highly engineered, non-commodity, customer-specific products with large shares of small markets supplied by a limited number of competitors.

Acquisition Strategy

We believe that our businesses have significant opportunities to grow through disciplined, strategic acquisitions that enhance the strengths of our core businesses. We typically seek "bolt-on" acquisitions, in which we acquire another industry participant or adjacent product lines that expand our existing product offerings, gain access to new customers, end markets and distribution channels, expand our geographic footprint and/or capitalize on scale and cost efficiencies. Strategically, our primary focus is currently on acquisition targets in the Packaging segment, as this segment has a higher growth and margin profile. We will also consider opportunistic bolt-on acquisitions in our other segments, although such transactions are likely to be more modest in terms of target size and transaction value.

Materials and Supply Arrangements

Our largest raw material purchases are for steel, aluminum, titanium, cast iron, polyethylene and other resins. Raw materials and other supplies used in our operations are normally available from a variety of competing suppliers. In addition to raw materials, we purchase a variety of components and finished products from low-cost sources in China, India, Mexico, South Korea, Taiwan, Thailand and Vietnam.

Steel is purchased primarily from steel mills and service centers with pricing contracts principally in the three-to-six month time frame. Changing global dynamics for steel production and supply will continue to present a challenge to our business. Polyethylene is generally a commodity resin with multiple suppliers capable of providing product globally. While both steel and polyethylene are readily available from a variety of competing suppliers, our business has experienced, and we believe will continue to experience, volatility in the costs of these raw materials.

Employees and Labor Relations

As of December 31, 2016, we employed approximately 4,000 people, of which approximately 47% were located outside the United States and 21% were unionized. We currently have collective bargaining agreements covering six facilities worldwide, two of which are in the United States. Employee relations have generally been satisfactory.

In December 2016, we concluded, without a work stoppage or strike, a three-year extension of our labor agreement with the Basrur Uniseal Company Karmikara Sangha (a unit of BNIWU - CITU) at our Energy facility in Bangalore, India.

In January 2015, we finalized the decision to move a portion of the gasket and fastener operations from our Energy facility in Houston, Texas to a new facility in Reynosa, Mexico. This decision impacted less than 10% of the Houston facility's unionized work force.

Seasonality and Backlog

None of our reportable segments experience significant seasonal fluctuations. However, our fourth quarter tends to be our lowest revenue quarter as a result of holiday slowdowns at certain of our significant customers.

We do not consider sales order backlog to be a material factor in our businesses. Our Aerospace customers often provide a forward view of build rates and need for products, but firm orders do not extend for more than a few months, and are not guaranteed and subject to change.

Environmental Matters

We are subject to increasingly stringent environmental laws and regulations, including those relating to air emissions, wastewater discharges and chemical and hazardous waste management and disposal. Some of these environmental laws hold owners or operators of land or businesses liable for their own and for previous owners' or operators' releases of hazardous or toxic substances or wastes. Other environmental laws and regulations require the obtainment and compliance with environmental permits. To date, costs of complying with environmental, health and safety requirements have not been material. However, the nature of our operations and our long history of industrial activities at certain of our current or former facilities, as well as those acquired, could potentially result in material environmental liabilities.

Current laws and regulations have not had a material impact on our business, capital expenditures or financial position. However, we must comply with existing and pending climate change legislation, regulation and international treaties or accords. Future events, including those relating to climate change or greenhouse gas regulation could require us to incur expenses related to the modification or curtailment of operations, installation of pollution control equipment or investigation and cleanup of contaminated sites.

Intangible Assets

Our identified intangible assets, consisting of customer relationships, trademarks and trade names and technology, are recorded at approximately \$213.9 million at December 31, 2016, net of accumulated amortization. The valuation of each of the identified intangibles was performed using broadly accepted valuation methodologies and techniques.

Customer Relationships. We have developed and maintained stable, long-term selling relationships with customer groups for specific branded products and/or focused market product offerings within each of our businesses. Useful lives assigned to customer relationship intangibles range from five to 25 years and have been estimated using historic customer retention and turnover data. Other factors considered in evaluating estimated useful lives include the diverse nature of focused markets and products of which we have significant share, how customers in these markets make purchases and these customers' position in the supply chain. We also monitor and evaluate the impact of other evolving risks including the threat of lower cost competitors and evolving technology.

Trademarks and Trade Names. Each of our operating groups designs and manufactures products for focused markets under various trade names and trademarks (see discussion above by reportable segment). Our trademark/trade name intangibles are well-established and considered long-lived assets that require maintenance through advertising and promotion expenditures. Because it is our practice and intent to maintain and to continue to support, develop and market these trademarks/trade names for the foreseeable future, we consider our rights in these trademarks/trade names to have an indefinite life, except as otherwise dictated by applicable law.

Technology. We hold a number of United States and foreign patents, patent applications, and proprietary product and process-oriented technologies within all four of our reportable segments. We have, and will continue to dedicate, technical resources toward the further development of our products and processes in order to maintain our competitive position in the industrial, commercial and consumer end markets that we serve. Estimated useful lives for our technology intangibles range from one to 30 years and are determined in part by any legal, regulatory or contractual provisions that limit useful life. For example, patent rights have a maximum limit of 20 years in the United States. Other factors considered include the expected use of the technology by the operating groups, the expected useful life of the product and/or product programs to which the technology relates, and the rate of technology adoption by the industry.

International Operations

Approximately 14.0% of our net sales for the year ended December 31, 2016 were derived from sales by our subsidiaries located outside of the United States, and we may expand our international operations through organic growth actions and acquisitions. In addition, approximately 14.7% of our long-lived assets as of December 31, 2016 were located outside of the United States. We operate manufacturing facilities in Belgium, Canada, China, Germany, India, Mexico, Singapore, Spain, Thailand, the United Kingdom and Vietnam. In addition to the net sales derived from sales by our subsidiaries located outside of the United States, we also generated approximately \$76.2 million of export sales from the United States. For information pertaining to the net sales and operating net assets attributed to our international operations, refer to Note 19, "Segment Information," included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K.

Website Access to Company Reports

We use our corporate website, www.trimascorp.com, as a channel for routine distribution of important information, including news releases, company presentations and financial information. We post filings as soon as reasonably practicable after they are electronically filed with, or furnished to, the Securities and Exchange Commission ("SEC"), including our annual, quarterly, and current reports on Forms 10-K, 10-Q, and 8-K, our proxy statements and any amendments to those reports or statements. All such postings and filings are available under our Investors section of the website free of charge. The SEC also maintains a website, www.sec.gov, that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC. The content on any website referred to in this Annual Report on Form 10-K is not incorporated by reference into this Annual Report on Form 10-K unless expressly noted.

Item 1A. Risk Factors

You should carefully consider each of the risks described below, together with information included elsewhere in this Annual Report on Form 10-K and other documents we file with the SEC. The risks and uncertainties described below are those that we have identified as material, but are not the only risks and uncertainties facing us. Additional risks and uncertainties not currently known to us or that we currently believe are immaterial may also impact our business operations, financial results and liquidity.

Risks Relating to our Business

Our businesses depend upon general economic conditions and we serve some customers in highly cyclical industries; as such, we may be subject to the loss of sales and margins due to an economic downturn or recession.

Our financial performance depends, in large part, on conditions in the markets that we serve in both the U.S. and global economies. Some of the industries that we serve are highly cyclical, such as the industrial equipment, energy and aerospace industries. When combined with ongoing customer consolidation activity and periodic manufacturing and inventory initiatives, an uncertain macro-economic and political climate could lead to reduced demand from our customers and increased price competition for our products, increased risk of excess and obsolete inventories and uncollectible receivables, and higher overhead costs as a percentage of revenue all of which would impact our operating margins.

Trends in oil and natural gas prices may affect the demand for, and profitability of, our energy products and services, which could have a material adverse effect on our business, consolidated results of operations, and consolidated financial condition.

The oil and gas industry historically has experienced periodic downturns. Demand for our energy-related products, such as engines, compression products, gaskets and fasteners is sensitive to the level of drilling and production activity of, and the corresponding capital spending by, oil and natural gas companies. The level of drilling and production activity is directly affected by trends in oil and natural gas prices, which have been at lower levels over the past two years, and may continue to remain at depressed levels and be subject to future volatility.

Prices for oil and natural gas are subject to large fluctuations in response to changes in the supply of and demand for oil and natural gas, market uncertainty, geopolitical developments and a variety of other factors that are beyond our control. Even the perception of longer-term lower oil and natural gas prices can reduce or defer major capital expenditures by our customers in the oil and gas industry. Given the long-term nature of many large-scale development projects, a significant downturn in the oil and gas industry could result in the reduction in demand for our energy-related products, and could have a material adverse effect on our financial condition, results of operations and cash flows.

We have significant goodwill and intangible assets, and future impairment of our goodwill and intangible assets could have a material negative impact on our financial results.

At December 31, 2016, our goodwill and intangible assets were approximately \$529.0 million and represented approximately 50.3% of our total assets. Based on the results of our annual goodwill and indefinite-lived intangible asset impairment tests, we recorded pre-tax goodwill and indefinite-lived intangible asset impairment charges in 2016 of approximately \$98.9 million within our Aerospace reporting unit. Due to a significant decline in profitability levels in our Energy and engine products reporting units, we recorded pre-tax goodwill and indefinite-lived intangible asset impairment charges in 2015 of approximately \$75.7 million. If we experience declines in sales and operating profit or do not meet our current and forecasted operating budget, we may be subject to additional goodwill and/or other intangible asset impairments in the future. While the fair value of our remaining goodwill exceeds its carrying value, significantly worse financial performance of our businesses, significantly different assumptions regarding future performance of our businesses or significant declines in our stock price could result in future impairment losses. Because of the significance of our goodwill and intangible assets, and based on the magnitude of historical impairment charges, any future impairment of these assets could have a material adverse effect on our financial results.

Many of the markets we serve are highly competitive, which could limit sales volumes and reduce our operating margins.

Many of our products are sold in competitive markets. We believe that the principal points of competition in our markets are product quality and price, design and engineering capabilities, product development, conformity to customer specifications, reliability and timeliness of delivery, customer service and effectiveness of distribution. Maintaining and improving our competitive position will require continued investment by us in manufacturing, engineering, quality standards, marketing, customer service and support of our distribution networks. We may have insufficient resources in the future to continue to make such investments and, even if we make such investments, we may not be able to maintain or improve our competitive position. We also face the risk of lower-cost foreign manufacturers located in China, Southeast Asia, India and other regions competing in the markets for our products and we may be driven as a consequence of this competition to increase our investment overseas. Making overseas investments can be highly complicated and we may not always realize the advantages we anticipate from any such investments. Competitive pressure may limit the volume of products that we sell and reduce our operating margins.

We may be unable to successfully implement our business strategies. Our ability to realize our business strategies may be limited.

Our businesses operate in relatively mature industries and it may be difficult to successfully pursue our growth strategies and realize material benefits therefrom. Even if we are successful, other risks attendant to our businesses and the economy generally may substantially or entirely eliminate the benefits. While we have successfully utilized some of these strategies in the past, our growth has principally come through acquisitions.

Our growth strategy includes the impact of acquisitions. If we are unable to identify attractive acquisition candidates, successfully integrate acquired operations or realize the intended benefits of our acquisitions, we may be adversely affected.

One of our principal growth strategies is to pursue strategic acquisition opportunities. We have completed 14 acquisitions over the past five years (excluding transactions completed within our former Cequent businesses), primarily comprised of bolt-on businesses to our existing platforms. Each of these acquisitions required integration expense and actions that negatively impacted our results of operations and that could not have been fully anticipated beforehand. In addition, attractive acquisition candidates may not be identified and acquired in the future, financing for acquisitions may be unavailable on satisfactory terms and we may be unable to accomplish our strategic objectives in effecting a particular acquisition. We may encounter various risks in acquiring other companies, including the possible inability to integrate an acquired business into our operations, diversion of management's attention and unanticipated problems or liabilities, some or all of which could materially and adversely affect our business strategy and financial condition and results of operations.

Our ability to deliver products that satisfy customer requirements is dependent on the performance of our subcontractors and suppliers, as well as on the availability of raw materials and other components.

We rely on other companies, including subcontractors and suppliers, to provide and produce raw materials, integrated components and sub-assemblies and production commodities included in, or used in the production of, our products. If one or more of our suppliers or subcontractors experiences delivery delays or other performance problems, we may be unable to meet commitments to our customers or incur additional costs. In some instances, we depend upon a single source of supply. Any service disruption from one of these suppliers, either due to circumstances beyond the supplier's control, such as geo-political developments, or as a result of performance problems or financial difficulties, could have a material adverse effect on our ability to meet commitments to our customers or increase our operating costs.

Increases in our raw material or energy costs or the loss of critical suppliers could adversely affect our profitability and other financial results.

We are sensitive to price movements in our raw materials supply base. Our largest material purchases are for steel, copper, aluminum, titanium, polyethylene and other resins. Prices for these products fluctuate with market conditions, and have generally increased over time. We may be unable to completely offset the impact with price increases on a timely basis due to outstanding commitments to our customers, competitive considerations or our customers' resistance to accepting such price increases and our financial performance may be adversely impacted by further price increases. A failure by our suppliers to continue to supply us with certain raw materials or component parts on commercially reasonable terms, or at all, could have a material adverse effect on us. To the extent there are energy supply disruptions or material fluctuations in energy costs, our margins could be materially adversely impacted.

Our products are typically highly engineered or customer-driven and we are subject to risks associated with changing technology and manufacturing techniques that could place us at a competitive disadvantage.

We believe that our customers rigorously evaluate their suppliers on the basis of product quality, price competitiveness, technical expertise and development capability, new product innovation, reliability and timeliness of delivery, product design capability, manufacturing expertise, operational flexibility, customer service and overall management. Our success depends on our ability to continue to meet our customers' changing expectations with respect to these criteria. We anticipate that we will remain committed to product research and development, advanced manufacturing techniques and service to remain competitive, which entails significant costs. We may be unable to address technological advances, implement new and more cost-effective manufacturing techniques, or introduce new or improved products, whether in existing or new markets, so as to maintain our businesses' competitive positions or to grow our businesses as desired.

We depend on the services of key individuals and relationships, the loss of which could materially harm us.

Our success will depend, in part, on the efforts of our senior management, including our chief executive officer. Our future success will also depend on, among other factors, our ability to attract and retain other qualified personnel. The loss of the services of any of our key employees or the failure to attract or retain employees could have a material adverse effect on us.

Our reputation, ability to do business, and results of operations may be impaired by improper conduct by any of our employees, agents, or business partners.

While we strive to maintain high standards, we cannot provide assurance that our internal controls and compliance systems will always protect us from acts committed by our employees, agents, or business partners that would violate U.S. and/or non-U.S. laws or fail to protect our confidential information, including the laws governing payments to government officials, bribery, fraud, anti-kickback and false claims rules, competition, export and import compliance, money laundering, and data privacy laws, as well as the improper use of proprietary information or social media. Any such allegations, violations of law or improper actions could subject us to civil or criminal investigations in the U.S. and in other jurisdictions, could lead to substantial civil or criminal, monetary and non-monetary penalties, and related shareholder lawsuits, could lead to increased costs of compliance, could damage our reputation and could have a material effect on our financial statements.

We have debt principal and interest payment requirements that may restrict our future operations and impair our ability to meet our obligations.

As of December 31, 2016, we have approximately \$374.7 million of outstanding debt. After consideration of our interest rate swap agreement (see Note 12, "*Derivative Instruments*," included in Item 8, "*Financial Statements and Supplementary Data*," within this Form 10-K for additional information), approximately 35% of our debt bears interest at variable rates. We may experience increases in our interest expense as a result of general increases in interest rate levels. Our debt service payment obligations in 2016 were approximately \$25.5 million, and based on amounts outstanding as of December 31, 2016, a 1% increase in the per annum interest rate for our variable rate debt would increase our interest expense by approximately \$1.3 million annually.

Our degree of leverage and level of interest expense may have important consequences, including:

- our leverage may place us at a competitive disadvantage as compared with our less leveraged competitors and make us more vulnerable in the event of a downturn in general economic conditions or in any of our businesses;
- our flexibility in planning for, or reacting to, changes in our businesses and the industries in which we operate may be limited;
- a substantial portion of our cash flow from operations will be dedicated to the payment of interest and principal on our indebtedness, thereby reducing the funds available to us for operations, capital expenditures, acquisitions, future business opportunities or obligations to pay rent in respect of our operating leases; and
- our operations are restricted by our debt instruments, which contain certain financial and operating covenants, and those restrictions may limit, among other things, our ability to borrow money in the future for working capital, capital expenditures, acquisitions, rent expense or other purposes.

Our ability to service our debt and other obligations will depend on our future operating performance, which will be affected by prevailing economic conditions and financial, business and other factors, many of which are beyond our control. Our business may not generate sufficient cash flow, and future financings may not be available to provide sufficient net proceeds, to meet these obligations or to successfully execute our business strategies. See "*Management's Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources*."

Restrictions in our debt instruments and accounts receivable facility limit our ability to take certain actions and breaches thereof could impair our liquidity.

Our credit agreement contains covenants that restrict our ability to:

- pay dividends or redeem or repurchase capital stock;
- incur additional indebtedness and grant liens;
- make acquisitions and joint venture investments;
- sell assets; and
- make capital expenditures.

Our credit agreement also requires us to comply with financial covenants relating to, among other things, interest coverage and leverage. Our accounts receivable facility contains covenants similar to those in our credit agreement and includes additional requirements regarding our receivables. We may not be able to satisfy these covenants in the future or be able to pursue our strategies within the constraints of these covenants. Substantially all of the assets of our domestic subsidiaries (other than our special purpose receivables subsidiary) are pledged as collateral pursuant to the terms of our credit agreement. Borrowings under the foreign currency sub limit are secured by a pledge of the assets of the foreign subsidiary borrowers that are party to our credit agreement. A breach of a covenant contained in our debt instruments could result in an event of default under one or more of our debt instruments, our accounts receivable facility and our lease financing arrangements. Such breaches would permit the lenders under our credit agreement to declare all amounts borrowed thereunder to be due and payable, and the commitments of such lenders to make further extensions of credit could be terminated. In addition, such breach may cause a termination of our accounts receivable facility. Each of these circumstances could materially and adversely impair our liquidity.

We may face liability associated with the use of products for which patent ownership or other intellectual property rights are claimed.

We may be subject to claims or inquiries regarding alleged unauthorized use of a third party's intellectual property. An adverse outcome in any intellectual property litigation could subject us to significant liabilities to third parties, require us to license technology or other intellectual property rights from others, require us to comply with injunctions to cease marketing or using certain products or brands, or require us to redesign, re-engineer, or re-brand certain products or packaging, any of which could affect our business, financial condition and operating results. If we are required to seek licenses under patents or other intellectual property rights of others, we may not be able to acquire these licenses on acceptable terms, if at all. In addition, the cost of responding to an intellectual property infringement claim, in terms of legal fees and expenses and the diversion of management resources, whether or not the claim is valid, could have a material adverse effect on our business, results of operations and financial condition.

We may be unable to adequately protect our intellectual property.

While we believe that our patents, trademarks and other intellectual property have significant value, it is uncertain that this intellectual property or any intellectual property acquired or developed by us in the future, will provide a meaningful competitive advantage. Our patents or pending applications may be challenged, invalidated or circumvented by competitors or rights granted thereunder may not provide meaningful proprietary protection. Moreover, competitors may infringe on our patents or successfully avoid them through design innovation. Policing unauthorized use of our intellectual property is difficult and expensive, and we may not be able to, or have the resources to, prevent misappropriation of our proprietary rights, particularly in countries where the laws may not protect such rights as fully as in the U.S. The cost of protecting our intellectual property may be significant and have a material adverse effect on our financial condition and future results of operations.

We may incur material losses and costs as a result of product liability, recall and warranty claims brought against us.

We are subject to a variety of litigation incidental to our businesses, including claims for damages arising out of use of our products, claims relating to intellectual property matters and claims involving employment matters and commercial disputes.

We currently carry insurance and maintain reserves for potential product liability claims. However, our insurance coverage may be inadequate if such claims do arise and any liability not covered by insurance could have a material adverse effect on our business. Although we have been able to obtain insurance in amounts we believe to be appropriate to cover such liability to date, our insurance premiums may increase in the future as a consequence of conditions in the insurance business generally or our situation in particular. Any such increase could result in lower net income or cause the need to reduce our insurance coverage. In addition, a future claim may be brought against us that could have a material adverse effect on us. Any product liability claim may also include the imposition of punitive damages, the award of which, pursuant to certain state laws, may not be covered by insurance. Our product liability insurance policies have limits that, if exceeded, may result in material costs that could have an adverse effect on our future profitability. In addition, warranty claims are generally not covered by our product liability insurance. Further, any product liability or warranty issues may adversely affect our reputation as a manufacturer of high-quality, safe products, divert management's attention, and could have a material adverse effect on our business.

In addition, the Lamons business within our Energy reportable segment is a party to lawsuits related to asbestos contained in gaskets formerly manufactured by it or its predecessors. Some of this litigation includes claims for punitive and consequential as well as compensatory damages. We are not able to predict the outcome of these matters given that, among other things, claims may be initially made in jurisdictions without specifying the amount sought or by simply stating the minimum or maximum permissible monetary relief, and may be amended to alter the amount sought. Of the 5,339 claims pending at December 31, 2016, 76 set forth specific amounts of damages (other than those stating the statutory minimum or maximum). See Note 14, "Commitments and Contingencies," included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K for additional information.

Total settlement costs (exclusive of defense costs) for all such cases, some of which were filed over 20 years ago, have been approximately \$8.3 million. All relief sought in the asbestos cases is monetary in nature. To date, approximately 40% of our costs related to settlement and defense of asbestos litigation have been covered by our primary insurance. Effective February 14, 2006, we entered into a coverage-in-place agreement with our first level excess carriers regarding the coverage to be provided to us for asbestos-related claims when the primary insurance is exhausted. The coverage-in-place agreement makes asbestos defense costs and indemnity insurance coverage available to us that might otherwise be disputed by the carriers and provides a methodology for the administration of such expenses. Nonetheless, we believe it is likely that there will be a period within the next six to 18 months, prior to the commencement of coverage under this agreement and following exhaustion of our primary insurance coverage, during which we likely will be solely responsible for defense costs and indemnity payments, the duration of which would be subject to the scope of damage awards and settlements paid. We also may incur significant litigation costs in defending these matters in the future. We may be required to incur additional defense costs and pay damage awards or settlements or become subject to equitable remedies that could adversely affect our businesses.

Our business may be materially and adversely affected by compliance obligations and liabilities under environmental laws and regulations.

We are subject to increasingly stringent environmental laws and regulations, including those relating to air emissions, wastewater discharges and chemical and hazardous waste management and disposal. Some of these environmental laws hold owners or operators of land or businesses liable for their own and for previous owners' or operators' releases of hazardous or toxic substances or wastes. Other environmental laws and regulations require the obtainment and compliance with environmental permits. To date, costs of complying with environmental, health and safety requirements have not been material. However, the nature of our operations and our long history of industrial activities at certain of our current or former facilities, as well as those acquired, could potentially result in material environmental liabilities.

While we must comply with existing and pending climate change legislation, regulation and international treaties or accords, current laws and regulations have not had a material impact on our business, capital expenditures or financial position. Future events, including those relating to climate change or greenhouse gas regulation, could require us to incur expenses related to the modification or curtailment of operations, installation of pollution control equipment or investigation and cleanup of contaminated sites.

Our business may be materially and adversely affected by changes to fiscal and tax policies.

The new U.S. presidential administration has included as part of its agenda substantial change to fiscal and tax policies, which may include comprehensive tax reform. The structure of any such policies or reform is unknown and a change in tax laws or rates could have a material adverse effect on our financial condition and future results of operations.

Our borrowing costs may be impacted by our credit ratings developed by various rating agencies.

Two major ratings agencies, Standard & Poor's and Moody's, evaluate our credit profile on an ongoing basis and have each assigned ratings for our long-term debt. If our credit ratings were to decline, our ability to access certain financial markets may become limited, the perception of us in the view of our customers, suppliers and security holders may worsen and as a result, we may be adversely affected.

We have significant operating lease obligations and our failure to meet those obligations could adversely affect our financial condition.

We lease many of our manufacturing facilities and certain capital equipment. Our rental expense in 2016 under these operating leases was approximately \$17.4 million. A failure to pay our rental obligations would constitute a default allowing the applicable landlord to pursue any remedy available to it under applicable law, which would include taking possession of our property and, in the case of real property, evicting us. These leases are categorized as operating leases and are not considered indebtedness for purposes of our debt instruments.

We may be subject to further unionization and work stoppages at our facilities or our customers may be subject to work stoppages, which could seriously impact the profitability of our business.

As of December 31, 2016, approximately 21% of our work force was unionized under several different unions and bargaining agreements. We have collective bargaining agreements covering six facilities worldwide, two of which are in the United States.

In December 2016, we concluded, without a work stoppage or strike, a three year extension of our labor agreement with the Basrur Uniseal Company Karmikara Sangha (a unit of BNIWU - CITU) at our Energy facility in Bangalore, India.

In January 2015, we finalized the decision to move a portion of the gasket and fastener operations from our Energy facility in Houston to a new facility in Mexico. This decision impacted less than 10% of the Houston facility's unionized work force.

We are not aware of any present active union organizing drives at any of our other facilities. We cannot predict the impact of any further unionization of our workplace.

Many of our direct or indirect customers have unionized work forces. Strikes, work stoppages or slowdowns experienced by these customers or their suppliers could result in slowdowns or closures of assembly plants where our products are included. In addition, organizations responsible for shipping our customers' products may be impacted by occasional strikes or other activity. Any interruption in delivery of our customers' products may reduce demand for our products and have a material adverse effect on us.

Healthcare costs for active employees and future retirees may exceed projections and may negatively affect our financial results.

We maintain a range of healthcare benefits for our active employees and a limited number of retired employees pursuant to labor contracts and otherwise. Healthcare benefits for active employees and certain retirees are provided through comprehensive hospital, surgical and major medical benefit provisions or through health maintenance organizations, all of which are subject to various cost-sharing features. Some of these benefits are provided for in fixed amounts negotiated in labor contracts with the respective unions. If our costs under our benefit programs for active employees and retirees exceed our projections, our business and financial results could be materially adversely affected. Additionally, foreign competitors and many domestic competitors provide fewer benefits to their employees and retirees, and this difference in cost could adversely impact our competitive position.

A growing portion of our sales may be derived from international sources, which exposes us to certain risks which may adversely affect our financial results and impact our ability to service debt.

We have operations outside of the United States. Approximately 14.0% of our net sales for the year ended December 31, 2016 were derived from sales by our subsidiaries located outside of the U.S. In addition, we may expand our international operations through internal growth or acquisitions. International operations, particularly sales to emerging markets and manufacturing in non-U.S. countries, are subject to risks that are not present within U.S. markets, which include, but are not limited to, the following:

- volatility of currency exchange between the U.S. dollar and currencies in international markets;
- changes in local government regulations and policies including, but not limited to, foreign currency exchange controls or monetary policy, governmental embargoes, repatriation of earnings, expropriation of property, duty or tariff restrictions, investment limitations and tax policies;
- political and economic instability and disruptions, including labor unrest, civil strife, acts of war, guerrilla activities, insurrection and terrorism;
- legislation that regulates the use of chemicals;
- disadvantages of competing against companies from countries that are not subject to U.S. laws and regulations, including the Foreign Corrupt Practices Act ("FCPA");
- compliance with international trade laws and regulations, including export control and economic sanctions, such as anti-dumping duties;
- difficulties in staffing and managing multi-national operations;
- limitations on our ability to enforce legal rights and remedies;
- tax inefficiencies in repatriating cash flow from non-U.S. subsidiaries that could affect our financial results and reduce our ability to service debt;
- reduced protection of intellectual property rights; and
- other risks arising out of foreign sovereignty over the areas where our operations are conducted.

In addition, we could be adversely affected by violations of the FCPA and similar worldwide anti-bribery laws as well as export controls and economic sanction laws. The FCPA and similar anti-bribery laws in other jurisdictions generally prohibit companies and their intermediaries from making improper payments to non-U.S. officials for the purpose of obtaining or retaining business.

Our acquisition and disposition agreements by which we have acquired or sold companies, include indemnification provisions that may not fully protect us and may result in unexpected liabilities.

Certain of the agreements related to the acquisition and disposition of businesses require indemnification against certain liabilities related to the operations of the company for the previous owner. We cannot be assured that any of these indemnification provisions will fully protect us, and as a result we may incur unexpected liabilities that adversely affect our profitability and financial position.

A major failure of our information systems could harm our business; increased IT security threats and more sophisticated and targeted computer crime could pose a risk to our systems, networks, and products.

We depend on integrated information systems to conduct our business. We may experience operating problems with our information systems as a result of system failures, viruses, computer hackers or other causes. Any significant disruption or slowdown of our systems could cause customers to cancel orders or cause standard business processes to become inefficient or ineffective.

In addition, increased global IT security threats and more sophisticated and targeted computer crime pose a risk to the security of our systems and networks and the confidentiality, availability and integrity of our data and communications. While we attempt to mitigate these risks by employing a number of measures, including employee training, comprehensive monitoring of our networks and systems, and maintenance of backup and protective systems, our networks and systems remain potentially vulnerable to advanced persistent threats. Depending on their nature and scope, such threats could potentially lead to the compromising of confidential information and communications, improper use of our systems and networks, manipulation and destruction of data, defective products, production downtimes and operational disruptions, which in turn could adversely affect our reputation, competitiveness and results of operations.

The results of the United Kingdom's referendum on withdrawal from the European Union may have a negative effect on global economic conditions, financial markets and our business.

In June 2016, a majority of voters in the United Kingdom elected to withdraw from the European Union in a national referendum. The referendum was advisory, and the terms of any withdrawal are subject to a negotiation period that could last at least two years after the government of the United Kingdom formally initiates a withdrawal process. Nevertheless, the referendum has created significant uncertainty about the future relationship between the United Kingdom and the European Union, including with respect to the laws and regulations that will apply as the United Kingdom determines which European Union laws to replace or replicate in the event of a withdrawal. The results of the referendum have adversely impacted the British Pound and may continue to have an impact on other foreign currencies. The referendum has given rise to calls for the governments of other European Union member states to consider withdrawal. These developments, or the perception that any of them could occur, have had and may continue to have a material adverse effect on global economic conditions and the stability of global financial markets, and may significantly reduce global market liquidity and restrict the ability of key market participants to operate in certain financial markets. Any of these factors could depress economic activity and restrict our access to capital, which could have a material adverse effect on our business, financial condition and results of operations and reduce the price of our equity shares. Additionally, our Packaging business is dual headquartered in the United Kingdom and Indiana, and we operate other manufacturing facilities internationally, including in the United Kingdom. Accordingly, the results of the referendum may have an adverse impact on our international operations, particularly in the United Kingdom.

Our stock price may be subject to significant volatility due to our own results or market trends.

If our revenue, earnings or cash flows in any quarter fail to meet the investment community's expectations, there could be an immediate negative impact on our stock price. Our stock price could also be impacted by broader market trends and world events unrelated to our performance.

Risks Relating to the Spin-off of our former Cequent Businesses

We may be unable to achieve some or all of the benefits that we expected to achieve from the spin-off.

Although we believe that the separation of our former Cequent businesses from TriMas has provided, and will continue to provide, financial, operational, managerial and other benefits to us and our shareholders, the spin-off may not provide such results on the scope or scale we anticipate, and we may not realize all of the assumed benefits of the spin-off. If we do not realize these assumed benefits, we could suffer a material adverse effect on our financial condition.

If the spin-off does not qualify as a tax-free transaction, the Company and its shareholders could be subject to substantial tax liabilities.

The spin-off was conditioned on our receipt of an opinion from our tax advisors, in form and substance satisfactory to us, that the distribution of shares of our Cequent businesses in the spin-off qualifies as tax-free to the Cequent businesses, the Company and our shareholders for U.S. federal income tax purposes under Sections 355 and 368(a)(1)(D) and related provisions of the U.S. Internal Revenue Code of 1986, as amended (the "Code"), the Company and other members of our consolidated tax reporting group. The opinion relied on, among other things, various assumptions and representations as to factual matters made by the Company and the Cequent businesses which, if inaccurate or incomplete in any material respect, could jeopardize the conclusions reached by our advisor in its opinion. The opinion is not binding on the Internal Revenue Service ("IRS"), or the courts, and there is no assurance that the IRS or the courts will not challenge the qualification of the spin-off as a transaction under Sections 355 and 368(a) of the Code or that any such challenge would not prevail.

If the spin-off were determined not to qualify under Section 355 of the Code, each U.S. holder of our common shares who received shares of the Cequent businesses in connection with the spin-off would generally be treated as having received a taxable distribution of property in an amount equal to the fair market value of the shares of the Cequent businesses that were received. That distribution would be taxable to each such shareholder as a dividend to the extent of our current and accumulated earnings and profits. For each such shareholder, any amount that exceeded our earnings and profits would be treated first as a non-taxable return of capital to the extent of such shareholder's tax basis in his or her common shares of the Company with any remaining amount being taxed as a capital gain. We would be subject to tax as if we had sold common shares in a taxable sale for their fair market value and we would recognize taxable gain in an amount equal to the excess of the fair market value of such common shares over our tax basis in such common shares, which could have a material adverse impact on our financial condition, results of operations and cash flows.

Certain members of our board of directors and management may have actual or potential conflicts of interest because of their ownership of shares of the Cequent businesses or their relationships with the Cequent businesses following the spin-off.

Certain members of our board of directors and management own shares of the Cequent businesses, now a new independent publicly traded company, Horizon Global Corporation ("Horizon"), and/or options to purchase shares of Horizon, which could create, or appear to create, potential conflicts of interest when our directors and executive officers are faced with decisions that could have different implications for the Company and Horizon. One of our directors, Samuel Valenti III, is also a director of Horizon. This may create, or appear to create, potential conflicts of interest if Mr. Valenti is faced with decisions that could have different implications for Horizon than the decisions have for the Company.

Item 1B. Unresolved Staff Comments

Not applicable.

Item 2. Properties

Properties

Our principal manufacturing facilities range in size from approximately 10,000 square feet to approximately 255,000 square feet. Except as set forth in the table below, all of our manufacturing facilities are owned. The leases for our manufacturing facilities have initial terms that expire from 2017 through 2029 and are all renewable, at our option, for various terms, provided that we are not in default under the lease agreements. Substantially all of our owned U.S. real properties are subject to liens in connection with our credit facility. Our executive offices are located in Bloomfield Hills, Michigan under a lease through June 2017. Our buildings have been generally well maintained, are in good operating condition and are adequate for current production requirements.

The following list sets forth the location of our principal owned and leased manufacturing and other facilities used in continuing operations and identifies the principal reportable segment utilizing such facilities as of December 31, 2016:

Packaging	Energy	Aerospace	Engineered Components
<i>United States:</i>	<i>United States:</i>	<i>United States:</i>	<i>United States:</i>
Arkansas:	Texas:	California:	Alabama:
Atkins ⁽¹⁾	Houston ⁽¹⁾	Commerce ⁽¹⁾	Huntsville
California:	<i>International:</i>	Stanton ⁽¹⁾	Oklahoma:
Irwindale ⁽¹⁾	Belgium:	City of Industry	Tulsa
Rohnert Park ⁽¹⁾	Geel, Antwerp ⁽¹⁾	Kansas:	Texas:
Indiana:	Canada:	Ottawa	Longview
Auburn	Sarnia, Ontario ⁽¹⁾	Arizona:	
Hamilton ⁽¹⁾	India:	Tempe ⁽¹⁾	
Ohio:	Bangalore ⁽¹⁾	Tolleson	
New Albany ⁽¹⁾	Mexico:		
<i>International:</i>	Reynosa ⁽¹⁾		
Germany:	Thailand:		
Neunkirchen	Muang Rayong ⁽¹⁾		
Mexico:	United Kingdom:		
Mexico City	Wolverhampton ⁽¹⁾		
San Miguel de Allende ⁽¹⁾			
United Kingdom:			
Leicester			
China:			
Hangzhou ⁽¹⁾			
Haining City ⁽¹⁾			
India:			
Greater Noida ⁽¹⁾			
Baddi			
Vietnam:			
Thu Dau Mot ⁽¹⁾			

⁽¹⁾ Represents a leased facility. All such leases are operating leases.

Item 3. Legal Proceedings

See Note 14, "Commitments and Contingencies" included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K.

Item 4. Mine Safety Disclosures

Not applicable.

Supplementary Item. Executive Officers of the Company

As of December 31, 2016, the following were executive officers of the Company:

Thomas A. Amato. Mr. Amato, age 53, was appointed the Company's president and chief executive officer in July 2016. Previously, he served as chief executive officer and president of Metaldyne, LLC, an international engineered products manufacturing company, from 2009 through 2015, and co-president and chief integration officer of Metaldyne Performance Group, a global manufacturing company formed in mid-2014 and taken public in the same year, from August 2014 through December 2015. Prior to 2009, he served as chairman, chief executive officer, and president of Metaldyne Corporation, a global components manufacturer, and co-chief executive officer of Asahi Tec, a Japanese casting and forging company. Prior to this, Mr. Amato worked at MascoTech in positions of increasing responsibility, and successfully completed several acquisitions and divestitures. During this time, one of his roles was vice president of corporate development for TriMas. From 1987 to 1994, Mr. Amato worked at Imperial Chemical Industries, a large multinational chemical company, as an applications development engineer and, eventually, a group leader.

Robert J. Zalupski. Mr. Zalupski, age 57, was appointed the Company's chief financial officer in January 2015. Previously, he served as vice president, finance and treasurer of the Company since 2003 and assumed responsibility for corporate development in March 2010. He joined the Company as director of finance and treasury in 2002, prior to which he worked in the Detroit office of Arthur Andersen. From 1996 through 2001, Mr. Zalupski was a partner in the audit and business advisory services practice of Arthur Andersen providing audit, business consulting, and risk management services to both public and privately held companies in the manufacturing, defense, and automotive industries. Prior to 1996, Mr. Zalupski held various positions of increasing responsibility within the audit practice of Arthur Andersen serving public and privately held clients in a variety of industries.

Joshua A. Sherbin. Mr. Sherbin, age 53, was appointed the Company's general counsel and corporate secretary in 2005, vice president and chief compliance officer in May 2008, and senior vice president in March 2016. Prior to joining the Company, he was employed as the North American corporate counsel and corporate secretary for Valeo, a diversified Tier 1 international automotive supplier headquartered in Europe. Prior to joining Valeo in 1997, Mr. Sherbin was senior counsel, assistant corporate secretary for Kelly Services, Inc., an employment staffing company, from 1995 to 1997. From 1988 until 1995, he was an associate with the law firm Butzel Long in its general business practice.

PART II

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

Our common stock, par value \$0.01 per share, is listed for trading on the NASDAQ Global Select Market under the symbol "TRS." As of February 21, 2017, there were 278 holders of record of our common stock.

Our credit agreement restricts the payment of dividends on common stock, as such we did not pay dividends in 2016 or 2015. Our current policy is to retain earnings to repay debt and finance our operations and acquisitions. See the discussion under Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources" and Note 11 to the Company's financial statements captioned "Long-term Debt," included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K.

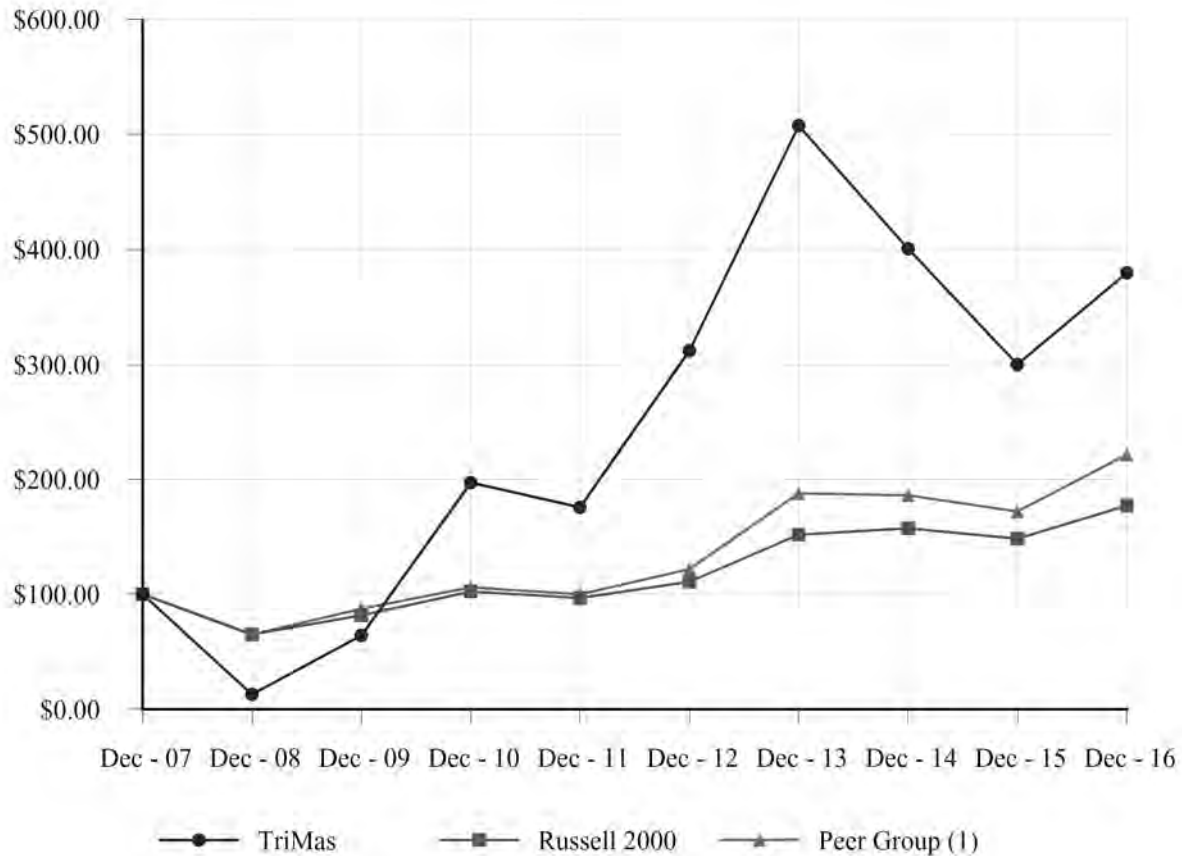
The high and low sales prices per share of our common stock by quarter, as reported on the NASDAQ through December 31, 2016, are shown below:

	Price range of common stock	
	High Price	Low Price
Year ended December 31, 2016		
4th Quarter	\$ 24.10	\$ 17.26
3rd Quarter	\$ 20.12	\$ 17.00
2nd Quarter	\$ 18.74	\$ 15.63
1st Quarter	\$ 18.62	\$ 14.76
Year ended December 31, 2015		
4th Quarter	\$ 22.02	\$ 15.29
3rd Quarter	\$ 25.35	\$ 15.32
2nd Quarter	\$ 32.54	\$ 27.74
1st Quarter	\$ 31.85	\$ 26.59

At the close of business on June 30, 2015, our shareholders received two common shares of Horizon common stock for every five shares of the Company they held as of the close of business on June 25, 2015. On June 30, 2015, the last trading day before the spin-off became effective, the closing price of our common shares, trading "regular way" (that is with an entitlement to common shares of Horizon distributed in the spin-off) was \$29.60. On July 1, 2015, the first trading day after the spin-off, the opening price of our common shares was \$24.99 per share and the opening price of Horizon common shares was \$15.50 per share. These stock prices for our common stock and Horizon common stock were as quoted on the NASDAQ Global Select Market and the New York Stock Exchange, respectively.

Performance Graph

The following graph compares the cumulative total stockholder return from December 31, 2007 through December 31, 2016 for TriMas common stock, the Russell 2000 Index and a peer group⁽¹⁾ of companies we have selected for purposes of this comparison. We have assumed that dividends have been reinvested (and taking into account the value of Horizon Global shares distributed in the spin-off) and returns have been weighted-averaged based on market capitalization. The graph assumes that \$100 was invested on December 31, 2007 in each of TriMas common stock, the stocks comprising the Russell 2000 Index and the stocks comprising the peer group.



⁽¹⁾ Includes Actuant Corporation, Carlisle Companies Inc., Crane Co., Dover Corporation, IDEX Corporation, Illinois Tool Works, Inc., SPX Corporation, Teleflex, Inc. and Kaydon Corp (included in peer group until being acquired in 2013).

Item 6. Selected Financial Data

The financial data for each of the five years presented has been derived from our financial statements and notes to those financial statements, for which the year ended December 31, 2012 was audited by KPMG LLP and the years ended December 31, 2013 through December 31, 2016 have been audited by Deloitte & Touche LLP. The following data should be read in conjunction with Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," and our audited financial statements included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K. The following tables set forth our selected historical financial data from continuing operations for the five years ended December 31, 2016 (dollars and shares in thousands, except per share data).

	Year ended December 31,				
	2016	2015	2014	2013	2012
Statement of Operations Data:					
Net sales	\$ 794,020	\$ 863,980	\$ 887,300	\$ 799,700	\$ 738,550
Gross profit	210,480	236,110	237,010	226,040	211,750
Operating profit (loss) ^(a)	(44,000)	(4,250)	86,650	97,210	88,400
Income (loss) from continuing operations ^{(a), (b)}	(39,800)	(28,660)	46,890	59,240	13,750
Per Share Data:					
Basic:					
Continuing operations ^(a)	\$ (0.88)	\$ (0.64)	\$ 1.03	\$ 1.34	\$ 0.30
Weighted average shares	45,407	45,124	44,882	40,926	37,521
Diluted:					
Continuing operations ^(a)	\$ (0.88)	\$ (0.64)	\$ 1.02	\$ 1.32	\$ 0.30
Weighted average shares	45,407	45,124	45,269	41,396	37,949

	Year ended December 31,				
	2016	2015	2014	2013	2012
Balance Sheet Data:					
Total assets ^{(c), (d)}	\$ 1,051,650	\$ 1,170,300	\$ 1,625,430	\$ 1,268,990	\$ 1,101,570
Total debt ^{(c), (d)}	374,650	419,630	630,810	294,620	407,950
Goodwill and other intangibles ^{(a), (d)}	529,000	652,790	757,500	445,840	401,370

(a) During 2016, we recorded goodwill and indefinite-lived intangible asset impairment charges totaling approximately \$98.9 million. During 2015, we recorded goodwill and indefinite-lived intangible asset impairment charges totaling approximately \$75.7 million. See Note 7, "Goodwill and Other Intangibles Assets," included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K for further information.

(b) During 2012, we incurred debt extinguishment costs of approximately \$46.8 million related to the redemption of our former senior notes and the refinance of our previous credit agreement.

(c) During 2015, we completed the spin-off of our Cequent businesses, thereby reducing the amount of our total assets and total debt as compared to prior periods. See Note 5, "Discontinued Operations" included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K for further information.

(d) During 2014, we acquired 100% of the equity interest in Allfast Fastening Systems, thereby increasing the amount of our total assets, total debt and goodwill and other intangibles. See Note 4, "Acquisitions" and Note 11, "Long-term Debt" included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K for further information.

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

The statements in the discussion and analysis regarding industry outlook, our expectations regarding the performance of our business and the other non-historical statements in the discussion and analysis are forward-looking statements. These forward-looking statements are subject to numerous risks and uncertainties, including, but not limited to, the risks and uncertainties described in Item 1A "Risk Factors." Our actual results may differ materially from those contained in or implied by any forward-looking statements. You should read the following discussion together with Item 8, "Financial Statements and Supplementary Data."

Introduction

We are a global manufacturer and distributor of products for commercial, industrial and consumer markets. We are principally engaged in four reportable segments: Packaging, Aerospace, Energy and Engineered Components.

On June 30, 2015, we completed the spin-off of our Cequent businesses, creating a new independent publicly-traded company, Horizon Global Corporation ("Horizon"). On June 30, 2015, our stockholders received two shares of Horizon common stock for every five shares of TriMas common stock that they held as of the close of business on June 25, 2015. The financial position, results of operations and cash flows of Horizon are reflected as discontinued operations for all periods presented through the date of the spin-off.

Key Factors and Risks Affecting Our Reported Results. Our businesses and results of operations depend upon general economic conditions and we serve some customers in cyclical industries that are highly competitive and themselves significantly impacted by changes in economic conditions. There has been low overall economic growth over the past few years, particularly in the United States and Europe. The most significant external factor impacting us recently is the impact of lower oil prices, which began to decline in late 2014, declined throughout 2015 and remained at low levels during 2016. This decline most directly impacts our Arrow Engine business within our Engineered Components reportable segment (which serves the upstream oil and natural gas markets at the well site), and also impacts our Energy reportable segment, which primarily serves petrochemical and other refineries in the downstream oil and gas markets, as well as historically having a fraction of its business dedicated to upstream activity. Between Arrow Engine and the Energy segment, we experienced approximately \$66 million of net sales decline from 2014 to 2015, and an additional \$56 million decline from 2015 to 2016.

Specific to Arrow Engine, net sales declined more than 50% during 2015 as compared to 2014, and by more than 50% again in 2016 compared with 2015, and are expected to remain at a low level until the price of oil increases over a sustained period where its customers decide to increase their activity levels and related well-site investments. The business reacted aggressively in cutting costs and structuring its business over the past two years in response to the lower demand levels, and was able to remain at an approximately break-even profit level in 2015, and near break-even in 2016, despite these significant reductions in sales levels.

In our Energy segment, the impact of the lower oil prices was muted in 2015 by market share gains and adding product content to our product portfolio. We were able to essentially hold 2015 sales levels flat with 2014 until the fourth quarter of 2015, when capital spending was significantly reduced at many of our customers, and sales levels dropped more than 20% on a sequential basis. The sales level has remained at a low level throughout 2016, as customers tightly managed spending initiatives, and we have chosen to deemphasize or exit certain lower margin products and sales in underperforming geographic regions.

In addition to the impact of lower oil prices, there has been a shift over the past two to three years in our Energy reportable segment from historical demand and activity, both in the United States and internationally. Petrochemical plants and refinery customers deferred shutdown activity, and we experienced decreases in engineering and construction ("E&C") customer activity. As noted above, we were able to hold sales levels essentially flat on a sequential quarterly basis in 2014 and until fourth quarter of 2015 with market share gains and additional product content; however, our margins declined significantly due to the mix of product sales and inefficiencies that resulted from the shift in activity levels. The current lower oil prices have continued to place further pressure on the top-line and predictability of customer order patterns. Given these factors, we have been realigning the business and its fixed cost structure with the current business environment, aggressively closing and consolidating facilities and seeking alternate lower-cost sources for input costs. We have begun, and expect to continue, to realize the cost savings and operational efficiencies associated with leveraging the new lower fixed cost structure and other initiatives, and continue to evaluate the cost structure and physical footprint of the business.

The other significant external factor impacting our recent results is supply chain disruption within our Aerospace reportable segment. Beginning in the middle of 2015, our two largest Aerospace distribution customers began reducing their investment in on-hand inventory levels of fastener products, and therefore their purchases of our products. This trend has continued through 2016. While this has impacted our net sales, it has also had a significant impact on margin levels, as certain of these products historically commanded higher profit margins. In addition to the reduction in distribution customer sales, in the first quarter of 2016, we also experienced lower sales, and significantly lower profit margins, as a result of production and scheduling challenges in one of our Aerospace fastener facilities, significantly lower fixed cost absorption and inefficiencies as we adjust to the changing demand levels, and integration costs associated with our 2015 machined components facility acquisition. We established plans to address these matters, and have been executing against those plans, as evidenced by sequential sales and margin increases in the second and third quarters of 2016, as we monitored whether a trend developed that was other than temporary. However, fourth quarter margins were lower than expected. Considering these impacts to our recent financial results, as well updating our assessment of future expectations for growth and profit levels, we determined during the fourth quarter that there were indicators that the fair value of the Aerospace reporting unit was less than its carrying value. Following an assessment of value, we recorded impairment charges for goodwill of approximately \$60.2 million and for certain Aerospace-related trade name intangible assets of approximately \$38.7 million in 2016.

Each year, we target certain levels of cost savings from continuous improvement and productivity initiatives in each business, with a goal of at minimum covering inflationary and input cost increases, and in an endeavor to each year lower input costs or improve throughput and yield rates to become more efficient. In addition, we continuously review our costs to ensure alignment between current demand and cost structure. In 2016, in response to continued net sales weakness, we accelerated facility consolidation actions in each of our reportable segments to more efficiently utilize our existing locations while better serving our customers. None of the actions is individually significant to our results of operations. We continue to evaluate further actions as merited based on business performance.

In 2015, given the uncertain economic environment and the impact on net sales and profitability of lower oil prices, a stronger U.S. dollar and slowing industrial production, we announced a Financial Improvement Plan ("FIP") to improve our profitability, cash flow conversion and operational efficiency. As part of the FIP, we originally targeted cost actions to yield \$15 million of annual savings, and in early 2016 added \$7 million of incremental cost savings actions, increasing the expected annual run-rate cost savings to \$22 million. By implementing the FIP, we believe we have lowered the cost structure of our engine-related business, allowing it to achieve break-even operating profit despite the more than 75% decline in sales as a result of the impact of lower oil prices. The FIP consisted of headcount reductions, manufacturing and administrative cost reduction and facility closures or consolidations. We believe the FIP was necessary to help mitigate the external factors pressuring our revenue, and position the Company for improved profitability and operating leverage across a lower fixed cost structure in the future. The FIP has been fully implemented, and the resulting savings significantly mitigated the impact of the reduction in year-over-year sales levels.

Critical factors affecting our ability to succeed include: our ability to create organic growth through product development, cross selling and extending product-line offerings, and our ability to quickly and cost-effectively introduce new products; our ability to acquire and integrate companies or products that supplement existing product lines, add new distribution channels, expand our geographic coverage or enable better absorption of overhead costs; our ability to manage our cost structure more efficiently via supply base management, internal sourcing and/or purchasing of materials, selective outsourcing and/or purchasing of support functions, working capital management, and greater leverage of our administrative functions. If we are unable to do any of the foregoing successfully, our financial condition and results of operations could be materially and adversely impacted.

Our businesses do not experience significant seasonal fluctuation, other than our fourth quarter, which has tended to be the lowest net sales quarter of the year given holiday shutdowns in certain customers or other customers deferring capital spending to the new year. We do not consider sales order backlog to be a material factor in our business. A growing portion of our sales is derived from international sources, which exposes us to certain risks, including currency risks.

We are sensitive to price movements in our raw materials supply base. Our largest material purchases are for steel, aluminum, polyethylene and other resins and utility-related inputs. Historically, we have experienced volatility in costs of steel and resin and have worked with our suppliers to manage costs and disruptions in supply. We also utilize pricing programs to pass increased steel, aluminum and resin costs to customers. Although we may experience delays in our ability to implement price increases, we have been generally able to recover such increased costs. We may experience disruptions in supply in the future and may not be able to pass along higher costs associated with such disruptions to our customers in the form of price increases.

Certain of our businesses are sensitive to oil price movements. As noted earlier, our Arrow Engine business is most directly impacted by significant volatility in oil prices. Arrow's pumpjack and other engine sales and related parts, which comprise a significant portion of the business, are impacted by oil drilling levels, rig counts and commodity pricing. In addition, a portion of our Energy reportable segment serves upstream customers at oil well sites that have been impacted by changes in oil prices. The majority of this segment provides parts for refineries and chemical plants, which may or may not decide to incur capital expenditures or changeover production stock, both of which require retooling with our gaskets and bolts, in times of fluctuating oil prices. Our Packaging reportable segment may be impacted by oil prices, as it is a significant driver of resin pricing, although we generally are able to maintain profit levels when oil prices change due to escalator/de-escalator clauses in contracts with many of our customers.

Segment Information and Supplemental Analysis

The following table summarizes financial information for our four reportable segments (dollars in thousands):

	Year ended December 31,					
	2016	As a Percentage of Net Sales	2015	As a Percentage of Net Sales	2014	As a Percentage of Net Sales
Net Sales						
Packaging	\$ 341,340	43.0 %	\$ 334,270	38.7 %	\$ 337,710	38.1 %
Aerospace	174,920	22.0 %	176,480	20.4 %	121,510	13.7 %
Energy	158,990	20.0 %	193,390	22.4 %	206,720	23.3 %
Engineered Components	118,770	15.0 %	159,840	18.5 %	221,360	24.9 %
Total	<u>\$ 794,020</u>	<u>100.0 %</u>	<u>\$ 863,980</u>	<u>100.0 %</u>	<u>\$ 887,300</u>	<u>100.0 %</u>
Gross Profit						
Packaging	\$ 120,980	35.4 %	\$ 120,610	36.1 %	\$ 118,210	35.0 %
Aerospace	35,390	20.2 %	58,580	33.2 %	34,710	28.6 %
Energy	29,690	18.7 %	23,720	12.3 %	35,660	17.3 %
Engineered Components	24,420	20.6 %	33,200	20.8 %	48,430	21.9 %
Total	<u>\$ 210,480</u>	<u>26.5 %</u>	<u>\$ 236,110</u>	<u>27.3 %</u>	<u>\$ 237,010</u>	<u>26.7 %</u>
Selling, General and Administrative						
Packaging	\$ 42,770	12.5 %	\$ 41,990	12.6 %	\$ 38,490	11.4 %
Aerospace	27,170	15.5 %	29,700	16.8 %	16,860	13.9 %
Energy	42,420	26.7 %	46,790	24.2 %	40,600	19.6 %
Engineered Components	8,870	7.5 %	11,750	7.4 %	14,190	6.4 %
Corporate expenses	32,480	N/A	32,120	N/A	36,450	N/A
Total	<u>\$ 153,710</u>	<u>19.4 %</u>	<u>\$ 162,350</u>	<u>18.8 %</u>	<u>\$ 146,590</u>	<u>16.5 %</u>
Operating Profit (Loss)						
Packaging	\$ 77,840	22.8 %	\$ 78,470	23.5 %	\$ 77,850	23.1 %
Aerospace	(90,810)	(51.9)%	28,320	16.0 %	17,830	14.7 %
Energy	(13,840)	(8.7)%	(97,160)	(50.2)%	(6,660)	(3.2)%
Engineered Components	15,300	12.9 %	18,240	11.4 %	34,080	15.4 %
Corporate	(32,490)	N/A	(32,120)	N/A	(36,450)	N/A
Total	<u>\$ (44,000)</u>	<u>(5.5)%</u>	<u>\$ (4,250)</u>	<u>(0.5)%</u>	<u>\$ 86,650</u>	<u>9.8 %</u>
Capital Expenditures						
Packaging	\$ 19,880	5.8 %	\$ 13,670	4.1 %	\$ 13,730	4.1 %
Aerospace	3,950	2.3 %	5,010	2.8 %	4,430	3.6 %
Energy	2,800	1.8 %	7,610	3.9 %	2,690	1.3 %
Engineered Components	4,670	3.9 %	2,320	1.5 %	1,690	0.8 %
Corporate	30	N/A	50	N/A	460	N/A
Total	<u>\$ 31,330</u>	<u>3.9 %</u>	<u>\$ 28,660</u>	<u>3.3 %</u>	<u>\$ 23,000</u>	<u>2.6 %</u>
Depreciation and Amortization						
Packaging	\$ 22,120	6.5 %	\$ 20,920	6.3 %	\$ 20,410	6.0 %
Aerospace	14,090	8.1 %	13,290	7.5 %	7,630	6.3 %
Energy	4,280	2.7 %	4,790	2.5 %	4,600	2.2 %
Engineered Components	4,090	3.4 %	4,200	2.6 %	4,460	2.0 %
Corporate	280	N/A	340	N/A	340	N/A
Total	<u>\$ 44,860</u>	<u>5.6 %</u>	<u>\$ 43,540</u>	<u>5.0 %</u>	<u>\$ 37,440</u>	<u>4.2 %</u>

Results of Operations

Year Ended December 31, 2016 Compared with Year Ended December 31, 2015

The principal factors impacting us during the year ended December 31, 2016, compared with the year ended December 31, 2015 were:

- the impact of lower oil prices, primarily impacting sales and profit levels in our Engineered Components and Energy reportable segments;
- costs incurred and savings achieved from our FIP and other cost savings actions, spread across all of our reportable segments, with the largest amounts within our Energy reportable segment;
- the impact of production and scheduling costs and inefficiencies, as well as the impact of lower distribution customer sales, all within our Aerospace reportable segment;
- the impact of our November 2015 acquisition of the Tolleson, Arizona machined components facility from Parker-Hannifin Corporation within our Aerospace reportable segment;
- the impact of a stronger U.S. dollar, primarily in our Packaging and Energy reportable segments;
- the spin-off of the Cequent businesses in 2015, including costs incurred to affect and reclassifying to discontinued operations for all periods presented, and amending our credit agreement ("Credit Agreement"); and
- an approximate \$98.9 million goodwill and intangible asset impairment charge in 2016 in our Aerospace reportable segment and an approximate \$74.1 million goodwill impairment charge in 2015 within our Energy and Engineered Components reportable segments.

Overall, net sales decreased approximately \$70.0 million, or approximately 8.1%, to \$794.0 million in 2016, as compared to \$864.0 million in 2015, primarily as a result of the impact of lower oil prices and oil-related activity on our Energy and Engineered Components reportable segments, which more than offset growth in our Packaging reportable segment and \$10.6 million of additional sales from the recent acquisition in our Aerospace reportable segment. Our Energy and Engineered Components reportable segments had a combined sales decrease of approximately \$74.3 million (excluding the effects of foreign currency), primarily as a result of lower oil prices and related activity. Sales within our Aerospace reportable segment declined approximately \$1.6 million, as declines in distribution and OE sales were mostly offset by the acquisition-related sales. Sales were further impacted by approximately \$8.6 million of unfavorable currency exchange, as our reported results in U.S. dollars were negatively impacted as a result of the stronger U.S. dollar relative to foreign currencies. These decreases were partially offset by approximately \$14.5 million in increased sales within our Packaging reportable segment, excluding the impact of foreign currency, primarily due to sales growth of our health, beauty and home care end market products.

Gross profit margin (gross profit as a percentage of sales) approximated 26.5% and 27.3% in 2016 and 2015, respectively. Gross profit decreased \$25.6 million, to \$210.5 million in 2016, as compared to \$236.1 million in 2015. Of this decrease in gross profit, approximately \$17.4 million is primarily due to overall lower sales levels and less favorable product sales mix in our Aerospace and Engineered Components reportable segments. In addition, within our Aerospace reportable segment, gross profit decreased by approximately \$7.7 million due to manufacturing inefficiencies and lower fixed cost absorption and approximately \$5.5 million to adjust certain inventory parts to estimated net realizable value as well as the result of a higher year-over-year physical inventory shrink and scrap rate. Partially offsetting these impacts was an increase of gross profit within our Energy reportable segment of approximately \$6.0 million, primarily due to lower restructuring costs as compared to the prior year.

Operating loss margin (operating loss as a percentage of sales) approximated 5.5% and 0.5% in 2016 and 2015, respectively. Operating loss increased \$39.7 million, to \$44.0 million in 2016, as compared to \$4.3 million in 2015, primarily due to approximately \$98.9 million in goodwill and intangible asset impairment charges in our Aerospace reportable segment in 2016 as compared to \$74.1 million in goodwill impairment charges in our Energy and Engineered Components reportable segments in 2015. In addition, operating loss increased due to our \$25.6 million decrease in gross profit. These impacts were partially offset by a reduction of selling, general and administrative expenses of \$8.7 million, primarily due to costs savings associated with the execution of our FIP and other cost savings actions within our Energy and Engineered Components reportable segments.

Interest expense decreased approximately \$0.4 million, to \$13.7 million in 2016, as compared to \$14.1 million in 2015. The decrease in interest expense was primarily due to a decrease in our weighted average variable rate borrowings to approximately \$454.1 million in 2016, from approximately \$631.8 million in 2015, primarily due to the distribution from Horizon to the Company in connection with the Cequent spin-off in June 2015, which the Company used to reduce outstanding borrowings. The effective weighted average interest rate on our outstanding variable rate borrowings, including our Credit Agreement and accounts receivable facilities, was approximately 2.2% for 2016 and 1.9% for 2015. Historically, a portion of our interest expense was allocated to the Cequent businesses and was recorded as discontinued operations.

We incurred debt financing and extinguishment costs of approximately \$2.0 million in 2015 related to the amendment of our Credit Agreement in conjunction with the spin-off of the Cequent businesses during the second quarter of 2015.

Other expense, net decreased approximately \$1.3 million to \$0.5 million in 2016, from \$1.8 million in 2015. The decrease was primarily due to the impact of realized currency gains and losses and reductions of certain indemnification assets related to uncertain tax liabilities in 2015 that did not repeat in 2016.

The effective income tax rate for 2016 was 31.7%, compared to (29.6)% for 2015. During 2016, we reported domestic and foreign pre-tax losses of approximately \$69.9 million and \$11.6 million, respectively, and recognized tax benefits of approximately \$2.2 million due to a change in an uncertain tax position for which the statute of limitations expired and research and manufacturing tax incentives. In addition, we were unable to record tax benefit of approximately \$5.1 million related to pre-tax goodwill impairment charges in the U.S. We also incurred tax charges of approximately \$2.1 million directly attributable to increases in valuation allowances on certain deferred tax assets including foreign tax operating loss carryforwards. In 2015, we reported domestic and foreign pre-tax losses of approximately \$3.2 million and \$19.0 million, respectively, and recognized tax benefits of approximately \$3.1 million due to a change in an uncertain tax position for which the statute of limitations expired and research and manufacturing tax incentives. In addition, we were unable to record tax benefit of approximately \$11.4 million related to pre-tax goodwill impairment charges in the U.S. and certain other jurisdictions. We also incurred tax charges of approximately \$3.8 million directly attributable to increases in valuation allowances on certain deferred tax assets including foreign tax operating loss carryforwards.

Loss from continuing operations decreased approximately \$11.1 million to \$39.8 million in 2016, from a loss of \$28.7 million in 2015. The decrease was primarily the result of an approximately \$39.7 million decrease in operating profit, which includes an approximate \$23.2 million increase in goodwill and intangible asset impairment charges. The decrease was partially offset by a decrease in income tax benefit (expense) of approximately \$24.9 million, a decrease in debt extinguishment costs of approximately \$2.0 million, decreases in other expenses, net of approximately \$1.3 million and a decrease in interest expense of approximately \$0.4 million.

See below for a discussion of operating results by reportable segment.

Packaging. Net sales increased approximately \$7.0 million, or 2.1%, to \$341.3 million in 2016, as compared to \$334.3 million in 2015. Sales of our health, beauty and home care products increased approximately \$10.5 million, due to growth in the European, North American and Asian markets. Sales of our industrial products increased approximately \$3.4 million, primarily due to increased demand in the North American market. Sales of our food and beverage products also increased approximately \$0.7 million, primarily due to increased demand in the United States. These increases were partially offset by approximately \$7.5 million of unfavorable currency exchange, as our reported results in U.S. dollars were negatively impacted as a result of the stronger U.S. dollar relative to foreign currencies.

Packaging's gross profit increased approximately \$0.4 million to \$121.0 million, or 35.4% of sales, in 2016, as compared to \$120.6 million, or 36.1% of sales, in 2015. Gross profit increased approximately \$5.2 million due to higher sales levels, excluding the impact of unfavorable foreign exchange, and by approximately \$1.1 million due to improved overhead cost absorption and a more favorable product sales mix. These increases were partially offset by approximately \$1.5 million of start-up costs for the new Mexican manufacturing facility, the impact of the reduction of an estimated acquisition liability of approximately \$1.2 million during 2015, which did not repeat in 2016, and approximately \$3.2 million of unfavorable currency exchange, as our reported results in U.S. dollars were negatively impacted as a result of the stronger U.S. dollar relative to foreign currencies.

Packaging's selling, general and administrative expenses increased approximately \$0.8 million to \$42.8 million, or 12.5% of sales, in 2016, as compared to \$42.0 million, or 12.6% of sales, in 2015. The increase was primarily due to approximately \$1.0 million of severance and other costs related to the closure of our existing Mexico manufacturing facility and establishment and move to the new manufacturing facility in Mexico, as well as the impact of the reduction in the Arminak contingent liability of approximately \$1.1 million in 2015. In addition, professional fees increased approximately \$1.7 million as a result of our front end reorganization to operate on a global versus regional basis, combined with other growth and product initiatives. These increases were partially offset by a decrease in selling, general and administrative expenses of approximately \$1.7 million due the impact of foreign currency, with the remainder of the decrease primarily related to lower employee related costs as a result of execution of the FIP.

Packaging's operating profit decreased approximately \$0.6 million to \$77.8 million, or 22.8% of sales, in 2016, as compared to \$78.5 million, or 23.5% of sales, in 2015. Although sales levels increased, operating profit and related margin declined primarily due to the reduction in acquisition and contingent liabilities in 2015, which did not repeat in 2016, costs related to the closure and move from our existing facility in Mexico to a new facility, higher professional fees and unfavorable currency exchange, which the incremental profit generated on higher sales levels and lower employee costs mostly offset.

Aerospace. Net sales decreased approximately \$1.6 million, or 0.9%, to \$174.9 million in 2016, as compared to \$176.5 million in 2015. Sales to distribution customers declined by approximately \$8.3 million, primarily as a result of certain large customers continuing planned reductions of their investment in on-hand inventory levels of certain fastener products. Sales to OE customers decreased approximately \$4.0 million, as while demand continued at expected levels, we experienced scheduling and production constraints, primarily in the first half of 2016, which impacted our ability to meet current demand. These decreases were partially offset by approximately \$10.6 million of increased sales related to the November 2015 machined components facility acquisition.

Gross profit within Aerospace decreased approximately \$23.2 million to \$35.4 million, or 20.2% of sales in 2016, from \$58.6 million, or 33.2% of sales, in 2015. Of this decrease in gross profit, approximately \$8.6 million is due to a less favorable product sales mix, with lower margin standard fasteners and machined component products comprising a larger percentage of the total sales. In addition, approximately \$7.7 million of the reduction is due to manufacturing inefficiencies and lower fixed cost absorption as a result of lower organic sales levels plus the first half 2016 production and scheduling challenges in our Commerce, CA facility. Approximately \$5.5 million relates to adjustments to inventory, reducing certain inventory parts to estimated net realizable value and as a result of higher year-over-year physical shrink and scrap rates, and approximately \$1.4 million is related to integration and new product qualification costs for the acquired machined components facility.

Selling, general and administrative expenses decreased approximately \$2.5 million to \$27.2 million, or 15.5% of sales, in 2016, as compared to \$29.7 million, or 16.8% of sales, in 2015, primarily due to cost savings associated with the FIP, as well as costs related to warehouse consolidation and other sales-related reorganizations incurred in 2015 that did not repeat in 2016.

Operating profit within Aerospace decreased approximately \$119.1 million to an operating loss of \$90.8 million, or 51.9% of sales, in 2016, as compared to \$28.3 million, or 16.0% of sales, in 2015. Operating profit and related margin decreased primarily due to approximately \$98.9 million of goodwill and indefinite-lived intangible asset impairment charges in the fourth quarter of 2016. Operating profit also declined as a result of the current product sales mix, manufacturing inefficiencies and lower fixed cost absorption, inventory adjustments and integration expenses, which were partially offset by cost savings associated with the FIP.

Energy. Net sales decreased approximately \$34.4 million, or 17.8%, to \$159.0 million in 2016, as compared to \$193.4 million in 2015. Sales decreased by approximately \$24.8 million in the United States and by approximately \$7.1 million in our international branches, due to weaker upstream and downstream demand, primarily from the major oil and petrochemical refinery customers. Sales further declined by approximately \$1.4 million due to lower sales resulting from branch closures in Brazil, China and the Netherlands, and approximately \$1.1 million of net unfavorable currency exchange, as our reported results in U.S. dollars were negatively impacted as a result of the stronger U.S. dollar relative to foreign currencies.

Gross profit within Energy increased approximately \$6.0 million to \$29.7 million, or 18.7% of sales, in 2016, as compared to \$23.7 million, or 12.3% of sales, in 2015. The decline in sales resulted in approximately \$4.1 million lower gross profit. However, gross profit increased year-over-year primarily due to approximately \$4.8 million of lower restructuring-related costs as compared to the prior year and approximately \$4.0 million lower material costs as a result of costs incurred in 2015 as part of the U.S. West Coast port delays, which caused us to temporarily produce certain products in higher cost facilities to meet demand levels. The remainder of the increase in gross profit is primarily due to lower labor and fixed costs as a result of the cost savings actions as part of the FIP.

Selling, general and administrative expenses within Energy decreased approximately \$4.4 million to \$42.4 million, or 26.7% of net sales, in 2016, as compared to \$46.8 million, or 24.2% of net sales, in 2015, primarily as a result of higher costs in 2015 associated with execution of the FIP. In addition, we incurred approximately \$1.9 million of costs in 2015 associated with the resolution of a previous legal claim, net of insurance recoveries.

Operating loss within Energy decreased approximately \$83.3 million to a \$13.8 million loss, or 8.7% of sales, in 2016, as compared to a \$97.2 million loss, or 50.2% of sales, in 2015, primarily as a result of a \$72.5 million goodwill and indefinite-lived intangible assets impairment charge during 2015, which did not repeat in 2016. Additionally, operating profit improved as a result of savings and lower year-over-year costs from our restructuring efforts, as well as 2015 costs associated with the West Coast port delays and legal claim which did not repeat in 2016.

Engineered Components. Net sales in 2016 decreased approximately \$41.0 million, or 25.7%, to \$118.8 million, as compared to \$159.8 million in 2015. Sales of our engines and compression-related products declined approximately \$21.4 million as a result of reduced levels of oil and gas drilling and well completions in the U.S. and Canada in response to lower oil prices. Sales of our industrial cylinders decreased by approximately \$19.6 million, primarily due to the impact of customer consolidation and lower demand for large high pressure gas cylinders in industrial applications.

Gross profit within Engineered Components decreased approximately \$8.8 million to \$24.4 million, or 20.6% of sales, in 2016, from \$33.2 million, or 20.8% of sales, in 2015, primarily as a result of the decreased sales levels. Gross profit margin from sales of our engine and compression-related products decreased as a result of lower fixed cost absorption despite cost reductions to better align our cost structure with current demand levels. Gross profit margin from sales of our industrial cylinders remained relatively flat, as increases resulting from lower input costs and a more favorable product mix of higher margin specialty cylinders in place of higher volume large high pressure gas cylinders were offset by the impact of lower sales levels and lower fixed cost absorption.

Selling, general and administrative expenses decreased approximately \$2.9 million to \$8.9 million, or 7.5% of sales, in 2016, as compared to \$11.8 million, or 7.4% of sales, in 2015. The decrease in selling, general and administrative expenses was primarily a result of our FIP and other cost savings initiatives for engine and compression-related products, as we reduced costs given the low oil-related activity to better align our cost structure with current demand levels. In addition, selling, general and administrative expenses were lowered for industrial cylinder products as a result of lower demand for gas cylinders in industrial applications.

Operating profit within Engineered Components decreased approximately \$2.9 million to \$15.3 million, or 12.9% of sales, in 2016, as compared to \$18.2 million, or 11.4% of sales, in 2015. Operating profit declined primarily due to lower sales levels, partially offset by a \$3.2 million goodwill impairment charge in the fourth quarter of 2015 that did not recur in 2016. Despite the decrease in sales, operating profit margin increased due to execution of our FIP and other cost savings actions, which allowed the engine business to remain near break-even levels despite the reduction in net sales.

Corporate Expenses. Corporate expenses included in operating profit consist of the following (dollars in millions):

	Year ended December 31,	
	2016	2015
Corporate operating expenses	\$ 14.6	\$ 12.4
Employee costs and related benefits	17.9	19.7
Corporate expenses	<u>\$ 32.5</u>	<u>\$ 32.1</u>

Corporate expenses included in operating profit increased approximately \$0.4 million to \$32.5 million in 2016, from \$32.1 million in 2015. Corporate operating expenses increased primarily due to approximately \$4.7 million of costs incurred associated with the July 2016 change in our President and CEO and the separation of our former Vice President of Human Resources. These increases were partially offset by a decrease in third-party professional fees and other corporate costs of approximately \$1.6 million, approximately \$0.5 million of FIP related costs that were incurred in 2015 that did not repeat in 2016 and a favorable property tax assessment settlement in 2016 of approximately \$0.4 million for a former business unit. Employee costs and related benefits decreased approximately \$1.8 million, primarily due to lower headcount following the Cequent spin-off as well as lower employee levels following the FIP, which were partially offset by an increase in expense related to the timing of our long-term incentive compensation.

Discontinued Operations. The results of discontinued operations consists of our former Cequent businesses, which were spun-off on June 30, 2015. Loss from discontinued operations, net of income tax expenses, was \$4.7 million for the year ended December 31, 2015. See Note 5, "Discontinued Operations," to our consolidated financial statements attached herein.

Year Ended December 31, 2015 Compared with Year Ended December 31, 2014

The principal factors impacting us during the year ended December 31, 2015 compared with the year ended December 31, 2014 were:

- the spin-off of the Cequent businesses, including costs incurred to affect and reclassifying to discontinued operations for all periods presented, and amending our Credit Agreement;
- the impact of lower oil prices, primarily in our Engineered Components and Energy reportable segments;
- the impact of acquisitions (see below for the impact by reportable segment);
- cash and non-cash costs incurred related to facility closures and consolidations, primarily within our Energy reportable segment;
- an approximate \$74.1 million goodwill impairment charge between our Energy and Engineered Components reportable segments;
- the impact of the stronger U.S. dollar, primarily in our Packaging and Energy reportable segments; and
- the impact of industrial slowing demand in the back half of 2015, primarily in our Packaging and Engineered Components reportable segments;

Overall, net sales decreased approximately \$23.3 million, or approximately 2.6%, to \$864.0 million in 2015, as compared to \$887.3 million in 2014. The impact of lower oil prices and the strong U.S. dollar significantly pressured the top-line during 2015, more than offsetting additional sales from organic sales growth and acquisitions in our Aerospace reportable segment. As a result of lower oil prices and related activity, sales of engine and compression-related products declined approximately \$52.9 million during 2015 within our Engineered Components reportable segment. Sales further declined in our Engineered Components reportable segment by approximately \$8.6 million, primarily due to a reduction of sales of our acetylene cylinders and lower export sales due to the impact of the stronger U.S. dollar. In addition, sales declined approximately \$8.8 million (constant currency) in our Energy reportable segment, primarily from lower North American upstream gasket and bolt sales into oil and natural gas fields. Sales were further impacted by approximately \$13.1 million of net unfavorable currency exchange, as our reported results in U.S. dollars were negatively impacted as a result of the stronger U.S. dollar relative to foreign currencies. These decreases were partially offset by an increase in sales during 2015 of approximately \$57.5 million due to our recent acquisitions and by approximately \$7.9 million of higher demand from our OEM and other customers in our Aerospace reportable segment.

Gross profit margin (gross profit as a percentage of sales) approximated 27.3% and 26.7% in 2015 and 2014, respectively. The primary driver of the increase in gross profit was our Aerospace reportable segment, due to both higher profit and margin associated with the Allfast Fastening Systems ("Allfast") acquisition and improved manufacturing efficiencies in 2015 in our legacy Aerospace business. Lower material costs also benefited profit margins in our Packaging and Engineered Components reportable segments. Gross profit margin also increased in our Packaging reportable segment due to productivity initiatives and a more favorable product sales mix. While gross profit margin declined within our Engineered Components reportable segment due to lower fixed cost absorption, this segment was able to substantially offset the impact of an approximate 28% sales reduction to only a 110 basis point reduction in gross profit margin due to cost reductions and aligning its structure with current demand levels. Gross profit margin declined in our Energy reportable segment due to higher costs related to our restructuring and footprint optimization efforts as well as costs related to U.S. West Coast port delays. In addition, gross profit was negatively impacted by approximately \$4.8 million of unfavorable currency exchange, as our reported results in U.S. dollars were negatively impacted as a result of the stronger U.S. dollar relative to foreign currencies.

Operating profit (loss) margin (operating profit (loss) as a percentage of sales) approximated (0.5)% and 9.8% in 2015 and 2014, respectively. Operating profit decreased approximately \$91.0 million, or 104.9%, to an operating loss of \$4.3 million in 2015, as compared to operating profit of \$86.7 million in 2014, primarily due to approximately \$74.1 million in goodwill impairment charges in our Energy and Engineered Components reportable segments. Increases in operating profit margin in our Packaging and Aerospace reportable segments due to productivity and manufacturing efficiencies, plus the favorable product sales mix impact of the Allfast acquisition, and a reduction in corporate costs and expenses were more than offset by reductions in profit margin in Energy and Engineered Components reportable segments. The decline in the Energy reportable segment, after consideration of the goodwill impairment, was due to costs related to our restructuring and footprint optimization efforts, higher legal expenses and costs related to U.S. West Coast port delays. The decline in operating profit margin within Engineered Components is primarily due to lower fixed cost absorption related to our engine and compression-related products. While costs were reduced year-over-year, net sales of such products were down more than 50% from 2014 levels.

Interest expense increased approximately \$4.5 million, to \$14.1 million in 2015, as compared to \$9.6 million in 2014. The increase in interest expense was primarily due to an increase in our weighted average variable rate borrowings to approximately \$631.8 million in 2015, from approximately \$512.3 million in 2014, primarily due to incremental net borrowings associated with funding the Allfast acquisition in October 2014 and the distribution received from the Cequent spin-off in June 2015. The effective weighted average interest rate on our outstanding variable rate borrowings, including our Credit Agreement and accounts receivable facilities, was approximately 1.9% for 2015 and 2014, respectively. Historically, a portion of our interest expense was allocated to the Cequent businesses and was recorded as discontinued operations.

We incurred debt financing and extinguishment costs of approximately \$2.0 million in 2015 related to the amendment of our Credit Agreement in conjunction with the spin-off of the Cequent businesses during the second quarter of 2015. During 2014, we incurred debt financing expenses of approximately \$3.4 million related to our former incremental term loan A facility used to fund the Allfast acquisition.

Other expense, net decreased approximately \$2.3 million to \$1.8 million in 2015, from \$4.1 million in 2014. The decrease was primarily due to costs attributed to a reduction of certain indemnification assets related to uncertain tax liabilities during 2014 that did not recur.

The effective income tax rate for 2015 was (29.6)%, compared to 32.6% for 2014. During 2015, we reported domestic and foreign pre-tax losses of approximately \$3.2 million and \$19.0 million, respectively, and recognized tax benefits of approximately \$3.1 million due to a change in an uncertain tax position for which the statute of limitations expired and research and manufacturing tax incentives. In addition, we were unable to record tax benefit of approximately \$11.4 million related to pre-tax goodwill impairment charges in the U.S. and certain other jurisdictions. We also incurred tax charges of approximately \$3.8 million directly attributable to increases in valuation allowances on certain deferred tax assets including foreign tax operating loss carryforwards. In 2014, we reported domestic and foreign pre-tax income of approximately \$67.3 million and \$2.3 million, respectively, and recognized tax benefits of approximately \$4.4 million due to a change in an uncertain tax position for which the statute of limitations expired and research and manufacturing tax incentives. In addition, we incurred tax charges of approximately \$3.3 million during 2014 directly attributable to increases in valuation allowances on certain deferred tax assets including foreign tax operating loss carryforwards.

Income (loss) from continuing operations decreased approximately \$75.6 million to a loss of \$28.7 million in 2015, from income of \$46.9 million in 2014. The decrease was primarily the result of an approximately \$91.0 million decrease in operating profit, which includes approximately \$74.1 million in goodwill impairment charges in 2015, and increased interest expense of approximately \$4.5 million, partially offset by a decrease in income tax expense of approximately \$16.2 million, decreases in other expenses of approximately \$2.3 million, and decreased debt financing and extinguishment costs of approximately \$1.4 million.

Net income attributable to noncontrolling interest was \$0.8 million in 2014. The income was related to our 70% acquisition in Arminak & Associates LLC ("Arminak") in February 2012, and represented the 30% interest not attributed to TriMas Corporation. We acquired the remaining 30% interest in Arminak on March 11, 2014. See Note 4, "Acquisitions," included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K.

See below for a discussion of operating results by reportable segment.

Packaging. Net sales decreased approximately \$3.4 million, or 1.0%, to \$334.3 million in 2015, as compared to \$337.7 million in 2014, primarily as a result of approximately \$8.5 million of unfavorable currency exchange, as our reported results in U.S. dollars were negatively impacted as a result of the stronger U.S. dollar relative to foreign currencies. Sales of our industrial closures also decreased approximately \$2.4 million, primarily as a result of lower demand in North America. These decreases were partially offset by incremental net sales of approximately \$7.0 million related to the acquisition of Lion Holdings Pvt. Ltd. ("Lion Holdings") in the third quarter of 2014 and an increase of approximately \$0.4 million related to our specialty systems products, primarily due to increased demand from customers in North America.

Packaging's gross profit increased approximately \$2.4 million to \$120.6 million, or 36.1% of sales, in 2015, as compared to \$118.2 million, or 35.0% of sales, in 2014. Gross profit increased primarily due to profit derived from the acquisition of Lion Holdings, as well as a \$1.2 million reduction of an estimated acquisition related liability, a more favorable product mix and continued productivity initiatives. These increases were partially offset by approximately \$3.9 million of unfavorable currency exchange as a result of the stronger U.S. dollar relative to foreign currencies.

Packaging's selling, general and administrative expenses increased approximately \$3.5 million to \$42.0 million, or 12.6% of sales, in 2015, as compared to \$38.5 million, or 11.4% of sales, in 2014, primarily as a result of approximately \$1.8 million of incremental selling, general and administrative costs associated with our Lion Holdings acquisition and a \$0.9 million charge associated with the closure of a distribution center in Europe. Additionally, during 2015 we recognized a \$1.1 million reduction in the Arminak contingent liability to the estimated fair value, as compared to a \$2.0 million reduction in the Arminak contingent liability recognized during 2014.

Packaging's operating profit increased approximately \$0.6 million to \$78.5 million, or 23.5% of sales, in 2015, as compared to \$77.9 million, or 23.1% of sales, in 2014, primarily due to an approximate \$1.7 million charge in 2014 associated with the disposal of equipment which was rendered obsolete as part of the Lion Holdings acquisition that did not repeat in 2015. Although sales levels decreased and selling general and administrative expenses increased, operating profit and margin increased due to a more favorable product mix and continued productivity initiatives.

Aerospace. Net sales increased approximately \$55.0 million, or 45.2%, to \$176.5 million in 2015, as compared to \$121.5 million in 2014. Sales increased approximately \$50.5 million due to the acquisition of Allfast in October 2014 and Parker-Hannifin Corporation's Tolleson, Arizona facility in November 2015. In addition, sales increased by approximately \$7.9 million due to higher demand from our OEM and other customers. These increases were partially offset by lower demand from our two largest distribution customers, as they have communicated they are reducing their on-hand inventory levels of certain of our fastener products.

Gross profit within Aerospace increased approximately \$23.9 million to \$58.6 million, or 33.2% of sales, in 2015, from \$34.7 million, or 28.6% of sales, in 2014, primarily due to additional profit and the favorable product sales mix associated with the acquisition of Allfast. Also, the additional sales levels from our legacy business and improved manufacturing and labor efficiencies in 2015 lifted profit dollars and margin slightly, as this segment improved its manufacturing throughput and operating effectiveness following inefficiencies in 2014 resulting from increased change-over and processing related to smaller customer order quantities and less predictable than expected order patterns associated with our large OE and distribution customers.

Selling, general and administrative expenses increased approximately \$12.8 million to \$29.7 million, or 16.8% of sales, in 2015, as compared to \$16.9 million, or 13.9% of sales, in 2014, primarily due to higher ongoing selling, general and administrative costs of approximately \$8.5 million related to our Allfast acquisition. In addition, we incurred approximately \$2.1 million in incremental costs related to a warehouse consolidation and other sales-related reorganizations. The remaining increase is primarily due to costs incurred to affect future synergies associated with combining four previously separate businesses and processes into one Aerospace platform.

Operating profit within Aerospace increased approximately \$10.5 million to \$28.3 million, or 16% of sales, in 2015, as compared to \$17.8 million, or 14.7% of sales, in 2014. Operating profit increased due to higher sales levels, while operating profit margin increased due to increases in gross margin due to profit derived from Allfast and improved manufacturing efficiencies in 2015, which were partially offset by increased selling, general and administrative costs primarily related to the ongoing cost of acquisitions.

Energy. Net sales for 2015 decreased approximately \$13.3 million, or 6.4%, to \$193.4 million, as compared to \$206.7 million in 2014. Through the first three quarters of 2015, this segment, after consideration of foreign currency exchange, increased sales levels compared to 2014 by approximately \$1.2 million, as market share gains and higher E&C sales more than offset weaker upstream sales at well sites due to the lower oil prices and lower sales as a result of closure of locations in China and Brazil. However, in the fourth quarter of 2015, sales declined approximately 20% from the level in the first three quarters of 2015, due primarily to lower demand from large refinery and petrochemical customers, partially due to the lower oil prices and partially due to deferring planned fourth quarter capital spending projects. Despite this significant change in late 2015, overall 2015 sales still increased by approximately \$1.9 million from 2014 levels in our international branches due to continued geographic market expansion and new product introductions. However, the international branch sales increase was more than offset by an approximate \$5.9 million sales decline in North America due to the lower petrochemical and refinery customer demand levels and approximately \$4.8 million of lower sales in China and Brazil due to our restructuring activities in those regions. In addition, this segment was impacted by approximately \$4.5 million of net unfavorable currency exchange, as our reported results in U.S. dollars were negatively impacted as a result of the stronger U.S. dollar relative to foreign currencies.

Gross profit within Energy decreased approximately \$12.0 million to \$23.7 million, or 12.3% of sales, in 2015, as compared to \$35.7 million, or 17.3% of sales, in 2014. Gross profit decreased primarily due to the decrease in sales and the resulting reduction in fixed costs absorption. In addition, we incurred approximately \$4.0 million due to higher material sourcing costs, related to U.S. West Coast port delays, where we moved certain production to higher cost facilities to meet current orders. Gross profit continues to be impacted by our restructuring efforts, including facility closures and footprint optimization costs and severance, as this effort was also underway during 2014, the year over year impact on gross profit was approximately \$3.1 million.

Selling, general and administrative expenses within Energy increased approximately \$6.2 million to \$46.8 million, or 24.2% of sales, in 2015, as compared to \$40.6 million, or 19.6% of sales, in 2014. During 2015, we incurred incremental costs of approximately \$6.0 million associated with our restructuring efforts, including facility closures and footprint optimization costs, consulting fees and severance costs. Additionally, we incurred higher legal costs of approximately \$0.6 million primarily due to the resolution of a previous legal claim, net of insurance recoveries.

Operating profit within Energy decreased approximately \$90.5 million to \$97.2 million, or 50.2% of sales, in 2015, as compared to \$6.7 million, or 3.2% of sales, in 2014. Operating profit and related margin decreased primarily as a result of a \$72.5 million goodwill and indefinite-lived intangible assets impairment charge during the fourth quarter of 2015, an approximate \$1.4 million charge in 2015 associated with the disposal of equipment in conjunction with our facility closures and consolidation efforts, higher restructuring related costs and higher sourcing costs resulting from port delays.

Engineered Components. Net sales in 2015 decreased approximately \$61.5 million, or 27.8%, to \$159.8 million, as compared to \$221.4 million in 2014. Sales of our slow speed and compressor engine and related products declined approximately \$35.2 million, and sales of our gas compression products declined approximately \$17.7 million, both primarily as a result of reduced levels of oil and gas drilling and well completions in the U.S. and Canada in response to lower oil prices. Sales further declined as a result of a one-time sale of our compressor packages by a significant customer in 2014 for approximately \$5.6 million that did not recur. In addition, sales of our industrial cylinder products decreased approximately \$8.6 million, primarily due to a reduction of sales of our acetylene cylinders and lower export sales due to the impact of the stronger U.S. dollar.

Gross profit within Engineered Components decreased approximately \$15.2 million to \$33.2 million, or 20.8% of sales, in 2015, from \$48.4 million, or 21.9% of sales, in 2014. Gross profit declined as a result of the decreased sales levels in our engine and compression-related products due to lower oil prices. Gross profit margin for engine and compression-related products further declined due to lower fixed cost absorption, despite cost reductions to better align our cost structure with current demand levels. These decreases were partially offset by increased gross profit and gross profit margin from sales of our industrial cylinders as a result of continued productivity initiatives, as we continue to gain efficiencies from our previous asset acquisition.

Selling, general and administrative expenses decreased approximately \$2.4 million to \$11.8 million, or 7.4% of sales, in 2015, as compared to \$14.2 million, or 6.4% of sales, in 2014, substantially all due to cost reductions in our engine and compression-related products, as we reduced costs given the low oil-related activity to better align our cost structure with current demand levels.

Operating profit within Engineered Components decreased approximately \$15.8 million to \$18.2 million, or 11.4% of sales, in 2015, as compared to \$34.1 million, or 15.4% of sales, in 2014, primarily due to the reduced sales levels. Operating profit also decreased as a result of a \$3.2 million goodwill impairment charge during the fourth quarter of 2015 as a result of the significant decline in current and forecasted sales of engine and engine-related products. Operating profit margin decreased as a result of lower fixed cost absorption related to our engine and compression-related products, which was partially offset by increased productivity initiatives and additional fixed cost absorption for our industrial cylinder products.

Corporate Expenses. Corporate expenses included in operating profit consist of the following (dollars in millions):

	Year ended December 31,	
	2015	2014
Corporate operating expenses	\$ 12.4	\$ 15.3
Employee costs and related benefits	19.7	21.2
Corporate expenses	<u>\$ 32.1</u>	<u>\$ 36.5</u>

Corporate expenses included in operating profit decreased approximately \$4.4 million to \$32.1 million in 2015, from \$36.5 million in 2014. The decrease between years is primarily attributed to \$1.4 million lower acquisition due diligence costs incurred in 2015 than in 2014, a decrease in expense due to the timing and estimated attainment of our short and long-term incentive compensation and a reduction in employee costs and related benefits due to headcount reductions as part of the FIP.

Discontinued Operations. The results of discontinued operations consists of our former Cequent businesses, which were spun-off on June 30, 2015, and our former NI Industries business, which ceased operation in September 2014. Loss from discontinued operations, net of income tax expense, was \$4.7 million for the year ended December 31, 2015, as compared to income from discontinued operations, net of income tax expense of \$22.4 million for the year ended December 31, 2014. See Note 5, "Discontinued Operations," to our consolidated financial statements attached herein.

Liquidity and Capital Resources

Cash Flows

Cash flows provided by operating activities of continuing operations in 2016 were approximately \$80.5 million, as compared to \$76.6 million in 2015. Significant changes in cash flows provided by operating activities of continuing operations and the reasons for such changes are as follows:

- In 2016, the Company generated \$82.9 million in cash flows, based on the reported net loss from continuing operations of \$39.8 million and after considering the effects of non-cash items related to impairment of goodwill and indefinite-lived intangible assets, losses on dispositions of businesses and other assets, depreciation, amortization, stock compensation and related changes in excess tax benefits, changes in deferred income taxes, debt financing and extinguishment costs and other, net. In 2015, the Company generated \$92.8 million based on the reported net loss from continuing operations of \$28.7 million and after considering the effects of similar non-cash items.
- Decreases in accounts receivable resulted in a source of cash of approximately \$8.0 million and \$5.3 million in 2016 and 2015, respectively. The decreases in accounts receivable are primarily due to the decrease in year-over-year sales and the timing of such sales. In addition, a portion of the reduction in 2016 is as a result of improved cash collections, as we were able to lower days sales outstanding of receivables by three days during 2016.
- We reduced our investment in inventory by approximately \$5.2 million and \$3.3 million in 2016 and 2015, respectively, primarily as a result of needing to carry fewer items in stock given lower year-over-year sales levels. Our days sales in inventory remained relatively flat year-over-year given the reduced sales and inventory purchase levels.
- Decreases in accounts payable and accrued liabilities resulted in a cash use of approximately \$18.1 million and \$29.5 million in 2016 and 2015, respectively. The decrease in accounts payable and accrued liabilities is primarily a result of lower purchases of inventory and other supplies given the lower sales demand. Our days accounts payable on hand decreased by approximately nine days during 2016, primarily due to the timing of payments made to suppliers and mix of vendors and related terms.

Net cash used for investing activities in 2016 was approximately \$31.1 million, as compared to \$37.0 million in 2015. During 2016, we incurred approximately \$31.3 million in capital expenditures as we have continued our investment in growth, capacity and productivity-related capital projects. Cash received from the disposition of assets was approximately \$0.2 million in 2016. During 2015, we paid approximately \$10.0 million for two acquisitions, the largest of which was for an Aerospace machined components facility in Tolleson, Arizona, which we acquired from Parker-Hannifin Corporation. We also invested approximately \$28.7 million in capital expenditures and received cash from the disposition of assets of approximately \$1.7 million.

Net cash used for financing activities in 2016 was approximately \$48.1 million, as compared to \$236.4 million in 2015. During 2016, we made approximately \$13.9 million of scheduled payments on our term loan and had net additional repayments of approximately \$30.9 million on our receivables and revolving credit facilities. We also made deferred purchase price payments related to our previous acquisitions of approximately \$2.5 million and used a net cash amount of approximately \$0.8 million related to our stock compensation arrangements. During 2015, in conjunction with the spin-off of our former Cequent businesses, Horizon made a cash distribution to us of \$214.5 million. We used the distribution received from Horizon to amend and pay down our term loan facilities. We had net additional borrowings of approximately \$169.9 million on our term loan facilities and \$39.5 million on our receivables and revolving credit facilities. We transferred cash of approximately \$17.1 million during the period to Horizon in connection with the spin-off. We also made deferred purchase price payments related to our previous acquisitions of approximately \$6.4 million, we used approximately \$1.9 million related to debt financing fees and used a net cash amount of approximately \$1.7 million related to our stock compensation arrangements.

Our Debt and Other Commitments

We are party to a Credit Agreement, consisting of a \$500.0 million senior secured revolving credit facility, which permits borrowings denominated in specific foreign currencies ("Foreign Currency Loans"), subject to a \$75.0 million sub limit, and a \$275.0 million senior secured term loan A facility ("Term Loan A Facility"). Below is a summary of the key terms under the Credit Agreement as of December 31, 2016, with term loans showing the face amount of borrowings upon issuance and revolving credit facilities showing gross availability at each date:

Instrument	Amount (\$ in millions)	Maturity Date	Interest Rate
Credit Agreement			
Senior secured revolving credit facility	\$ 500.0	6/30/2020	LIBOR ^(a) plus 1.750% ^(b)
Senior secured term loan A facility	275.0	6/30/2020	LIBOR ^(a) plus 1.750% ^(b)

(a) London Interbank Offered Rate ("LIBOR")

(b) The interest rate spread is based upon the leverage ratio, as defined, as of the most recent determination date.

The Credit Agreement also provides incremental term loan facility commitments and/or incremental revolving credit facility commitments in an amount not to exceed the greater of \$300 million and an amount such that, after giving effect to such incremental commitments and the incurrence of any other indebtedness substantially simultaneously with the making of such incremental commitments, the senior secured net leverage ratio, as defined in the Credit Agreement, is no greater than 2.50 to 1.00. The terms and conditions of any incremental term loan facility and/or incremental revolving credit facility commitments must be no more favorable than the existing credit facilities under the Credit Agreement.

We may be required to prepay a portion of the loans under the Term Loan A Facility in an amount equal to a percentage of our excess cash flow, as defined, with such percentage based on our leverage ratio, as defined. As of December 31, 2016, no amounts are due under this provision.

Amounts drawn under our revolving credit facility fluctuate daily based upon our working capital and other ordinary course needs. Availability under our revolving credit facility depends upon, among other things, compliance with the Credit Agreement's financial covenants. Our Credit Agreement contains various negative and affirmative covenants and other requirements affecting us and our subsidiaries that are comparable to the previous credit agreement, including restrictions on incurrence of debt, liens, mergers, investments, loans, advances, guarantee obligations, acquisitions, asset dispositions, sale-leaseback transactions, hedging agreements, dividends and other restricted payments, transactions with affiliates, restrictive agreements and amendments to charters, bylaws, and other material documents. The terms of the Credit Agreement also require us and our subsidiaries to meet certain restrictive financial covenants and ratios computed quarterly, including a maximum leverage ratio (total consolidated indebtedness plus outstanding amounts under the accounts receivable securitization facility over consolidated EBITDA, as defined) and a minimum interest expense coverage ratio (consolidated EBITDA, as defined, over cash interest expense, as defined). Our permitted leverage ratio under the Credit Agreement is 3.50 to 1.00 as of December 31, 2016. If we were to complete an acquisition which qualifies for a Covenant Holiday Period, as defined in our Credit Agreement, then our permitted leverage ratio cannot exceed 4.00 to 1.00 during that period. Our actual leverage ratio was 2.63 to 1.00 as of December 31, 2016. Our permitted interest expense coverage ratio under the Credit Agreement is 3.00 to 1.00 and, our actual interest expense coverage ratio was 11.94 to 1.00 as of December 31, 2016. At December 31, 2016, we were in compliance with our financial and other covenants contained in the Credit Agreement.

The following is a reconciliation of net loss, as reported, which is a GAAP measure of our operating results, to Consolidated Bank EBITDA, as defined in our Credit Agreement, for the year ended December 31, 2016. We present Consolidated Bank EBITDA to show our performance under our financial covenants. Dollars are in thousands in the below tables.

	Year ended December 31, 2016
Net loss	\$ (39,800)
Bank stipulated adjustments:	
Interest expense, net (as defined)	13,720
Depreciation and amortization	44,860
Extraordinary non-cash charges	98,900
Non-cash compensation expense ⁽¹⁾	6,940
Other non-cash expenses or losses	8,180
Non-recurring expenses or costs ⁽²⁾	11,400
Acquisition integration costs ⁽³⁾	1,460
Consolidated Bank EBITDA, as defined	<u>\$ 145,660</u>

	December 31, 2016
Total Consolidated Indebtedness, as defined ⁽⁴⁾	\$ 383,320
Consolidated Bank EBITDA, as defined	145,660
Actual leverage ratio	<u>2.63 x</u>
Covenant requirement	<u>3.50 x</u>

	December 31, 2016
Interest expense, as defined	\$ 13,720
Interest income	(160)
Non-cash amounts attributable to amortization of financing costs	(1,360)
Total consolidated cash interest expense, as defined	<u>\$ 12,200</u>

	December 31, 2016
Consolidated Bank EBITDA, as defined	\$ 145,660
Total consolidated cash interest expense, as defined	12,200
Actual interest expense coverage ratio	<u>11.94 x</u>
Covenant requirement	<u>3.00 x</u>

(1) Non-cash compensation expenses resulting from the grant of restricted shares of common stock and common stock options.

(2) Non-recurring costs and expenses related to cost savings projects, including restructuring and severance expenses, not to exceed \$15 million in any fiscal year and \$40.0 million in aggregate, subsequent to June 30, 2015.

(3) Costs and expenses arising from the integration of any business acquired not to exceed \$15 million in any fiscal year and \$40 million in the aggregate.

(4) Includes \$4.0 million of acquisition related deferred purchase price as of December 31, 2016.

Another important source of liquidity is our \$75.0 million accounts receivable facility, under which we have the ability to sell eligible accounts receivable to a third-party multi-seller receivables funding company. Our available liquidity under our accounts receivable facility ranged from approximately \$54 million to \$66 million, depending on the level of receivables outstanding at a given point in time during the year. We had \$45.5 million and \$53.6 million outstanding under the facility as of December 31, 2016 and 2015, respectively, and \$10.1 million and \$7.1 million available but not utilized as of December 31, 2016 and 2015, respectively. At December 31, 2016, we had \$75.9 million outstanding under our revolving credit facility and had \$408.2 million potentially available after giving effect to approximately \$15.9 million of letters of credit issued and outstanding. At December 31, 2015, we had \$100.3 million outstanding under our revolving credit facility and had \$378.1 million potentially available after giving effect to approximately \$21.6 million of letters of credit issued and outstanding. The letters of credit are used for a variety of purposes, including support of certain operating lease agreements, vendor payment terms and other subsidiary operating activities, and to meet various states' requirements to self-insure workers' compensation claims, including incurred but not reported claims. Including availability under our accounts receivable facility and after consideration of leverage restrictions contained in the Credit Agreement, as of December 31, 2016 and December 31, 2015, we had \$126.5 million and \$107.4 million, respectively, of borrowing capacity available for general corporate purposes.

We rely upon our cash flow from operations and available liquidity under our revolving credit and accounts receivable facilities to fund our debt service obligations and other contractual commitments, working capital and capital expenditure requirements. At the end of each quarter, we use cash on hand from our domestic and certain foreign subsidiaries to pay down amounts outstanding under our revolving credit and accounts receivable facilities. Generally, excluding the impact and timing of acquisitions, we use available liquidity under these facilities to fund capital expenditures and daily working capital requirements.

Our combined weighted average monthly amounts outstanding on our Credit Agreement and our accounts receivable facility approximated \$454.1 million and \$631.8 million during 2016 and 2015, respectively. The overall decrease is due primarily to the distribution received from the Cequent spin-off in June 2015 and due to cash generated during 2016 and used to repay amounts outstanding on our revolving credit facility.

Cash management related to our revolving credit and accounts receivable facilities is centralized. We monitor our cash position and available liquidity on a daily basis and forecast our cash needs on a weekly basis within the current quarter and on a monthly basis outside the current quarter over the remainder of the year. Our business and related cash forecasts are updated monthly. While the majority of our cash on hand as of December 31, 2016 is located in jurisdictions outside the United States, given aggregate available funding under our revolving credit and accounts receivable facilities of \$126.5 million at December 31, 2016 after consideration of the aforementioned leverage restrictions, and based on forecasted cash sources and requirements inherent in our business plans, we believe that our liquidity and capital resources, including anticipated cash flows from operations, will be sufficient to meet our debt service, capital expenditure and other short-term and long-term obligation needs for the foreseeable future.

Our exposure to interest rate risk results primarily from the variable rates under our Credit Agreement. Borrowings under the Credit Agreement bear interest, at various rates, as more fully described in Note 11, "*Long-term Debt*," included in Item 8, "*Financial Statements and Supplementary Data*," within this Form 10-K. We use interest rate swap agreements to fix the LIBOR-based variable portion of the interest rates on our term loan facility. As of December 31, 2016, we had interest rate swap agreements in place that hedge a notional amount of debt from approximately \$245.0 million to approximately \$192.7 million, with established fixed interest rates in a range of 0.74% to 2.68% with various expiration terms extending to June 30, 2020.

We are subject to variable interest rates on our term loan and revolving credit facility. At December 31, 2016, 1-Month LIBOR approximated 0.77%. Based on our variable rate-based borrowings outstanding at December 31, 2016, and after consideration of the interest rate swap agreement associated with our \$275.0 million term loan A, a 1% increase in the per annum interest rate would increase our interest expense by approximately \$1.3 million annually.

Principal payments required under the Credit Agreement for the term loan A facility are \$3.4 million due each fiscal quarter beginning December 2015 through September 2018 and approximately \$5.2 million due each fiscal quarter from December 2018 through March 2020, with final payment of \$202.8 million due on June 30, 2020.

In addition to our long-term debt, we have other cash commitments related to leases. We account for these lease transactions primarily as operating leases, and incurred expense from continuing operations related thereto of approximately \$17.4 million in 2016. We expect to continue to utilize leasing as a financing strategy in the future to meet capital expenditure needs and to reduce debt levels.

In addition to lease expense from continuing operations, we also have approximately \$2.4 million in annual future lease obligations related to businesses that have been discontinued, of which approximately 67% relate to the facility for the former specialty laminates, jacketings and insulation tapes line of business (which extends through 2024) and 33% relates to the facility for the former industrial fastening business (which extends through 2022).

Market Risk

We conduct business in various locations throughout the world and are subject to market risk due to changes in the value of foreign currencies. The functional currencies of our foreign subsidiaries are primarily the local currency in the country of domicile. We manage these operating activities at the local level and revenues and costs are generally denominated in local currencies; however, results of operations and assets and liabilities reported in U.S. dollars will fluctuate with changes in exchange rates between such local currencies and the U.S. dollar.

We have historically used derivative financial instruments to manage currency risks, albeit in immaterial notional contracts, as we explored the predictability of our procurement activities denominated in currencies other than the functional currency of our subsidiaries and the impact of currency rate volatility on our earnings.

We are also subject to interest risk as it relates to our long-term debt. We use interest rate swap agreements to fix the variable portion of our debt to manage this risk. See Note 12, "*Derivative Instruments*," included in Item 8, "*Financial Statements and Supplementary Data*," within this Form 10-K for additional information.

Common Stock

TriMas is listed in the NASDAQ Global Select MarketSM. Our stock trades under the symbol "TRS."

Contractual Obligations and Off-Balance Sheet Arrangements

Under various agreements, we are obligated to make future cash payments in fixed amounts. These include payments under our long-term debt agreements, rent payments required under operating and capital lease agreements, certain benefit obligations and interest obligations on our Credit Agreement.

The following table summarizes our significant contractual cash obligations as of December 31, 2016 (dollars in thousands).

	Payments Due by Periods				
	Total	Less than One Year	1 - 3 Years	3 - 5 Years	More than 5 Years
Contractual cash obligations:					
Long-term debt and receivables facilities	\$ 379,370	\$ 13,810	\$ 36,190	\$ 329,370	\$ —
Operating lease obligations	83,090	17,480	28,610	19,000	18,000
Benefit obligations	15,470	1,990	2,790	2,890	7,800
Interest obligations ^(a)	28,750	8,710	16,280	3,760	—
Other	7,130	2,210	4,920	—	—
Total contractual obligations	<u>\$ 513,810</u>	<u>\$ 44,200</u>	<u>\$ 88,790</u>	<u>\$ 355,020</u>	<u>\$ 25,800</u>

(a) Interest on our senior secured revolving credit facility and term loan A facility is based on LIBOR plus 175.0 basis points at December 31, 2016. Interest on our receivables facility is based on LIBOR plus 100.0 basis points at December 31, 2016. These rates were used to estimate our future interest obligations with respect to the long-term debt. These rates exclude the impact of our interest rate swap agreements. See Note 12, "Derivative Instruments," included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K for additional information.

As of December 31, 2016, we had a \$500.0 million revolving credit facility and a \$75.0 million accounts receivable facility. We had \$75.9 million outstanding under our revolving credit facility, and \$45.5 million outstanding under the accounts receivable facility as of December 31, 2016.

We may be required to prepay a portion of our term loan A facility in an amount equal to a percentage of our excess cash flow, as defined, with such percentage based on our leverage ratio, as defined. No amounts have been included in the contractual obligations table as a reasonable estimate cannot be determined.

As of December 31, 2016, we are contingently liable for standby letters of credit totaling \$15.9 million issued on our behalf by financial institutions under the Credit Agreement. These letters of credit are used for a variety of purposes, including to support certain operating lease agreements, vendor payment terms and other subsidiary operating activities, and to meet various states' requirements to self-insure workers' compensation claims, including incurred but not reported claims.

The liability related to unrecognized tax benefits has been excluded from the contractual obligations table because a reasonable estimate of the timing and amount of cash flows from future tax settlements cannot be determined. For additional information, refer to Note 20, "Income Taxes," included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K.

Credit Rating

We and certain of our outstanding debt obligations are rated by Standard & Poor's and Moody's. On June 9, 2016, Moody's affirmed a rating of Ba3 to our senior secured credit facilities, as presented in Note 11, "Long-term Debt" included in Item 8, "Financial Statements and Supplementary Data" within this Form 10-K. Moody's also affirmed a Ba3 Corporate Family Rating and maintained our outlook as stable. On December 21, 2016, Standard & Poor's affirmed a BB- corporate credit rating to our credit facilities and on June 1, 2015, Standard & Poor's maintained our outlook as stable. If our credit ratings were to decline, our ability to access certain financial markets may become limited, our cost of borrowings may increase, the perception of us in the view of our customers, suppliers and security holders may worsen and as a result, we may be adversely affected.

Outlook

The past few years have been a period of significant change for TriMas, with portfolio reshaping as part of the Cequent spin-off and various acquisitions within our Packaging and Aerospace businesses, a CEO leadership transition with a renewed focus on optimizing our current portfolio and considering future strategic direction, and significant reductions in our fixed cost structure in response to challenging macroeconomic conditions. In 2016, we were able to mitigate the impact of an approximate 8% year-over-year decline in net sales, primarily in our energy-facing businesses, with cost savings resulting from completion of our \$22 million Financial Improvement Plan implemented during the back half of 2015 and through continued cost management and productivity initiatives.

We are cautiously optimistic about the possibility for growth in 2017. We are focused on growth programs in our Packaging and Aerospace segments, which have many initiatives underway that we expect will benefit us in 2017. In addition, while uncertainty still exists with respect to the broader macroeconomic environment, there are signs of stabilization in certain of our key end markets, most notably within the Aerospace distribution channel and increased quoting activity for upstream oil and gas-related business. There is also the potential that recent U.S. administration change may accelerate the U.S. industrial economy, which would benefit us given a majority of our sales and production is in the U.S. While these additional factors would be positive for TriMas, we are not counting on significant market improvement. Rather, we are focused on managing internal projects that we control, including continued execution of our turnaround plans in Energy and Aerospace, pruning our product portfolios to deemphasize or no longer sell certain lower-margin products, and seeking lower-cost sources for input costs, all while continuously assessing our manufacturing footprint and fixed cost structure.

While the tactics we employ may differ between years, our strategic priorities remain consistent: generating profitable growth, enhancing profit margins, optimizing capital and resource allocation and striving to be a workplace of choice for great people.

Impact of New Accounting Standards

See Note 2, "New Accounting Pronouncements," included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K.

Critical Accounting Policies

The following discussion of accounting policies is intended to supplement the accounting policies presented in Note 3, "Summary of Significant Accounting Policies" included in Item 8, "Financial Statements and Supplementary Data," within this Form 10-K. Certain of our accounting policies require the application of significant judgment by management in selecting the appropriate assumptions for calculating financial estimates. By their nature, these judgments are subject to an inherent degree of uncertainty. These judgments are based on our historical experience, our evaluation of business and macroeconomic trends, and information from other outside sources, as appropriate.

Receivables. Receivables are presented net of allowances for doubtful accounts of approximately \$4.6 million and \$3.7 million at December 31, 2016 and 2015, respectively. We monitor our exposure for credit losses and maintain adequate allowances for doubtful accounts. We determine these allowances based on our historical write-off experience and/or specific customer circumstances and provide such allowances when amounts are reasonably estimable and it is probable a loss has been incurred. We do not have concentrations of accounts receivable with a single customer or group of customers and do not believe that significant credit risk exists due to our diverse customer base. Trade accounts receivable of substantially all domestic business operations may be sold, on an ongoing basis, to TSPC, but remain included in our consolidated balance sheet.

Depreciation and Amortization. Depreciation is computed principally using the straight-line method over the estimated useful lives of the assets. Annual depreciation rates are as follows: building and land/building improvements three to 40 years, and machinery and equipment, three to 15 years. Capitalized debt issuance costs are amortized over the underlying terms of the related debt securities. Customer relationship intangibles are amortized over periods ranging from five to 25 years, while technology and other intangibles are amortized over periods ranging from one to 30 years.

Impairment of Long-Lived Assets and Definite-Lived Intangible Assets. We review, on at least a quarterly basis, the financial performance of each business unit for indicators of impairment. In reviewing for impairment indicators, we also consider events or changes in circumstances such as business prospects, customer retention, market trends, potential product obsolescence, competitive activities and other economic factors. An impairment loss is recognized when the carrying value of an asset group exceeds the future net undiscounted cash flows expected to be generated by that asset group. The impairment loss recognized is the amount by which the carrying value of the asset group exceeds its fair value.

Goodwill and Indefinite-Lived Intangibles. We assess goodwill and indefinite-lived intangible assets for impairment at the reporting unit level on an annual basis as of October 1, by reviewing relevant qualitative and quantitative factors. More frequent evaluations may be required if we experience changes in our business climate or as a result of other triggering events that take place. If carrying value exceeds fair value, a possible impairment exists and further evaluation is performed.

We determine our reporting units at the individual operating segment level, or one level below, when there is discrete financial information available that is regularly reviewed by segment management for evaluating operating results. For purposes of our 2016 goodwill impairment test, we had seven reporting units, five of which had goodwill, within our four reportable segments.

We first perform a qualitative assessment for our annual goodwill impairment test and for our indefinite-lived intangible asset impairment test, which involves significant use of management's judgment and assumptions to determine whether it is more likely than not that the fair value of a reporting unit or indefinite-lived intangible asset is less than its carrying amount. In conducting the qualitative assessment, we consider macroeconomic conditions, industry and market considerations, overall financial performance, entity and reporting unit specific events, capital markets pricing, recent fair value estimates and carrying amounts, as well as legal, regulatory, and contractual factors. These factors are all considered in reaching a conclusion about whether it is more likely than not that the fair values of the intangible assets are less than the carrying values. If we conclude that further testing is required, we would perform a quantitative valuation to estimate the fair value of our intangible assets.

Based on the Step Zero assessment in 2016, we elected to perform a Step I quantitative assessment for our Aerospace reporting unit as we determined there were indicators that the fair value of the Aerospace reporting unit may be less than the carrying value. In conducting the Step I quantitative analysis, we determined the estimated fair value of the Aerospace reporting unit utilizing both income and market-based approaches. The income approach relies on the present value of estimated future cash flows of the business, discounted using a rate appropriately reflecting the risks inherent in the cash flows. The market approach relies on market data of other public companies that we deem comparable in operations to our reporting units. Upon completion of the goodwill impairment test, we determined that the Aerospace reporting unit failed Step I, requiring a Step II test to determine the amount, if any, of an impairment charge. In addition, a 1% reduction in residual growth rate combined with a 1% increase in the weighted average cost of capital would not have changed the conclusion reached under the Step I impairment test. In performing Step II of the quantitative goodwill impairment test, we determined the implied fair value of the Aerospace reporting unit goodwill in the same manner as if the reporting units were being acquired in a business combination and compared the implied fair value of the reporting unit's goodwill to the respective carrying value of the goodwill. Based on our analysis, the implied fair value of goodwill for our Aerospace reporting unit was less than the respective carrying value; therefore, we recorded pre-tax goodwill impairment charges of approximately \$60.2 million during the fourth quarter of 2016. For all other reporting units with goodwill, based on the Step Zero assessment and consideration of the quantitative assessment performed in 2015, where all other reporting units' fair value exceeded its carrying value by more than 89%, we did not believe that it was more likely than not that the fair value of a reporting unit was less than its carrying amount; therefore, we determined that the Step I and Step II tests were not required.

Additionally, because of the factors previously mentioned, during the fourth quarter of 2016 we performed a quantitative assessment for all of our indefinite-lived intangible assets included within the Aerospace reportable segment, using a relief-from-royalty method. We performed a Step Zero qualitative analysis for all of our other indefinite-lived intangible assets. The relief-from-royalty method involves the estimation of appropriate market royalty rates for our indefinite-lived intangible assets and the application of these royalty rates to forecasted net sales attributable to the intangible assets. The resulting cash flows are then discounted to present value, using a rate appropriately reflecting the risks inherent in the cash flows, which is compared to the carrying value of the assets. Upon completion of the quantitative impairment test, we determined that certain of our Aerospace-related trade names had carrying values that exceeded their fair value, and thus we recorded pre-tax goodwill impairment charges in the fourth quarter of 2016 of approximately \$38.7 million.

Future declines in sales and/or operating profit, declines in our stock price, or other changes in our business or the markets for our products could result in further impairments of our goodwill and indefinite-lived intangible assets.

Pension Benefits. The Company engages independent actuaries to compute the amounts of liabilities and expenses under defined benefit pension plans, subject to the assumptions that the Company determines are appropriate based on historical trends, current market rates and future projections as of the measurement date. Annually, the Company reviews the actual experience compared to the most significant assumptions used and makes adjustments to the assumptions, if warranted. Discount rates are based upon an expected benefit payments duration analysis and the equivalent average yield rate for high-quality fixed-income investments. Pension benefits are funded through deposits with trustees and the expected long-term rate of return on plan assets is based upon actual historical returns modified for known changes in the market and any expected change in investment policy. Certain accounting guidance, including the guidance applicable to pensions, does not require immediate recognition of the effects of a deviation between actual and assumed experience or the revision of an estimate. This approach allows the favorable and unfavorable effects that fall within an acceptable range to be netted.

Income Taxes. We compute income taxes using the asset and liability method, whereby deferred income taxes using current enacted tax rates are provided for the temporary differences between the financial reporting basis and the tax basis of assets and liabilities and for operating loss and tax credit carryforwards. We determine valuation allowances based on an assessment of positive and negative evidence on a jurisdiction-by-jurisdiction basis and record a valuation allowance to reduce deferred tax assets to the amount more likely than not to be realized. Recognized income tax positions are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs. We record interest and penalties related to unrecognized tax benefits in income tax expense.

Other Loss Reserves. We have other loss exposures related to environmental claims, asbestos claims and litigation. Establishing loss reserves for these matters requires the use of estimates and judgment in regard to risk exposure and ultimate liability. We are generally self-insured for losses and liabilities related principally to workers' compensation, health and welfare claims and comprehensive general, product and vehicle liability. Generally, we are responsible for up to \$0.8 million per occurrence under our retention program for workers' compensation, between \$0.3 million and \$1.5 million per occurrence under our retention programs for comprehensive general, product and vehicle liability, and have a \$0.3 million per occurrence stop-loss limit with respect to our self-insured group medical plan. We accrue loss reserves up to our retention amounts based upon our estimates of the ultimate liability for claims incurred, including an estimate of related litigation defense costs, and an estimate of claims incurred but not reported using actuarial assumptions about future events. We accrue for such items when such amounts are reasonably estimable and probable. We utilize known facts and historical trends, as well as actuarial valuations in determining estimated required reserves. Changes in assumptions for factors such as medical costs and actual experience could cause these estimates to change significantly.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

In the normal course of business, we are exposed to market risk associated with fluctuations in commodity prices, insurable risks due to property damage, employee and liability claims, and other uncertainties in the financial and credit markets, which may impact demand for our products.

We conduct business in various locations throughout the world and are subject to market risk due to changes in the value of foreign currencies. The functional currencies of our foreign subsidiaries are primarily the local currency in the country of domicile. We manage these operating activities at the local level and revenues and costs are generally denominated in local currencies; however, results of operations and assets and liabilities reported in U.S. dollars will fluctuate with changes in exchange rates between such local currencies and the U.S. dollar. We may use derivative financial instruments to manage currency risks associated with our procurement activities denominated in currencies other than the functional currency of our subsidiaries and the impact of currency rate volatility on our earnings.

We are also subject to interest risk as it relates to long-term debt, for which we have historically and may prospectively employ derivative instruments such as interest rate swaps to mitigate the risk of variable interest rates. See Item 7 "*Management's Discussion and Analysis of Financial Condition and Results of Operations*" for details about our primary market risks, and the objectives and strategies used to manage these risks. Also see Note 11, "*Long-term Debt*," and Note 12, "*Derivative Instruments*," included in Item 8, "*Financial Statements and Supplementary Data*," within this Form 10-K for additional information.

Item 8. Financial Statements and Supplementary Data

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of
TriMas Corporation
Bloomfield Hills, Michigan

We have audited the accompanying consolidated balance sheets of TriMas Corporation and subsidiaries (the “Company”) as of December 31, 2016 and 2015, and the related consolidated statements of operations, comprehensive income, cash flows, and shareholders’ equity for each of the three years in the period ended December 31, 2016. Our audits also included the financial statement schedule listed in the Index at Item 15. These financial statements and financial statement schedule are the responsibility of the Company’s management. Our responsibility is to express an opinion on the financial statements and financial statement schedule based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, such consolidated financial statements present fairly, in all material respects, the financial position of TriMas Corporation and subsidiaries as of December 31, 2016 and 2015, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2016, in conformity with accounting principles generally accepted in the United States of America. Also, in our opinion, such financial statement schedule, when considered in relation to the basic consolidated financial statements taken as a whole, presents fairly, in all material respects, the information set forth therein.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the Company’s internal control over financial reporting as of December 31, 2016, based on the criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 28, 2017, expressed an unqualified opinion on the Company’s internal control over financial reporting.

/s/ Deloitte & Touche LLP

Detroit, Michigan
February 28, 2017

TriMas Corporation
Consolidated Balance Sheet
(Dollars in thousands)

	December 31,	
	2016	2015
Assets		
Current assets:		
Cash and cash equivalents	\$ 20,710	\$ 19,450
Receivables, net	111,570	121,990
Inventories	160,460	167,370
Prepaid expenses and other current assets	16,060	17,810
Total current assets	308,800	326,620
Property and equipment, net	179,160	181,130
Goodwill	315,080	378,920
Other intangibles, net	213,920	273,870
Other assets	34,690	9,760
Total assets	\$ 1,051,650	\$ 1,170,300
Liabilities and Shareholders' Equity		
Current liabilities:		
Current maturities, long-term debt	\$ 13,810	\$ 13,850
Accounts payable	72,270	88,420
Accrued liabilities	47,190	50,480
Total current liabilities	133,270	152,750
Long-term debt, net	360,840	405,780
Deferred income taxes	5,910	11,260
Other long-term liabilities	51,910	53,320
Total liabilities	551,930	623,110
Preferred stock \$0.01 par: Authorized 100,000,000 shares; Issued and outstanding: None	—	—
Common stock, \$0.01 par: Authorized 400,000,000 shares; Issued and outstanding: 45,520,598 shares at December 31, 2016 and 45,322,527 shares at December 31, 2015	460	450
Paid-in capital	817,580	812,160
Accumulated deficit	(293,920)	(254,120)
Accumulated other comprehensive loss	(24,400)	(11,300)
Total shareholders' equity	499,720	547,190
Total liabilities and shareholders' equity	\$ 1,051,650	\$ 1,170,300

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

TriMas Corporation
Consolidated Statement of Operations
(Dollars in thousands, except per share amounts)

	Year ended December 31,		
	2016	2015	2014
Net sales	\$ 794,020	\$ 863,980	\$ 887,300
Cost of sales	(583,540)	(627,870)	(650,290)
Gross profit	210,480	236,110	237,010
Selling, general and administrative expenses	(153,710)	(162,350)	(146,590)
Net loss on dispositions of property and equipment	(1,870)	(2,330)	(3,770)
Impairment of goodwill and indefinite-lived intangible assets	(98,900)	(75,680)	—
Operating profit (loss)	(44,000)	(4,250)	86,650
Other expense, net:			
Interest expense	(13,720)	(14,060)	(9,590)
Debt financing and extinguishment expenses	—	(1,970)	(3,360)
Other expense, net	(510)	(1,840)	(4,100)
Other expense, net	(14,230)	(17,870)	(17,050)
Income (loss) from continuing operations before income taxes	(58,230)	(22,120)	69,600
Income tax benefit (expense)	18,430	(6,540)	(22,710)
Income (loss) from continuing operations	(39,800)	(28,660)	46,890
Income (loss) from discontinued operations, net of income taxes	—	(4,740)	22,390
Net income (loss)	(39,800)	(33,400)	69,280
Less: Net income attributable to noncontrolling interests	—	—	810
Net income (loss) attributable to TriMas Corporation	\$ (39,800)	\$ (33,400)	\$ 68,470
Basic earnings (loss) per share attributable to TriMas Corporation:			
Continuing operations	\$ (0.88)	\$ (0.64)	\$ 1.03
Discontinued operations	—	(0.10)	0.50
Net income (loss) per share	\$ (0.88)	\$ (0.74)	\$ 1.53
Weighted average common shares - basic	45,407,316	45,123,626	44,881,925
Diluted earnings (loss) per share attributable to TriMas Corporation:			
Continuing operations	\$ (0.88)	\$ (0.64)	\$ 1.02
Discontinued operations	—	(0.10)	0.49
Net income (loss) per share	\$ (0.88)	\$ (0.74)	\$ 1.51
Weighted average common shares - diluted	45,407,316	45,123,626	45,269,409

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

TriMas Corporation
Consolidated Statement of Comprehensive Income
(Dollars in thousands)

	Year ended December 31,		
	2016	2015	2014
Net income (loss)	\$ (39,800)	\$ (33,400)	\$ 69,280
Other comprehensive income (loss):			
Defined pension and postretirement pension plans (Note 15)	250	1,810	(3,340)
Foreign currency translation	(12,620)	(12,370)	(13,820)
Derivative instruments (Note 12)	(730)	(2,650)	(450)
Total other comprehensive loss	(13,100)	(13,210)	(17,610)
Total comprehensive income (loss)	(52,900)	(46,610)	51,670
Less: Net income attributable to noncontrolling interests	—	—	810
Total comprehensive income (loss) attributable to TriMas Corporation	\$ (52,900)	\$ (46,610)	\$ 50,860

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

TriMas Corporation
Consolidated Statement of Cash Flows
(Dollars in thousands)

	<u>Year ended December 31,</u>		
	<u>2016</u>	<u>2015</u>	<u>2014</u>
Cash Flows from Operating Activities:			
Net income (loss)	\$ (39,800)	\$ (33,400)	\$ 69,280
Income (loss) from discontinued operations	—	(4,740)	22,390
Income (loss) from continuing operations	(39,800)	(28,660)	46,890
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Impairment of goodwill and indefinite-lived intangible assets	98,900	75,680	—
Loss on dispositions of property and equipment	1,870	2,330	3,770
Depreciation	24,390	22,570	21,380
Amortization of intangible assets	20,470	20,970	16,060
Amortization of debt issue costs	1,370	1,710	1,940
Deferred income taxes	(32,160)	(8,750)	(6,530)
Non-cash compensation expense	6,940	6,340	7,110
Excess tax benefits from stock based compensation	(640)	(590)	(1,180)
Debt financing and extinguishment expenses	—	1,970	3,360
(Increase) decrease in receivables	7,990	5,300	(9,790)
(Increase) decrease in inventories	5,180	3,250	(6,010)
Decrease in prepaid expenses and other assets	2,550	4,730	5,250
Increase (decrease) in accounts payable and accrued liabilities	(18,120)	(29,530)	11,830
Other, net	1,530	(750)	(1,560)
Net cash provided by operating activities of continuing operations	80,470	76,570	92,520
Net cash provided by (used for) operating activities of discontinued operations	—	(14,030)	30,880
Net cash provided by operating activities	80,470	62,540	123,400
Cash Flows from Investing Activities:			
Capital expenditures	(31,330)	(28,660)	(23,000)
Acquisition of businesses, net of cash acquired	—	(10,000)	(382,880)
Net proceeds from dispositions of property and equipment	220	1,700	200
Net cash used for investing activities of continuing operations	(31,110)	(36,960)	(405,680)
Net cash used for investing activities of discontinued operations	—	(2,510)	(4,410)
Net cash used for investing activities	(31,110)	(39,470)	(410,090)
Cash Flows from Financing Activities:			
Proceeds from borrowings on term loan facilities	—	275,000	275,000
Repayments of borrowings on term loan facilities	(13,850)	(444,890)	(8,910)
Proceeds from borrowings on revolving credit and accounts receivable facilities	402,420	1,129,840	1,063,960
Repayments of borrowings on revolving credit and accounts receivable facilities	(433,350)	(1,169,370)	(989,090)
Payments for deferred purchase price	(2,530)	(6,440)	—
Debt financing fees	—	(1,850)	(3,840)
Shares surrendered upon options and restricted stock vesting to cover taxes	(1,590)	(2,770)	(2,910)
Proceeds from exercise of stock options	160	500	640
Excess tax benefits from stock based compensation	640	590	1,180
Distributions to noncontrolling interests	—	—	(580)
Payment for noncontrolling interests	—	—	(51,000)
Cash transferred to the Cequent businesses	—	(17,050)	—
Net cash provided by (used for) financing activities of continuing operations	(48,100)	(236,440)	284,450
Net cash provided by (used for) financing activities of discontinued operations	—	208,400	(340)
Net cash provided by (used for) financing activities	(48,100)	(28,040)	284,110
Cash and Cash Equivalents:			
Increase (decrease) for the year	1,260	(4,970)	(2,580)
At beginning of year	19,450	24,420	27,000
At end of year	<u>\$ 20,710</u>	<u>\$ 19,450</u>	<u>\$ 24,420</u>
Supplemental disclosure of cash flow information:			
Cash paid for interest	<u>\$ 11,800</u>	<u>\$ 15,170</u>	<u>\$ 10,870</u>
Cash paid for income taxes	<u>\$ 17,210</u>	<u>\$ 30,580</u>	<u>\$ 41,110</u>

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

TriMas Corporation
Consolidated Statement of Shareholders' Equity
Years Ended December 31, 2016, 2015 and 2014
(Dollars in thousands)

	Common Stock	Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total
Balances at December 31, 2013	\$ 450	\$ 816,450	\$ (295,320)	\$ 27,830	\$ 549,410
Net income attributable to TriMas Corporation	—	—	68,470	—	68,470
Other comprehensive loss	—	—	—	(17,610)	(17,610)
Shares surrendered upon option and restricted stock vesting to cover tax	—	(2,910)	—	—	(2,910)
Stock option exercises and restricted stock vestings	—	640	—	—	640
Tax effect from stock based compensation	—	1,180	—	—	1,180
Non-cash compensation expense	—	7,440	—	—	7,440
Acquisition of remaining 30% interest in Arminak & Associates, LLC (net of tax of \$8.4 million) (Note 4)	—	(15,990)	—	—	(15,990)
Balances at December 31, 2014	\$ 450	\$ 806,810	\$ (226,850)	\$ 10,220	\$ 590,630
Net loss attributable to TriMas Corporation	—	—	(33,400)	—	(33,400)
Other comprehensive loss	—	—	—	(13,210)	(13,210)
Shares surrendered upon option and restricted stock vesting to cover tax	—	(2,770)	—	—	(2,770)
Stock option exercises and restricted stock vestings	—	500	—	—	500
Tax effect from stock based compensation	—	590	—	—	590
Non-cash compensation expense	—	7,030	—	—	7,030
Distribution of the Cequent businesses	—	—	6,130	(8,310)	(2,180)
Balances at December 31, 2015	\$ 450	\$ 812,160	\$ (254,120)	\$ (11,300)	\$ 547,190
Net loss attributable to TriMas Corporation	—	—	(39,800)	—	(39,800)
Other comprehensive loss	—	—	—	(13,100)	(13,100)
Shares surrendered upon option and restricted stock vesting to cover tax	—	(1,590)	—	—	(1,590)
Stock option exercises and restricted stock vestings	10	150	—	—	160
Tax effect from stock based compensation	—	(80)	—	—	(80)
Non-cash compensation expense	—	6,940	—	—	6,940
Balances at December 31, 2016	\$ 460	\$ 817,580	\$ (293,920)	\$ (24,400)	\$ 499,720

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

TRIMAS CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Basis of Presentation

TriMas Corporation ("TriMas" or the "Company"), and its consolidated subsidiaries, is a global manufacturer and distributor of products for commercial, industrial and consumer markets. The Company is principally engaged in the following reportable segments with diverse products and market channels: Packaging, Aerospace, Energy and Engineered Components. See Note 19, "Segment Information," for further information on each of the Company's reportable segments.

On June 30, 2015, the Company completed the spin-off of its Cequent businesses, creating a new independent publicly traded company, Horizon Global Corporation ("Horizon"). In addition, on June 30, 2015, immediately prior to the effective time of the spin-off, Horizon paid a cash distribution to the Company of \$214.5 million using the proceeds of its new debt financing arrangement and cash on hand.

The Company incurred approximately \$30 million of one-time, pre-tax costs associated with the spin-off, of which approximately \$29 million was incurred during 2015. These costs primarily related to financing, legal, tax and accounting services rendered by third parties. Of the \$30 million in costs, approximately \$18 million was included in income (loss) from discontinued operations, \$9 million was capitalized as deferred financing fees associated with Horizon's debt issuance coincident with the spin-off and was included in the balance sheet of the discontinued operations and approximately \$3 million relates to fees associated with the Company's refinancing of long-term debt, of which approximately \$2 million was included in income from continuing operations as debt financing and extinguishment costs and approximately \$1 million was capitalized as deferred financing fees in the accompanying consolidated balance sheet.

The financial position, results of operations and cash flows of the Cequent businesses are reflected as discontinued operations for all periods presented through the date of the spin-off. See Note 5, "Discontinued Operations," for further details regarding the spin-off.

2. New Accounting Pronouncements

In January 2017, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2017-04, "Intangibles - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment" ("ASU 2017-04"). ASU 2017-04 eliminates the requirement to perform a hypothetical purchase price allocation to measure the amount of goodwill impairment. Instead, under ASU 2017-04, the goodwill impairment would be the amount by which a reporting unit's carrying value exceeds its fair value; however, the loss recognized should not exceed the total amount of goodwill allocated to the reporting unit. ASU 2017-04 is effective for fiscal years, and interim periods within those years, beginning after December 15, 2019 with early adoption permitted. The Company is in the process of assessing the impact of adoption of ASU 2017-04 on its consolidated financial statements.

In October 2016, the FASB issued ASU 2016-16, "Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory" ("ASU 2016-16"). ASU 2016-16 requires that income tax consequences of an intra-entity transfer of an asset other than inventory are recognized when the transfer occurs. ASU 2016-16 is effective for fiscal years, and interim periods within those years, beginning after December 15, 2017 and is to be applied using a modified retrospective approach with early adoption permitted. The Company is in the process of assessing the impact of adoption of ASU 2016-16 on its consolidated financial statements.

In August 2016, the FASB issued ASU 2016-15, "Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments" ("ASU 2016-15"). ASU 2016-15 clarifies how certain cash receipts and cash payments are presented and classified in the statement of cash flows, with the objective of reducing existing diversity in practice. ASU 2016-15 is effective for fiscal years, and interim periods within those years, beginning after December 15, 2017 and is to be applied using a retrospective approach with early adoption permitted. The Company is in the process of assessing the impact of adoption of ASU 2016-15 on its consolidated financial statements.

In March 2016, the FASB issued ASU 2016-09, "Compensation - Stock Compensation (Topic 718)" ("ASU 2016-09"). ASU 2016-09 simplifies several aspects of accounting for share-based payment award transactions, including income tax consequences, classification of awards as either equity or liabilities and classification on the statement of cash flows. ASU 2016-09 is effective for fiscal years, and interim periods within those years, beginning after December 15, 2016, with early adoption permitted. The Company expects to adopt this standard on January 1, 2017 and is in the process of assessing the impact of adoption of ASU 2016-09 on its consolidated financial statements.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

In February 2016, the FASB issued ASU 2016-02, "Leases (Topic 842)" ("ASU 2016-02"). ASU 2016-02 requires that lessees, at the lease commencement date, recognize a lease liability representing the lessee's obligation to make lease payments arising from a lease as well as a right-of-use asset, which represents the lessee's right to use, or control the use of a specified asset, for the lease term. The new guidance also aligns lessor accounting to the lessee accounting model and to Topic 606, "Revenue from Contracts with Customers." ASU 2016-02 is effective for fiscal years, and interim periods within those years, beginning after December 15, 2018 and is to be applied using a modified retrospective approach with early adoption permitted. The Company is in the process of assessing the impact of the adoption of ASU 2016-02 on its consolidated financial statements.

In July 2015, the FASB issued ASU 2015-11, "Inventory (Topic 330): Simplifying the Measurement of Inventory" ("ASU 2015-11"). ASU 2015-11 requires an entity to measure inventory at the lower of cost and net realizable value, thereby simplifying the current guidance under which an entity must measure inventory at the lower of cost or market. The ASU defines net realizable value as the estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation. ASU 2015-11 is effective for fiscal years, and interim periods within those years, beginning after December 15, 2016 and is to be applied prospectively with early adoption permitted. During the fourth quarter of 2016, the Company early adopted the provisions of ASU 2015-11. The adoption of ASU 2015-11 did not have a material impact on the Company's consolidated financial statements.

In May 2015, the FASB issued ASU 2015-07, "Fair Value Measurement (Topic 820), Disclosures for Investments in Certain Entities That Calculate Net Asset Value per Share (or Its Equivalent)" ("ASU 2015-07"). ASU 2015-07 removes the requirement to classify investments for which fair value is measured at net asset value (NAV) per share (or its equivalent) using the practical expedient in the fair value hierarchy. ASU 2015-07 is effective for fiscal years, and interim periods within those years, beginning after December 15, 2015 and is to be applied retrospectively to all periods presented. The Company adopted the provisions of ASU 2015-07 during the fourth quarter of 2016. The adoption of ASU 2015-07 did not have a material impact on the Company's consolidated financial statements.

In May 2014, the FASB issued ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)" ("ASU 2014-09"). ASU 2014-09 requires that an entity recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the company expects to be entitled in exchange for those goods or services. Since the issuance of the original standard, the FASB has issued several subsequent updates including the following: 1) the deferral of ASU 2014-09 by one year, making it effective for annual reporting periods beginning on or after December 15, 2017 while also providing for early adoption, but not before the original effective date (ASU 2015-14); 2) clarification of the implementation guidance on principal versus agent considerations (ASU 2016-08); 3) further guidance on identifying performance obligations in a contract as well as clarifications on the licensing implementation guidance (ASU 2016-10); 4) rescission of several SEC Staff Announcements that are codified in Topic 605, including, among other items, guidance related to accounting for shipping and handling fees and costs, freight services and consideration given by a vendor to a customer (ASU 2016-11); 5) additional guidance and practical expedients in response to identified implementation issues (ASU 2016-12); and 6) technical corrections and improvements to certain aspects of the guidance issued in ASU 2014-09 (ASU 2016-20). Although the Company is still in the process of evaluating its contracts, the Company does not believe the adoption of this standard will have a material impact on the amount or timing of its revenues. The Company expects to adopt this standard on January 1, 2018 utilizing the modified retrospective approach. The Company continues to evaluate the impact of the adoption of the ASU on its consolidated financial statements.

3. Summary of Significant Accounting Policies

Principles of Consolidation. The accompanying consolidated financial statements include the accounts and transactions of TriMas and its subsidiaries. Intercompany transactions have been eliminated.

The Company records the initial carrying amount of redeemable noncontrolling interests at fair value. In the event a redeemable noncontrolling interest is present at the end of a reporting period, the Company adjusts the carrying amount to the greater of (1) the initial carrying amount, increased or decreased for the redeemable noncontrolling interests' share of net income or loss, their share of comprehensive income or loss and dividends and (2) the redemption value as determined by a specified multiple of earnings, as defined. This method views the end of the reporting period as if it were also the redemption date for the redeemable noncontrolling interests. When a noncontrolling interest exists, the Company conducts a quarterly review to determine if the fair value of the redeemable noncontrolling interests is less than the redemption value. If the fair value of the redeemable noncontrolling interests is less than the redemption value, there may be a charge to earnings per share attributable to TriMas Corporation.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Use of Estimates. The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management of the Company to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. Such estimates and assumptions also affect the reported amounts of revenues and expenses during the reporting periods. Significant items subject to such estimates and assumptions include the carrying amount of property and equipment, goodwill and other intangibles, valuation allowances for receivables, inventories and deferred income tax assets, valuation of derivatives, estimated future unrecoverable lease costs, estimated unrecognized tax benefits, reserves for asbestos and ordinary course litigation, assets and obligations related to employee benefits and valuation of redeemable non-controlling interests. Actual results may differ from such estimates and assumptions.

Cash and Cash Equivalents. The Company considers cash on hand and on deposit and investments in all highly liquid debt instruments with initial maturities of three months or less to be cash and cash equivalents.

Receivables. Receivables are presented net of allowances for doubtful accounts of approximately \$4.6 million and \$3.7 million at December 31, 2016 and 2015, respectively. The Company monitors its exposure for credit losses and maintains allowances for doubtful accounts based upon the Company's best estimate of probable losses inherent in the accounts receivable balances. The Company does not believe that significant credit risk exists due to its diverse customer base.

Sales of Receivables. The Company may, from time to time, sell certain of its receivables to third parties. Sales of receivables are recognized at the point in which the receivables sold are transferred beyond the reach of the Company and its creditors, the purchaser has the right to pledge or exchange the receivables and the Company has surrendered control over the transferred receivables.

Inventories. Inventories are stated at the lower of cost or net realizable value, with cost determined using the first-in, first-out method. Direct materials, direct labor and allocations of variable and fixed manufacturing-related overhead are included in inventory cost.

Property and Equipment. Property and equipment additions, including significant improvements, are recorded at cost. Upon retirement or disposal of property and equipment, the cost and accumulated depreciation are removed from the accounts, and any gain or loss is included in the accompanying statement of operations. Repair and maintenance costs are charged to expense as incurred.

Depreciation and Amortization. Depreciation is computed principally using the straight-line method over the estimated useful lives of the assets. Annual depreciation rates are as follows: building and land/building improvements three to 40 years, and machinery and equipment, three to 15 years. Capitalized debt issuance costs are amortized over the underlying terms of the related debt securities. Customer relationship intangibles are amortized over periods ranging from five to 25 years, while technology and other intangibles are amortized over periods ranging from one to 30 years.

Impairment of Long-Lived Assets and Definite-Lived Intangible Assets. The Company reviews, on at least a quarterly basis, the financial performance of its businesses for indicators of impairment. In reviewing for impairment indicators, the Company also considers events or changes in circumstances such as business prospects, customer retention, market trends, potential product obsolescence, competitive activities and other economic factors. An impairment loss is recognized when the carrying value of an asset group exceeds the future net undiscounted cash flows expected to be generated by that asset group. The impairment loss recognized is the amount by which the carrying value of the asset group exceeds its fair value.

Goodwill. The Company assesses goodwill for impairment on an annual basis (October 1 test date) by reviewing relevant qualitative and quantitative factors. More frequent evaluations may be required if the Company experiences changes in its business climate or as a result of other triggering events that take place. If carrying value exceeds fair value, a possible impairment exists and further evaluation is performed.

The Company determines its reporting units at the individual operating segment level, or one level below, when there is discrete financial information available that is regularly reviewed by segment management for evaluating operating results. For purposes of the Company's 2016 goodwill impairment test, the Company had seven reporting units, five of which had goodwill, within its four reportable segments. See Note 7, "Goodwill and Other Intangible Assets," for further details regarding the Company's goodwill impairment testing.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

In conducting a qualitative assessment ("Step Zero"), the Company considers relevant events and circumstances that affect the fair value or carrying amount of a reporting unit. Such events and circumstances can include macroeconomic conditions, industry and market considerations, overall financial performance, entity and reporting unit specific events, and capital markets pricing. The Company considers the extent to which each of the adverse events and circumstances identified affect the comparison of a reporting unit's fair value with its carrying amount. The Company places more weight on the events and circumstances that most affect a reporting unit's fair value or the carrying amount of its net assets. The Company considers positive and mitigating events and circumstances that may affect its determination of whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. The Company also considers recent valuations of its reporting units, including the difference between the most recent fair value estimate and the carrying amount. These factors are all considered by management in reaching its conclusion about whether to perform the first step of the quantitative goodwill impairment test. If management concludes that further testing is required, the Company performs a quantitative valuation to estimate the fair value of its reporting units.

If the Company concludes that conducting a quantitative assessment is required, it performs the first step of a two-step goodwill impairment test. For the first step ("Step I"), the Company estimates the fair value of the reporting unit being evaluated utilizing a combination of three valuation techniques: discounted cash flow (income approach), market comparable method (market approach) and market capitalization (direct market data method). The income approach is based on management's operating plan and internal five-year forecast and utilizes forward-looking assumptions and projections, but considers factors unique to each reporting unit and related long-range plans that may not be comparable to other companies and that are not yet public. The market approach considers potentially comparable companies and transactions within the industries where the Company's reporting units participate, and applies their trading multiples to the Company's reporting units. This approach utilizes data from actual marketplace transactions, but reliance on its results is limited by difficulty in identifying companies that are specifically comparable to the Company's reporting units, considering the diversity of the Company's businesses, the relative sizes and levels of complexity. The Company also uses the direct market data method by comparing its book value and the estimates of fair value of the reporting units to the Company's market capitalization as of the annual testing date. Management uses this comparison as additional evidence of the fair value of the Company, as its market capitalization may be suppressed by other factors such as the control premium associated with a controlling shareholder, the Company's degree of leverage and the float of the Company's common stock. Management evaluates and weights the results based on a combination of the income and market approaches, and, in situations where the income approach results differ significantly from the market and direct data approaches, management re-evaluates and adjusts, if necessary, its assumptions.

Based on the Step I test, if it is determined that the carrying value of the reporting unit is higher than its fair value, there is an indication that an impairment may exist and the second step ("Step II") must be performed to measure the amount of impairment loss, if any. In Step II, the Company determines the implied fair value of the reporting unit goodwill in the same manner as if the reporting unit was being acquired in a business combination and compares the implied fair value of the reporting unit goodwill to the carrying value of the goodwill. If the implied fair value of the goodwill is less than the carrying value, goodwill is impaired and is written down to the implied fair value amount.

Indefinite-Lived Intangibles. The Company assesses indefinite-lived intangible assets (primarily trademark/trade names) for impairment on an annual basis (October 1 test date) by reviewing relevant qualitative and quantitative factors. More frequent evaluations may be required if the Company experiences changes in its business climate or as a result of other triggering events that take place. If carrying value exceeds fair value, a possible impairment exists and further evaluation is performed.

In conducting a qualitative assessment, the Company considers relevant events and circumstances to determine whether it is more likely than not that the fair values of the indefinite-lived intangible assets are less than the carrying values. In addition to the events and circumstances that the Company considers above in its qualitative analysis for potential goodwill impairment, the Company also considers legal, regulatory and contractual factors that could affect the fair value or carrying amount of the Company's indefinite-lived intangible assets. The Company also considers recent valuations of its indefinite-lived intangible assets, including the difference between the most recent fair value estimates and the carrying amounts. These factors are all considered by management in reaching its conclusion about whether it is more likely than not that the fair values of the indefinite-lived intangible assets are less than the carrying values. If management concludes that further testing is required, the Company performs a quantitative valuation to estimate the fair value of its indefinite-lived intangible assets. In conducting the quantitative impairment analysis, the Company determines the fair value of its indefinite-lived intangible assets using the relief-from-royalty method. The relief-from-royalty method involves the estimation of appropriate market royalty rates for the indefinite-lived intangible assets and the application of these royalty rates to forecasted net sales attributable to the intangible assets. The resulting cash flows are then discounted to present value, using a rate appropriately reflecting the risks inherent in the cash flows, which is compared to the carrying value of the assets. If the carrying value exceeds fair value, an impairment is recorded. See Note 7, "Goodwill and Other Intangible Assets," for further details regarding the Company's indefinite-lived intangible asset impairment testing.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

High Deductible Insurance. The Company generally has a high deductible insurance plan for losses and liabilities related to workers' compensation, health and welfare claims and comprehensive general, product and vehicle liability. The Company is generally responsible for up to \$0.8 million per occurrence under its retention program for workers' compensation, between \$0.3 million and \$1.5 million per occurrence under its retention programs for comprehensive general, product and vehicle liability, and has a \$0.3 million per occurrence stop-loss limit with respect to its group medical plan. Total insurance limits under these retention programs vary by year for comprehensive general, product and vehicle liability and extend to the applicable statutory limits for workers' compensation. Reserves for claims losses, including an estimate of related litigation defense costs, are recorded based upon the Company's estimates of the aggregate liability for claims incurred using actuarial assumptions about future events. Changes in assumptions for factors such as medical costs and actual experience could cause these estimates to change.

Pension Plans. The Company engages independent actuaries to compute the amounts of liabilities and expenses under defined benefit pension plans, subject to the assumptions that the Company determines are appropriate based on historical trends, current market rates and future projections. Assumptions used in the actuarial calculations could have a significant impact on plan obligations, and a lesser impact on current period expense. Annually, the Company reviews the actual experience compared to the more significant assumptions used and makes adjustments to the assumptions, if warranted. Discount rates are based on an expected benefit payments duration analysis and the equivalent average yield rate for high-quality fixed-income investments. Pension benefits are funded through deposits with trustees and the expected long-term rate of return on fund assets is based on actual historical returns and a review of other public company pension asset return data, modified for known changes in the market and any expected change in investment policy.

Revenue Recognition. Revenues are recognized when products are shipped or services are provided to customers, the customer takes ownership and assumes risk of loss, the sales price is fixed and determinable and collectability is reasonably assured. Net sales are comprised of gross revenues less estimates of expected returns, trade discounts and customer allowances, which include incentives such as volume discounts and other supply agreements in connection with various programs. Such deductions are recorded during the period the related revenue is recognized.

Cost of Sales. Cost of sales includes material, labor and overhead costs incurred in the manufacture of products sold in the period. Material costs include raw material, purchased components, outside processing and inbound freight costs. Overhead costs consist of variable and fixed manufacturing costs, wages and fringe benefits, and purchasing, receiving and inspection costs.

Selling, General and Administrative Expenses. Selling, general and administrative expenses include the following: costs related to the advertising, sale, marketing and distribution of the Company's products, shipping and handling costs, amortization of customer intangible assets, costs of finance, human resources, legal functions, executive management costs and other administrative expenses.

Research and Development Costs. Research and development ("R&D") costs are expensed as incurred. R&D expenses were approximately \$0.6 million for each the years ended December 31, 2016 and 2015, and approximately \$0.8 million for the year ended December 31, 2014, and are included in cost of sales in the accompanying statement of operations.

Advertising and Sales Promotion Costs. Advertising and sales promotion costs are expensed as incurred. Advertising costs were approximately \$0.6 million, \$0.7 million and \$0.9 million for the years ended December 31, 2016, 2015 and 2014, respectively, and are included in selling, general and administrative expenses in the accompanying statement of operations.

Income Taxes. The Company computes income taxes using the asset and liability method, whereby deferred income taxes using current enacted tax rates are provided for the temporary differences between the financial reporting basis and the tax basis of assets and liabilities and for operating loss and tax credit carryforwards. The Company determines valuation allowances based on an assessment of positive and negative evidence on a jurisdiction-by-jurisdiction basis and records a valuation allowance to reduce deferred tax assets to the amount more likely than not to be realized. The Company recognizes the effect of income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs. The Company records interest and penalties related to unrecognized tax benefits in income tax expense.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Foreign Currency Translation. The financial statements of subsidiaries located outside of the United States are measured using the currency of the primary economic environment in which they operate as the functional currency. When translating into U.S. dollars, income and expense items are translated at average monthly exchange rates and assets and liabilities are translated at exchange rates in effect at the balance sheet date. Translation adjustments resulting from translating the functional currency into U.S. dollars are deferred as a component of accumulated other comprehensive income (loss) in the statement of shareholders' equity. Net foreign currency transaction gains (losses) were an approximate gain of \$0.8 million for the year ended December 31, 2016, and losses of \$0.2 million and \$1.3 million for the years ended December 31, 2015 and 2014, respectively, and are included in other expense, net in the accompanying statement of operations.

Derivative Financial Instruments. The Company records all derivative financial instruments at fair value on the balance sheet as either assets or liabilities, and changes in their fair values are immediately recognized in earnings if the derivatives do not qualify as effective hedges. If a derivative is designated as a fair value hedge, then changes in the fair value of the derivative are offset against the changes in the fair value of the underlying hedged item. If a derivative is designated as a cash flow hedge, then the effective portion of the changes in the fair value of the derivative is recognized as a component of other comprehensive income until the underlying hedged item is recognized in earnings or the forecasted transaction is no longer probable of occurring. The Company formally documents hedging relationships for all derivative transactions and the underlying hedged items, as well as its risk management objectives and strategies for undertaking the hedge transactions. See Note 12, "*Derivative Instruments*," for further information on the Company's financial instruments.

Fair Value of Financial Instruments. In accounting for and disclosing the fair value of these instruments, the Company uses the following hierarchy:

- Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the Company has the ability to access at the measurement date;
- Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly; and
- Level 3 inputs are unobservable inputs for the asset or liability.

Valuation of the Company's interest rate swaps are based on the income approach, which uses observable inputs such as interest rate yield curves.

The carrying value of financial instruments reported in the balance sheet for current assets and current liabilities approximates fair value due to the short maturity of these instruments. As of December 31, 2016 and 2015, the Company's term loan A traded at approximately 99.6% of par value and the Company's revolving credit facility traded at approximately 99.3% of par value. The valuations of the term loan A and credit facility were determined based on Level 2 inputs under the fair value hierarchy, as defined.

Business Combinations. The Company records assets acquired and liabilities assumed from acquisitions at fair value. The fair value of working capital accounts generally approximate book value. The valuation of inventory, property, plant and equipment, and intangible assets require significant assumptions. Inventory is recorded at fair value based on the estimated selling price less costs to sell, including completion, disposal and holding period costs with a reasonable profit margin. Property, plant and equipment is recorded at fair value using a combination of both the cost and market approaches for both the real and personal property acquired. Under the cost approach, consideration is given to the amount required to construct or purchase a new asset of equal value at current prices, with adjustments in value for physical deterioration, as well as functional and economic obsolescence. Under the market approach, recent transactions for similar types of assets are used as the basis for estimating fair value. For trademark/trade names and technology and other intangible assets, the estimated fair value is based on projected discounted future net cash flows using the relief-from-royalty method. For customer relationship intangible assets, the estimated fair value is based on projected discounted future cash flows using the excess earnings method. The relief-from-royalty and excess earnings method are both income approaches that utilize key assumptions such as forecasts of revenue and expenses over an extended period of time, royalty rate percentages, tax rates, and estimated costs of debt and equity capital to discount the projected cash flows.

Stock-based Compensation. The Company recognizes compensation expense related to equity awards based on their fair values as of the grant date. In addition, the Company periodically updates its estimate of attainment for each restricted share with a performance factor based on current and forecasted results, reflecting the change from prior estimate, if any, in current period compensation expense. The disclosed number of shares granted considers only the targeted number of shares until such time that the performance condition has been satisfied. If the performance conditions are not achieved, no award is earned.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Other Comprehensive Income (Loss). The Company refers to other comprehensive income (loss) as revenues, expenses, gains and losses that under accounting principles generally accepted in the United States of America are included in comprehensive income but are excluded from net earnings as these amounts are recorded directly as an adjustment to stockholders' equity. Other comprehensive income is comprised of foreign currency translation adjustments, amortization of prior service costs and unrecognized gains and losses in actuarial assumptions for pension and postretirement plans and changes in unrealized gains and losses on derivatives.

Reclassifications. Certain prior year amounts have been reclassified to conform with the current year presentation.

4. Acquisitions

2015 Acquisitions

During 2015, the Company completed two acquisitions for an aggregate amount of approximately \$10.0 million, net of cash acquired. The largest acquisition was the November 2015 acquisition of certain business assets of Parker-Hannifin Corporation, located in Tolleson, AZ, within the Company's Aerospace reportable segment.

2014 Acquisitions

Allfast Fastening Systems

On October 17, 2014, the Company acquired 100% of the equity interest in Allfast Fastening Systems, Inc. ("Allfast") for the purchase price of approximately \$351.2 million, net of cash acquired, with an additional \$15.7 million of deferred purchase price in accordance with the purchase agreement. Allfast is a global manufacturer of solid and blind rivets, blind bolts, temporary fasteners and installation tools for the aerospace industry. The acquisition strengthened the Company's specialty product offerings and is strategically aligned with its aerospace businesses. Allfast is included in the Company's Aerospace segment.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following table summarizes the fair value of consideration paid for Allfast, and the assets acquired and liabilities assumed (dollars in thousands):

	October 17, 2014
Consideration	
Cash paid, net of cash acquired	\$ 351,220
Deferred purchase price ^(a)	15,730
Total consideration	\$ 366,950
Recognized amounts of identifiable assets acquired and liabilities assumed	
Receivables	\$ 8,950
Inventories	19,850
Intangible assets other than goodwill ^(b)	165,000
Prepaid expenses and other assets	340
Property and equipment, net	26,490
Accounts payable and accrued liabilities	(2,620)
Total identifiable net assets	218,010
Goodwill ^(c)	148,940
	\$ 366,950

^(a) Of the deferred purchase price, approximately \$8.7 million, represented the Company's best estimate of the underlying obligations for certain tax amounts the Company agreed to reimburse the previous owner in order to acquire additional tax attributes. During 2015, the Company paid \$5.2 million of such amount and the remaining \$3.5 million liability was removed, with a corresponding reduction to goodwill, due to the finalization of the Seller's tax liability. In addition, deferred purchase price included approximately \$7.0 million of other liabilities, which the Company agreed to pay on behalf of the previous owner, all of which was paid out as of December 31, 2016.

^(b) Consisted of approximately \$83.0 million of customer relationships with an estimated useful life of 18 years, \$33.0 million of technology and other intangible assets with an estimated useful life of 15 years and \$49.0 million of trademark/trade name with an indefinite useful life.

^(c) All of the goodwill was assigned to the Company's Aerospace reportable segment and was expected to be deductible for tax purposes.

The results of operations of Allfast have been included in the Company's results beginning October 17, 2014. The actual amounts of net sales and operating profit of Allfast included in the accompanying consolidated statement of operations for the year ended December 31, 2014 were \$9.1 million and \$1.3 million, respectively.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following table summarizes the supplemental pro forma results of the combined entity as if the acquisition had occurred on January 1, 2013. The supplemental pro forma information presented below is for informational purposes and is not necessarily indicative of either future results of operations or results that might have been achieved had the acquisition been consummated on January 1, 2013 (dollars in thousands):

	Pro forma Combined ^(a)	
	Year ended December 31,	
	2014	2013
Net sales	\$ 936,440	\$ 853,590
Net income attributable to TriMas Corporation	\$ 49,590	\$ 56,550

^(a) The supplemental pro forma results reflect certain material adjustments, as follows:

1. Pre-tax pro forma adjustments for amortization expense of \$6.0 million and \$6.8 million for the years ended December 31, 2014 and December 31, 2013 on the intangible assets associated with the acquisition.
2. Pre-tax pro forma adjustments of \$4.9 million and \$7.1 million for the years ended December 31, 2014 and December 31, 2013, respectively, to reflect interest expense incurred on the incremental term loan A and revolver borrowings incurred in order to fund the acquisition.

Total acquisition costs incurred by the Company in connection with its purchase of Allfast, primarily related to third party legal, accounting and tax diligence fees, were approximately \$2.2 million, all of which were incurred during 2014. These costs are recorded in selling, general and administrative expenses in the accompanying consolidated statement of operations.

Other Acquisitions

In July 2014, the Company completed the acquisition of Lion Holdings PVT. Ltd. ("Lion Holdings") within the Company's Packaging reportable segment for the amount of approximately \$27.5 million, net of cash acquired. Located in both India and Vietnam, Lion Holdings specializes in the manufacture of highly engineered dispensing solutions and generated approximately \$10 million in revenue for the twelve months ended June 30, 2014.

Arminak & Associates

During the first quarter of 2012, the Company acquired 70% of the membership interests of Arminak & Associates, LLC ("Arminak") for the purchase price of approximately \$67.7 million, which is included in the Company's Packaging reportable segment. The original purchase agreement provided the Company an option to purchase, and Arminak's previous owners an option to sell, the remaining 30% noncontrolling interest at specified dates in the future based on a multiple of earnings, as defined in the purchase agreement. The original combination of a noncontrolling interest and a redemption feature resulted in a redeemable noncontrolling interest, which was classified outside of permanent equity on the Company's consolidated balance sheet. In order to estimate the fair value of the redeemable noncontrolling interest in Arminak upon acquisition, the Company utilized the Monte Carlo valuation method, using variations of estimated future discounted cash flows given certain significant assumptions including expected revenue growth, minimum and maximum estimated levels of gross profit margin, future expected cash flows, amounts transferred during each call and put exercise period and appropriate discount rates. As these assumptions are not observable in the market, the calculation represents a Level 3 fair value measurement. The Company recorded the redeemable noncontrolling interest at fair value at the date of acquisition.

On March 11, 2014, in lieu of the put call option in the original purchase agreement, the Company entered into a new agreement to purchase the entire 30% noncontrolling interest in Arminak for a cash purchase price of \$51.0 million. The purchase agreement also included additional contingent consideration of up to \$7.0 million, with the amount to be earned based on the achievement of certain levels of 2015 financial performance, however, no additional consideration was earned based on 2015 financial performance.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

As part of purchasing the remaining membership interest, the Company finalized the calculation of the redeemable noncontrolling interest as of March 11, 2014. Changes in the carrying amount of redeemable noncontrolling interest are summarized as follows (dollars in thousands):

	Redeemable Noncontrolling interest
Balance, December 31, 2013	\$ 29,480
Distributions to noncontrolling interests	(580)
Net income attributable to noncontrolling interests	810
Balance, March 11, 2014	\$ 29,710

The difference between the cash purchase price and final redeemable noncontrolling interest as of March 11, 2014 was recorded as a reduction in paid in capital, net of tax, as included in the accompanying consolidated statement of shareholders' equity.

5. Discontinued Operations

Spin-off of the Cequent businesses

On June 30, 2015, the Company completed the spin-off of its Cequent businesses (comprised of the former Cequent Americas and Cequent Asia Pacific Europe Africa ("Cequent APEA") reportable segments), creating a new independent publicly traded company, Horizon, through the distribution of 100% of the Company's interest in Horizon to holders of the Company's common stock. On June 30, 2015, each of the Company's shareholders of record as of the close of business on the record date of June 25, 2015, received two shares of Horizon common stock for every five shares of TriMas common stock held. In addition, on June 30, 2015, immediately prior to the effective time of the spin-off, Horizon entered into a new debt financing arrangement and used the proceeds to make a cash distribution of \$214.5 million to the Company.

The Cequent businesses are presented as discontinued operations in the Company's consolidated statements of operations and cash flows for all periods presented.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The carrying value of the assets and liabilities immediately preceding the spin-off of the Cequent businesses on June 30, 2015 were as follows (dollars in thousands):

Assets	Immediately preceding the spin-off on June 30, 2015
Current assets:	
Cash and cash equivalents	\$ 17,050
Receivables, net	92,750
Inventories	125,750
Prepaid expenses and other current assets	6,520
Total current assets	242,070
Property and equipment, net	48,870
Goodwill	5,630
Other intangibles, net	61,400
Other assets	16,390
Total assets	\$ 374,360
Liabilities	
Current liabilities:	
Current maturities, long-term debt	\$ 17,940
Accounts payable	81,830
Accrued liabilities	44,190
Total current liabilities	143,960
Long-term debt	195,460
Deferred income taxes	4,860
Other long-term liabilities	27,900
Total liabilities	\$ 372,180

Following the spin-off, there were no assets or liabilities remaining from the Cequent operations.

Results of discontinued operations, including the discontinued Cequent businesses and the Company's other discontinued operations, are summarized as follows (dollars in thousands):

	Year ended December 31,	
	2015	2014
Net sales	\$ 300,900	\$ 615,260
Cost of sales	(227,860)	(468,060)
Gross profit	73,040	147,200
Selling, general and administrative expenses	(72,360)	(111,900)
Operating profit	680	35,300
Interest expense	(2,540)	(5,430)
Other expense, net	(1,970)	4,170
Other expense, net	(4,510)	(1,260)
Income (loss) from discontinued operations, before income taxes	(3,830)	34,040
Income tax expense	(910)	(11,650)
Income (loss) from discontinued operations, net of tax	\$ (4,740)	\$ 22,390

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Other Discontinued Operations

During 2014, the Company ceased operations of its former NI Industries business. NI Industries manufactured cartridge cases for the defense industry and was party to a U.S. Government facility maintenance contract. The Company received approximately \$6.7 million for the sale of certain intellectual property and related inventory and tooling. This amount is included in income from discontinued operations in the accompanying consolidated statement of operations.

During 2009, the Company completed the sale of certain assets within its specialty laminates, jacketings and insulation tapes line of business, which was part of the Packaging reportable segment. The Company's manufacturing facility is subject to a lease agreement expiring in 2024 that was not assumed by the purchaser of the business. During 2014, the Company re-evaluated its estimate of unrecoverable future obligations initially recorded in 2009 and recorded an additional charge of approximately \$1.8 million, based on further deterioration of real estate values and market comparables for this facility.

The results of the aforementioned businesses are reported as discontinued operations for all periods presented.

6. Facility Closures and Consolidations

During 2016, 2015 and 2014, the Company closed and consolidated several facilities. See below for details of the most significant actions.

2016 Facility Closures and Consolidations

During 2016, the Company closed and consolidated certain facilities and initiated actions toward consolidating additional facilities within each of its reportable segments. The most significant activity related to the move of production activities in Mexico within the Packaging reportable segment from Mexico City to San Miguel de Allende, for which the Company recorded pre-tax charges of approximately \$2.5 million, of which approximately \$0.7 million related to severance benefits for employees involuntarily terminated, approximately \$0.8 million related to accelerated depreciation of machinery and equipment and the write-down of certain inventory to its estimated salvage value, with the remainder of the charges related to costs to move and start-up operations in the new facility.

2015 Facility Closures and Consolidations

During 2015, the Company closed and consolidated certain manufacturing facilities, branches, warehouses and sales offices, the largest of which were the closure of the Hangzhou, China, Rio de Janeiro, Brazil and Houston, Texas (former South Texas Bolt and Fitting) manufacturing facilities within the Energy reportable segment. As a part of the closure and consolidation actions, the Company recorded non-cash charges of approximately \$1.4 million in 2015, primarily related to write-down of property to its estimated salvage value. As a part of these facility closures and other cost savings actions within the Energy reportable segment, the Company recorded charges of approximately \$3.0 million in 2015 related to severance benefits for its approximately 240 employees that were involuntarily terminated. During 2016, upon the cease-use date of certain of the closed and consolidated facilities, the Company recorded a pre-tax charge within the Energy reportable segment of approximately \$0.4 million for estimated future unrecoverable lease obligations, net of estimated sublease recoveries, for a lease that expires in 2018.

2014 Facility Closures and Consolidations

In June 2014, the Company announced the restructuring of its Brazilian business within the Energy reportable segment, including plans to close its manufacturing facility in São Paulo, Brazil by the end of 2014. In connection with this action, the Company recorded charges of approximately \$0.5 million in 2014, primarily related to severance benefits, which is included in cost of sales in the accompanying consolidated statement of operations, for its approximately 60 employees involuntarily terminated as a result of this closure. During the fourth quarter of 2014, upon the cease use date of the facility, the Company recorded a pre-tax charge within in its Energy reportable segment of approximately \$3.9 million for estimated future unrecoverable lease obligation, net of estimated sublease recoveries, for the lease agreement that expires in 2022. Additionally, the Company recorded a \$1.3 million charge in 2014 related to the release of historical currency translation adjustments, which is included in dispositions of property and equipment in the accompanying consolidated statement of operations.

During the fourth quarter of 2015, the Company re-evaluated its estimate of unrecoverable future obligations initially recorded for its Brazilian business during 2014 and reduced its estimate by approximately \$1.7 million following entry into a sublease agreement for the facility.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

7. Goodwill and Other Intangible Assets

Goodwill

The Company performed a Step Zero qualitative assessment as part of its 2016 annual impairment test for all reporting units, which included a review of the Company's market capitalization. For all reporting units with goodwill other than the Aerospace reporting unit, based on the Step Zero assessment, the Company determined that there were no indications that the fair value of a reporting unit was less than its carrying amount. Therefore, the Company determined that the Step I and Step II tests were not required for these reporting units.

For the Company's Aerospace reporting unit, management had been monitoring current and expected operating results since the first quarter of 2016, when sales and margins were significantly lower than expected, to assess whether the reductions were other than temporary. Management established and executed against recovery plans, improving sales and margin levels during the second and third quarters of 2016. However, when considering these recent financial results, plus recognizing that fourth quarter 2016 results would be lower than previously expected, and updating the Company's assessment of future expectations for growth and profit levels, the Company determined that there were indicators that the fair value of the Aerospace reporting unit was less than its carrying value. Therefore, the Company performed a Step I quantitative assessment for its Aerospace reporting unit.

In preparing the Step I analysis, the Company utilized both income and market-based approaches, placing a 50% weighting on each. Significant management assumptions used under the income approach were a weighted average cost of capital ("WACC") of 10.3% and an estimated residual growth rate of 3%. In considering the WACC, management considered the level of risk inherent in the cash flow projections based on historical attainment of its projections and current market conditions. The use of these unobservable inputs resulted in the fair value estimate being classified as a Level 3 measurement within the fair value hierarchy.

Upon completion of the Step I test, the Company determined that the carrying value of the Aerospace reporting unit exceeded its fair value. The Company then performed a Step II test to determine whether goodwill had been impaired and, if applicable, to calculate the amount of the impairment charge. Based on the results of the Step II goodwill impairment test, the Company recorded a goodwill impairment charge of approximately \$60.2 million in its Aerospace reporting unit.

During 2015, due to a significant decline in profitability levels in the Company's Energy and engine products reporting units and a decline in the Company's stock price and resulting market capitalization, the Company determined there were indicators that the carrying value of certain of its reporting units exceeded their respective fair value. As such, the Company performed a Step I quantitative goodwill impairment test utilizing both income and market-based approaches, placing a 75% and 25% weighting on each, respectively. Significant management assumptions used under the income approach were WACC's ranging from 11% to 14.5% and an estimated residual growth rate of 3%. In considering the WACC for the reporting units under the income approach, management considered the level of risk inherent in the cash flow projections based on historical attainment of its projections and current market conditions. The use of these unobservable inputs resulted in the fair value estimate being classified as a Level 3 measurement within the fair value hierarchy.

Upon completion of the 2015 Step I test, the Company determined that the carrying value of the Energy and engine products reporting units exceeded its fair value. The Company then performed a Step II test to determine whether goodwill had been impaired and, if applicable, to calculate the amount of the impairment charge. Based on the results of the Step II goodwill impairment test, the Company recorded goodwill impairment charges of approximately \$70.9 million in its Energy reporting unit and approximately \$3.2 million in its engine products reporting unit.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Changes in the carrying amount of goodwill for the years ended December 31, 2016 and 2015 are as follows (dollars in thousands):

	Packaging	Aerospace	Energy	Engineered Components	Total
Balance, December 31, 2014	\$ 169,350	\$ 210,130	\$ 73,180	\$ 7,420	\$ 460,080
Goodwill from acquisitions	—	(3,500)	—	2,320	(1,180)
Impairment charge	—	—	(70,930)	(3,180)	(74,110)
Foreign currency translation and other	(3,620)	—	(2,250)	—	(5,870)
Balance, December 31, 2015	\$ 165,730	\$ 206,630	\$ —	\$ 6,560	\$ 378,920
Impairment charge	—	(60,200)	—	—	(60,200)
Foreign currency translation and other	(3,640)	—	—	—	(3,640)
Balance, December 31, 2016	<u>\$ 162,090</u>	<u>\$ 146,430</u>	<u>\$ —</u>	<u>\$ 6,560</u>	<u>\$ 315,080</u>

In 2015, the Company's estimate of the underlying obligation for certain tax amounts related to the acquisition of Allfast was adjusted due to the finalization of the Seller's tax liability, resulting in a \$3.5 million decrease to the deferred purchase price liability and goodwill.

Other Intangible Assets

The Company performed a qualitative assessment as part of its 2016 annual impairment test to determine whether it was more likely than not that the fair values of the indefinite-lived intangible assets were less than the carrying values. Based on the assessment, the Company determined that there were no indications that the fair values of any of its indefinite-lived intangible assets, except for the Aerospace indefinite-lived intangible assets, were less than the carrying values. Therefore, a quantitative assessment was not required for these indefinite-lived intangible assets.

The Company performed a quantitative assessment for all of its indefinite-lived intangible assets included within the Aerospace reportable segment, using a relief-from-royalty method. Significant management assumptions used under the relief-from-royalty method were a discount rate of 10.3% and an estimated residual growth rate of 3%. The use of these unobservable inputs resulted in the fair value estimates being classified as a Level 3 measurement within the fair value hierarchy. Upon completion of the quantitative impairment test, the Company determined that certain of the Company's Aerospace-related trade names had carrying values that exceeded their fair values, and therefore recorded impairment charges of approximately \$38.7 million.

In 2015, as part of the broadly focused restructuring initiative within the Company's Energy reportable segment, it was determined that the Company would discontinue use and wrote-off all of the approximately \$1.6 million of carrying value of certain of its Energy-related trade names.

Additionally, as part of the 2015 annual impairment test, the Company performed a quantitative assessment for all of its indefinite-lived intangibles assets except for the Allfast trade name, using a relief-from-royalty method. The Company performed a Step Zero qualitative analysis for the Allfast trade name as it was acquired less than one year prior and long-term sales projections were consistent with those expected in the purchase price valuation. Significant management assumptions used under the relief-from-royalty method were discount rates ranging from 14% to 17.5% and an estimated residual growth rate of 3%. The use of these unobservable inputs resulted in the fair value estimates being classified as a Level 3 measurement within the fair value hierarchy. Upon completion of the quantitative impairment test, the Company determined that the fair value of the Company's indefinite-lived intangible assets exceeded the carrying value, and thus there was no impairment.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The Company amortizes its other intangible assets over periods ranging from one to 30 years. The gross carrying amounts and accumulated amortization of the Company's other intangibles as of December 31, 2016 and 2015 are summarized below (dollars in thousands):

Intangible Category by Useful Life	As of December 31, 2016		As of December 31, 2015	
	Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
Finite-lived intangible assets:				
Customer relationships, 5 - 12 years	\$ 73,570	\$ (33,200)	\$ 74,890	\$ (25,960)
Customer relationships, 15 - 25 years	132,230	(44,970)	132,230	(38,060)
Total customer relationships	205,800	(78,170)	207,120	(64,020)
Technology and other, 1 - 15 years	57,470	(26,040)	57,860	(22,770)
Technology and other, 17 - 30 years	43,300	(31,370)	43,300	(29,250)
Total technology and other	100,770	(57,410)	101,160	(52,020)
Indefinite-lived intangible assets:				
Trademark/Trade names	42,930	—	81,630	—
Total other intangible assets	\$ 349,500	\$ (135,580)	\$ 389,910	\$ (116,040)

Amortization expense related to intangible assets as included in the accompanying consolidated statement of operations is summarized as follows (dollars in thousands):

	Year ended December 31,		
	2016	2015	2014
Technology and other, included in cost of sales	\$ 5,680	\$ 6,010	\$ 5,030
Customer relationships, included in selling, general and administrative expenses	14,790	14,960	11,030
Total amortization expense	\$ 20,470	\$ 20,970	\$ 16,060

Estimated amortization expense for the next five fiscal years beginning after December 31, 2016 is as follows (dollars in thousands):

Year ended December 31,	Estimated Amortization Expense
2017	\$19,800
2018	\$19,470
2019	\$19,100
2020	\$18,160
2021	\$15,380

8. Inventories

Inventories consist of the following components (dollars in thousands):

	December 31, 2016	December 31, 2015
Finished goods	\$ 95,290	\$ 101,480
Work in process	22,930	23,620
Raw materials	42,240	42,270
Total inventories	\$ 160,460	\$ 167,370

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

9. Property and Equipment, Net

Property and equipment consists of the following components (dollars in thousands):

	December 31, 2016	December 31, 2015
Land and land improvements	\$ 14,910	\$ 14,820
Building and building improvements	71,100	67,790
Machinery and equipment	281,180	274,650
	<u>367,190</u>	<u>357,260</u>
Less: Accumulated depreciation	188,030	176,130
Property and equipment, net	<u>\$ 179,160</u>	<u>\$ 181,130</u>

Depreciation expense as included in the accompanying consolidated statement of operations is as follows (dollars in thousands):

	Year ended December 31,		
	2016	2015	2014
Depreciation expense, included in cost of sales	\$ 21,620	\$ 19,730	\$ 18,450
Depreciation expense, included in selling, general and administrative expense	2,770	2,840	2,930
Total depreciation expense	<u>\$ 24,390</u>	<u>\$ 22,570</u>	<u>\$ 21,380</u>

10. Accrued Liabilities

Accrued liabilities consist of the following components (dollars in thousands):

	December 31, 2016	December 31, 2015
High deductible insurance	\$ 6,250	\$ 6,580
Accrued payroll	16,060	20,220
Other	24,880	23,680
Total accrued liabilities	<u>\$ 47,190</u>	<u>\$ 50,480</u>

11. Long-term Debt

The Company's long-term debt consists of the following (dollars in thousands):

	December 31, 2016	December 31, 2015
Credit Agreement	\$ 333,720	\$ 371,820
Receivables facility and other	45,650	53,860
Debt issuance costs	(4,720)	(6,050)
	<u>374,650</u>	<u>419,630</u>
Less: Current maturities, long-term debt	13,810	13,850
Long-term debt, net	<u>\$ 360,840</u>	<u>\$ 405,780</u>

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Credit Agreement

The Company is party to a credit agreement (the "Credit Agreement") consisting of a \$500.0 million senior secured revolving credit facility, which permits borrowings denominated in specific foreign currencies ("Foreign Currency Loans"), subject to a \$75.0 million sub limit, and a \$275.0 million senior secured term loan A facility ("Term Loan A Facility").

Below is a summary of key terms under the Credit Agreement as of December 31, 2016, with term loans showing the face amount of borrowings upon issuance and revolving credit facilities showing gross availability at each date:

Instrument	Amount (\$ in millions)	Maturity Date	Interest Rate
Credit Agreement			
Senior secured revolving credit facility	\$500.0	6/30/2020	LIBOR ^(a) plus 1.750% ^(b)
Senior secured term loan A facility	\$275.0	6/30/2020	LIBOR ^(a) plus 1.750% ^(b)

^(a) London Interbank Offered Rate ("LIBOR")

^(b) The interest rate spread is based on the leverage ratio, as defined, as of the most recent determination date.

The Credit Agreement also provides incremental term loan facility commitments and/or incremental revolving credit facility commitments in an amount not to exceed the greater of \$300.0 million and an amount such that, after giving effect to such incremental commitments and the incurrence of any other indebtedness substantially simultaneously with the making of such incremental commitments, the senior secured net leverage ratio, as defined in the Credit Agreement, is no greater than 2.50 to 1.00. The terms and conditions of any incremental term loan facility and/or incremental revolving credit facility commitments must be no more favorable than the existing credit facilities under the Credit Agreement.

The Company may be required to prepay a portion of the loans under the Term Loan A Facility in an amount equal to a percentage of the Company's excess cash flow, as defined, with such percentage based on the Company's leverage ratio, as defined. As of December 31, 2016, no amounts are due under this provision.

The Company's revolving credit facility allows for the issuance of letters of credit, not to exceed \$40.0 million in aggregate. At December 31, 2016, the Company had approximately \$75.9 million outstanding under its revolving credit facility and had \$408.2 million potentially available after giving effect to approximately \$15.9 million of letters of credit issued and outstanding. At December 31, 2015, the Company had \$100.3 million outstanding under its revolving credit facility and had \$378.1 million potentially available after giving effect to approximately \$21.6 million of letters of credit issued and outstanding. However, including availability under its accounts receivable facility and after consideration of leverage restrictions contained in the Credit Agreement, at December 31, 2016 and 2015, the Company had \$126.5 million and \$107.4 million, respectively, of borrowing capacity available for general corporate purposes.

Principal payments required under the Credit Agreement for the Term Loan A Facility are approximately \$3.4 million due each fiscal quarter from December 2015 through September 2018 and approximately \$5.2 million due each fiscal quarter from December 2018 through March 2020, with final payment of \$202.8 million due on June 30, 2020.

The debt under the Credit Agreement is an obligation of the Company and certain of its domestic subsidiaries and is secured by substantially all of the assets of such parties. Borrowings under the \$75.0 million foreign currency sub limit of the \$500.0 million senior secured revolving credit facility are secured by a pledge of the assets of the foreign subsidiary borrowers that are a party to the agreement. The Credit Agreement also contains various negative and affirmative covenants and other requirements affecting the Company and its subsidiaries, including restrictions on incurrence of debt, liens, mergers, investments, loans, advances, guarantee obligations, acquisitions, asset dispositions, sale-leaseback transactions, hedging agreements, dividends and other restricted payments, transactions with affiliates, restrictive agreements and amendments to charters, bylaws, and other material documents. The terms of the Credit Agreement also require the Company and its subsidiaries to meet certain restrictive financial covenants and ratios computed quarterly, including a maximum leverage ratio (total consolidated indebtedness plus outstanding amounts under the accounts receivable securitization facility over consolidated EBITDA, as defined) and a minimum interest expense coverage ratio (consolidated EBITDA, as defined, over cash interest expense, as defined). At December 31, 2016, the Company was in compliance with its financial covenants contained in the Credit Agreement.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

In June 2015, the Company amended its Credit Agreement, pursuant to which the Company was able to extend maturities and resize its credit facilities following the spin-off of the Cequent businesses. In connection with entering into the amended Credit Agreement, the Company incurred approximately \$1.8 million in fees during 2015 to amend the Credit Agreement, of which approximately \$1.4 million were capitalized as deferred financing fees and \$0.4 million were recorded as debt financing and extinguishment expense in 2015. The Company also recorded non-cash debt financing and extinguishment expense of \$1.5 million in 2015 related to the write-off of deferred financing fees associated with the previous credit facilities.

In 2014, the Company incurred approximately \$3.8 million in fees to amend the previous credit agreement, of which \$0.4 million were capitalized as deferred financing fees, and \$3.4 million were recorded as debt financing and extinguishment expense.

Receivables Facility

The Company is a party to an accounts receivable facility through TSPC, Inc. ("TSPC"), a wholly-owned subsidiary, to sell trade accounts receivable of substantially all of the Company's domestic business operations. Under this facility, TSPC, from time to time, may sell an undivided fractional ownership interest in the pool of receivables up to approximately \$75.0 million to a third party multi-seller receivables funding company. The net amount financed under the facility is less than the face amount of accounts receivable by an amount that approximates the purchaser's financing costs. The cost of funds under this facility consisted of a 1-month LIBOR plus a usage fee of 1.00% and a fee on the unused portion of the facility of 0.35% as of December 31, 2016 and 2015.

The Company had \$45.5 million and \$53.6 million outstanding under the facility as of December 31, 2016 and 2015, respectively, and \$10.1 million and \$7.1 million available but not utilized as of December 31, 2016 and 2015, respectively. Aggregate costs incurred under the facility were \$0.9 million, \$1.0 million and \$1.3 million for the years ended December 31, 2016, 2015 and 2014, respectively, and are included in interest expense in the accompanying consolidated statement of operations. The facility expires on June 30, 2020.

The cost of funds fees incurred are determined by calculating the estimated present value of the receivables sold compared to their carrying amount. The estimated present value factor is based on historical collection experience and a discount rate based on a 1-month LIBOR-based rate plus the usage fee discussed above and is computed in accordance with the terms of the securitization agreement. As of December 31, 2016, the cost of funds under the facility was based on an average liquidation period of the portfolio of approximately 1.8 months and an average discount rate of 1.9%.

Long-term Debt Maturities

Future maturities of the face value of long-term debt at December 31, 2016 are as follows (dollars in thousands):

Year Ending December 31:	Future Maturities
2017	\$ 13,810
2018	15,560
2019	20,630
2020	329,370
2021	—
Total	<u>\$ 379,370</u>

Debt Issuance Costs

The Company's unamortized debt issuance costs approximated \$4.7 million and \$6.1 million at December 31, 2016 and 2015, respectively, and were included as a direct reduction from the related debt liability in the accompanying consolidated balance sheet. These amounts consisted primarily of legal, accounting and other transaction advisory fees as well as facility fees paid to the lenders. Amortization expense for these items was approximately \$1.4 million, \$1.7 million and \$1.9 million in 2016, 2015 and 2014, respectively, and is included in interest expense in the accompanying consolidated statement of operations.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

12. Derivative Instruments

The Company utilizes interest rate swap agreements to fix the LIBOR-based variable portion of the interest rate on its long term debt. Terms of the interest rate swap agreements require the Company to receive a variable interest rate and pay a fixed interest rate. As of December 31, 2016, the Company had interest rate swap agreements in place that hedge a declining notional value of debt ranging from approximately \$245.0 million to approximately \$192.7 million, amortizing consistent with future scheduled debt principal payments. The interest rate swap agreements establish fixed interest rates in a range of 0.74% to 2.68% with various expiration terms extending to June 30, 2020. At inception, the interest rate swaps were and continue to be designated as cash flow hedges.

As of December 31, 2016 and 2015, the fair value carrying amount of the Company's derivatives designated as hedging instruments are recorded as follows (dollars in thousands):

Derivatives designated as hedging instruments	Balance Sheet Caption	Asset / (Liability) Derivatives	
		December 31, 2016	December 31, 2015
Interest rate swaps	Prepaid expenses and other current assets	\$ 160	\$ —
Interest rate swaps	Other assets	—	430
Interest rate swaps	Accrued liabilities	(870)	(150)
Interest rate swaps	Other long-term liabilities	(3,360)	(3,180)
Total derivatives designated as hedging instruments		\$ (4,070)	\$ (2,900)

The following tables summarize the income (loss) recognized in accumulated other comprehensive income ("AOCI") as of December 31, 2016 and 2015, and the amounts reclassified from AOCI into earnings for the years ended December 31, 2016, 2015 and 2014 (dollars in thousands):

	Amount of Income (Loss) Recognized in AOCI on Derivative (Effective Portion, net of tax)		Location of Income (Loss) Reclassified from AOCI into Earnings (Effective Portion)	Amount of Income (Loss) Reclassified from AOCI into Earnings		
	As of December 31,			Year ended December 31,		
	2016	2015		2016	2015	2014
Derivatives designated as hedging instruments						
Interest rate swaps	\$ (2,520)	\$ (1,790)	Interest expense	\$ (670)	\$ (420)	\$ —
			Income (loss) from discontinued operations	\$ —	\$ (440)	\$ (970)

Over the next 12 months, the Company expects to reclassify approximately \$0.7 million of pre-tax deferred losses from AOCI to interest expense as the related interest payments for the designated interest rate swap are funded.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The fair value of the Company's derivatives are estimated using an income approach based on valuation techniques to convert future amounts to a single, discounted amount. Estimates of the fair value of the Company's interest rate swaps use observable inputs such as interest rate yield curves. Fair value measurements and the fair value hierarchy level for the Company's assets and liabilities measured at fair value on a recurring basis as of December 31, 2016 and 2015 are shown below (dollars in thousands).

	Description	Frequency	Asset / (Liability)	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
December 31, 2016	Interest rate swaps	Recurring	\$ (4,070)	\$ —	\$ (4,070)	\$ —
December 31, 2015	Interest rate swaps	Recurring	\$ (2,900)	\$ —	\$ (2,900)	\$ —

13. Leases

The Company leases certain equipment and facilities under non-cancelable operating leases. Rental expense for the Company totaled approximately \$17.4 million in 2016, \$17.2 million in 2015 and \$16.8 million in 2014.

Minimum payments for operating leases having initial or remaining non-cancelable lease terms in excess of one year at December 31, 2016, including approximately \$2.4 million annually related to discontinued operations, are summarized below (dollars in thousands):

Year ended December 31,	Minimum Payments
2017	\$ 17,480
2018	16,050
2019	12,560
2020	10,550
2021	8,450
Thereafter	18,000
Total	\$ 83,090

14. Commitments and Contingencies

Environmental

The Company is subject to increasingly stringent environmental laws and regulations, including those relating to air emissions, wastewater discharges and chemical and hazardous waste management and disposal. Some of these environmental laws hold owners or operators of land or businesses liable for their own and for previous owners' or operators' releases of hazardous or toxic substances or wastes. Other environmental laws and regulations require the obtainment and compliance with environmental permits. To date, costs of complying with environmental, health and safety requirements have not been material. However, the nature of the Company's operations and the long history of industrial activities at certain of the Company's current or former facilities, as well as those acquired, could potentially result in material environmental liabilities.

While the Company must comply with existing and pending climate change legislation, regulation and international treaties or accords, current laws and regulations have not had a material impact on the Company's business, capital expenditures or financial position. Future events, including those relating to climate change or greenhouse gas regulation, could require the Company to incur expenses related to the modification or curtailment of operations, installation of pollution control equipment or investigation and cleanup of contaminated sites.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Asbestos

As of December 31, 2016, the Company was a party to 636 pending cases involving an aggregate of 5,339 claimants primarily alleging personal injury from exposure to asbestos containing materials formerly used in gaskets (both encapsulated and otherwise) manufactured or distributed by certain of its subsidiaries for use primarily in the petrochemical refining and exploration industries. The following chart summarizes the number of claimants, number of claims filed, number of claims dismissed, number of claims settled, the average settlement amount per claim and the total defense costs, excluding amounts reimbursed under the Company's primary insurance, at the applicable date and for the applicable periods:

	Claims pending at beginning of period	Claims filed during period	Claims dismissed during period	Claims settled during period	Average settlement amount per claim during period	Total defense costs during period
Fiscal year ended December 31, 2014	7,975	210	155	38	\$ 18,734	\$ 2,800,000
Fiscal year ended December 31, 2015	7,992	266	1,990	26	\$ 16,963	\$ 3,160,000
Fiscal year ended December 31, 2016	6,242	140	1,009	34	\$ 15,624	\$ 2,920,000

In addition, the Company acquired various companies to distribute its products that had distributed gaskets of other manufacturers prior to acquisition. The Company believes that many of the pending cases relate to locations at which none of its gaskets were distributed or used.

The Company may be subjected to significant additional asbestos-related claims in the future, the cost of settling cases in which product identification can be made may increase, and the Company may be subjected to further claims in respect of the former activities of its acquired gasket distributors. The Company is unable to make a meaningful statement concerning the monetary claims made in the asbestos cases given that, among other things, claims may be initially made in some jurisdictions without specifying the amount sought or by simply stating the requisite or maximum permissible monetary relief, and may be amended to alter the amount sought. The large majority of claims do not specify the amount sought. Of the 5,339 claims pending at December 31, 2016, 76 set forth specific amounts of damages (other than those stating the statutory minimum or maximum). At December 31, 2016, of the 76 claims that set forth specific amounts, there were no claims seeking specific amounts for punitive damages. Below is a breakdown of the amount sought for those claims seeking specific amounts:

Range of damages sought (in millions)	Compensatory		
	\$0.0 to \$0.6	\$0.6 to \$5.0	\$5.0+
Number of claims	3	25	48

In addition, relatively few of the claims have reached the discovery stage and even fewer claims have gone past the discovery stage.

Total settlement costs (exclusive of defense costs) for all such cases, some of which were filed over 20 years ago, have been approximately \$8.3 million. All relief sought in the asbestos cases is monetary in nature. To date, approximately 40% of the Company's costs related to settlement and defense of asbestos litigation have been covered by its primary insurance. Effective February 14, 2006, the Company entered into a coverage-in-place agreement with its first level excess carriers regarding the coverage to be provided to the Company for asbestos-related claims when the primary insurance is exhausted. The coverage-in-place agreement makes asbestos defense costs and indemnity insurance coverage available to the Company that might otherwise be disputed by the carriers and provides a methodology for the administration of such expenses. Nonetheless, the Company believes it is likely that there will be a period within the next six to 18 months, prior to the commencement of coverage under this agreement and following exhaustion of the Company's primary insurance coverage, during which the Company likely will be solely responsible for defense costs and indemnity payments, the duration of which would be subject to the scope of damage awards and settlements paid.

Based on the settlements made to date and the number of claims dismissed or withdrawn for lack of product identification, the Company believes that the relief sought (when specified) does not bear a reasonable relationship to its potential liability. Based upon the Company's experience to date, including the trend in annual defense and settlement costs incurred to date, and other available information (including the availability of excess insurance), the Company does not believe that these cases will have a material adverse effect on its financial position and results of operations or cash flows.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Metaldyne Corporation

Prior to June 6, 2002, the Company was wholly-owned by Metaldyne Corporation ("Metaldyne"). In connection with the reorganization between TriMas and Metaldyne in June 2002, TriMas assumed certain liabilities and obligations of Metaldyne, mainly comprised of contractual obligations to former TriMas employees, tax related matters, benefit plan liabilities and reimbursements to Metaldyne of normal course payments to be made on TriMas' behalf.

On January 11, 2007, Metaldyne merged into a subsidiary of Asahi Tec Corporation ("Asahi") whereby Metaldyne became a wholly-owned subsidiary of Asahi. In connection with the consummation of the merger, Metaldyne dividended the 4,825,587 shares of the Company's common stock that it owned on a pro rata basis to the holders of Metaldyne's common stock at the time of such dividend. As a result of the merger, Metaldyne and the Company were no longer related parties. In addition, as a result of the merger, it has been asserted that Metaldyne may be obligated to accelerate funding and payment of actuarially determined amounts owing to seven former Metaldyne executives under a supplemental executive retirement plan ("SERP"). Under the stock purchase agreement between Metaldyne and Heartland Industrial Partners ("Heartland"), TriMas is required to reimburse Metaldyne, when billed, for its allocated portion of the amounts due to certain Metaldyne SERP participants, as defined.

Subject to certain limited exceptions, Metaldyne and TriMas retained separate liabilities associated with the respective businesses following the reorganization in June 2002. Accordingly, the Company will indemnify and hold Metaldyne harmless from all liabilities associated with TriMas and its subsidiaries and the respective operations and assets, whenever conducted, and Metaldyne will indemnify and hold harmless Heartland and TriMas from all liabilities associated with Metaldyne and its subsidiaries (excluding TriMas and its subsidiaries) and their respective operations and assets, whenever conducted. In addition, TriMas agreed with Metaldyne to indemnify one another for its allocated share (42.01% with respect to TriMas and 57.99% with respect to Metaldyne) of liabilities not readily associated with either business, or otherwise addressed including certain costs related to other matters intended to effectuate other provisions of the agreement. These indemnification provisions survive indefinitely and are subject to a \$50,000 deductible.

On May 28, 2009, Metaldyne and its U.S. subsidiaries filed voluntary petitions in the United States Bankruptcy Court under Chapter 11 of the U.S. Bankruptcy Code. On February 23, 2010, the U.S. Bankruptcy Court confirmed the reorganization plan of Metaldyne and its U.S. subsidiaries.

The Company continues to evaluate the impact of Metaldyne's reorganization plans on its estimated obligations to Metaldyne. At December 31, 2016, TriMas has accrued an estimated liability to Metaldyne on its reported balance sheet of approximately \$7.6 million. However, if Metaldyne is required to accelerate funding of these liabilities, TriMas may be obligated to reimburse Metaldyne up to approximately \$10.0 million, which could result in future charges to the Company's statement of operations of up to \$2.4 million. The Metaldyne bankruptcy distribution trust is expected to terminate in 2017, at which time a final assessment of the liabilities will be determined.

Claims and Litigation

The Company is subject to other claims and litigation in the ordinary course of business which the Company does not believe are material. In addition, a claim asserted against the Company by a competitor in 2014 alleged false advertising where, although no formal demand was made, the Company believed the competitor may have been seeking in excess of \$10 million. In 2015, the Company resolved the matter for approximately \$2.8 million, inclusive of attorney fees and expenses and also recorded an insurance reimbursement of \$1.5 million related to this matter.

The Company does not believe claims and litigation will have a material adverse effect on its financial position and results of operations or cash flows.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

15. Employee Benefit Plans

Pension and Profit-Sharing Benefits

The Company provides a defined contribution profit sharing plan for the benefit of substantially all the Company's domestic salaried and non-union hourly employees. The plan contains both contributory and noncontributory profit sharing arrangements, as defined. Aggregate charges included in the accompanying statement of operations under this plan for both continuing and discontinued operations were approximately \$3.7 million, \$5.2 million and \$5.8 million in 2016, 2015 and 2014, respectively. Certain of the Company's foreign and union hourly employees participate in defined benefit pension plans.

Plan Assets, Expenses and Obligations

Plan assets, expenses and obligations for pension benefit plans disclosed herein include both continuing and discontinued operations.

Net periodic pension benefit expense recorded in the Company's statement of operations for defined benefit pension plans include the following components (dollars in thousands):

	Pension Benefit		
	2016	2015	2014
Service cost	\$ 950	\$ 890	\$ 760
Interest cost	1,510	1,580	1,760
Expected return on plan assets	(1,610)	(1,840)	(2,070)
Settlements and curtailments	1,330	2,750	—
Amortization of net loss	930	1,340	1,120
Net periodic benefit expense	<u>\$ 3,110</u>	<u>\$ 4,720</u>	<u>\$ 1,570</u>

During the fourth quarter of 2016, the Company recognized one-time settlement and curtailment charges of approximately \$1.3 million primarily due to lump sum payments in the United States and the United Kingdom.

During the second quarter of 2015, the Company recognized a one-time settlement charge associated with annuitizing the defined benefit obligations for certain current and former Cequent employees. The settlement charge of approximately \$2.8 million is included in the income (loss) from discontinued operations in the accompanying consolidated statement of operations.

The estimated net actuarial loss and prior service cost for defined benefit pension plans that is expected to be amortized from accumulated other comprehensive loss into net periodic benefit cost in 2017 is approximately \$1.0 million.

Actuarial valuations of the Company's defined benefit pension plans were prepared as of December 31, 2016, 2015 and 2014. Weighted average assumptions used in accounting for the U.S. defined benefit pension plans are as follows:

	Pension Benefit		
	2016	2015	2014
Discount rate for obligations	4.35%	4.62%	4.17%
Discount rate for benefit costs	4.62%	4.17%	5.01%
Rate of increase in compensation levels	N/A	N/A	N/A
Expected long-term rate of return on plan assets	7.13%	7.50%	7.50%

The Company utilizes a high-quality (Aa or greater) corporate bond yield curve as the basis for its domestic discount rate for its pension benefit plans. Management believes this yield curve removes the impact of including additional required corporate bond yields (potentially considered in the above-median curve) resulting from the uncertain economic climate that does not necessarily reflect the general trend in high-quality interest rates.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Actuarial valuations of the Company's non-U.S. defined benefit pension plans were prepared as of December 31, 2016, 2015 and 2014. Weighted average assumptions used in accounting for the non-U.S. defined benefit pension plans are as follows:

	Pension Benefit		
	2016	2015	2014
Discount rate for obligations	2.80%	3.80%	3.70%
Discount rate for benefit costs	3.80%	3.70%	4.50%
Rate of increase in compensation levels	3.90%	3.90%	3.80%
Expected long-term rate of return on plan assets	4.90%	4.90%	5.60%

The following provides a reconciliation of the changes in the Company's defined benefit pension plans' projected benefit obligations and fair value of assets for each of the years ended December 31, 2016 and 2015 and the funded status as of December 31, 2016 and 2015 (dollars in thousands):

	Pension Benefit	
	2016	2015
Changes in Projected Benefit Obligations		
Benefit obligations at January 1	\$ (38,240)	\$ (43,730)
Service cost	(950)	(890)
Interest cost	(1,510)	(1,580)
Participant contributions	(60)	(60)
Actuarial loss	(4,080)	(150)
Benefit payments	1,250	1,640
Settlements and curtailments	2,360	5,210
Change in foreign currency	3,590	1,320
Projected benefit obligations at December 31	<u>\$ (37,640)</u>	<u>\$ (38,240)</u>
Changes in Plan Assets		
Fair value of plan assets at January 1	\$ 28,270	\$ 32,610
Actual return on plan assets	2,910	50
Employer contributions	1,890	3,640
Participant contributions	60	60
Benefit payments	(1,250)	(1,640)
Settlements	(2,530)	(5,210)
Change in foreign currency	(3,090)	(1,240)
Fair value of plan assets at December 31	<u>\$ 26,260</u>	<u>\$ 28,270</u>
Funded status at December 31	<u>\$ (11,380)</u>	<u>\$ (9,970)</u>

	Pension Benefit	
	2016	2015
Amounts Recognized in Balance Sheet		
Prepaid benefit cost	\$ 740	\$ 590
Current liabilities	(830)	(320)
Noncurrent liabilities	(11,290)	(10,240)
Net liability recognized at December 31	<u>\$ (11,380)</u>	<u>\$ (9,970)</u>

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

	Pension Benefit	
	2016	2015
Amounts Recognized in Accumulated Other Comprehensive Loss		
Unrecognized prior-service cost	\$ 60	\$ 80
Unrecognized net loss	17,910	18,570
Total accumulated other comprehensive loss recognized at December 31	<u>\$ 17,970</u>	<u>\$ 18,650</u>

	Accumulated Benefit Obligations		Projected Benefit Obligations	
	2016	2015	2016	2015
Benefit Obligations at December 31,				
Total benefit obligations	\$ (34,790)	\$ (35,890)	\$ (37,640)	\$ (38,240)
Plans with benefit obligations exceeding plan assets				
Benefit obligations	\$ (17,400)	\$ (17,940)	\$ (37,200)	\$ (37,560)
Plan assets	7,880	9,200	25,080	27,000

The assumptions regarding discount rates and expected return on plan assets can have a significant impact on amounts reported for benefit plans. A 25 basis point change in benefit obligation discount rates or 50 basis point change in expected return on plan assets would have the following affect (dollars in thousands):

	Pension Benefit	
	December 31, 2016 Benefit Obligation	2016 Expense
Discount rate		
25 basis point increase	\$ (1,110)	\$ (80)
25 basis point decrease	\$ 1,180	\$ 90
Expected return on assets		
50 basis point increase	N/A	\$ (130)
50 basis point decrease	N/A	\$ 130

The Company expects to make contributions of approximately \$3.0 million to fund its pension plans during 2017.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Plan Assets

The Company's overall investment goal is to provide for capital growth with a moderate level of volatility by investing assets in targeted allocation ranges. Specific long term investment goals include total investment return, diversity to reduce volatility and risk, and to achieve an asset allocation profile that reflects the general nature and sensitivity of the plans' liabilities. Investment goals are established after a comprehensive review of current and projected financial statement requirements, plan assets and liability structure, market returns and risks as well as special requirements of the plans. The Company reviews investment goals and actual results annually to determine whether stated objectives are still relevant and the continued feasibility of achieving the objectives.

The actual weighted average asset allocation of the Company's domestic and foreign pension plans' assets at December 31, 2016 and 2015 and target allocations by class, were as follows:

	Domestic Pension			Foreign Pension		
	Target	Actual		Target	Actual	
		2016	2015		2016	2015
Equity securities	60%	59%	62%	33%	27%	26%
Fixed income	40%	38%	36%	45%	48%	40%
Diversified growth ^(a)	—%	—%	—%	22%	24%	20%
Cash and other	—%	3%	2%	—	1%	14%
Total	100%	100%	100%	100%	100%	100%

^(a) Diversified growth funds invest in a broad range of asset classes including equities, investment grade and high yield bonds, commodities, property, private equity, infrastructure and currencies.

Actual allocations to each asset vary from target allocations due to periodic investment strategy changes, market value fluctuations and the timing of benefit payments and contributions. The expected long-term rate of return for both the domestic and foreign plans' total assets is based on the expected return of each of the above categories, weighted based on the target allocation for each class. Actual allocation is reviewed regularly and rebalancing investments to their targeted allocation range is performed when deemed appropriate. During 2015, the Company made higher than expected contributions to one of its foreign defined benefit plans as part of a recovery plan to reduce the plan's net funding deficit. As of December 31, 2015, the Company had not yet completed its investment allocation strategy with respect to the incremental contributions, with the funds remaining in a cash account and causing a deviation from the targeted asset allocation.

In managing the plan assets, the Company reviews and manages risk associated with the funded status risk, interest rate risk, market risk, liquidity risk and operational risk. Investment policies reflect the unique circumstances of the respective plans and include requirements designed to mitigate these risks by including quality and diversification standards.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following table summarizes the level under the fair value hierarchy (see Note 3, "Summary of Significant Accounting Policies") that the Company's pension plan assets are measured on a recurring basis as of December 31, 2016 (dollars in thousands):

	<u>Total</u>	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>
Plan assets subject to leveling				
Investment funds				
Fixed income	\$ 2,930	\$ 2,930	\$ —	\$ —
Cash and cash equivalents	190	190	—	—
Plan assets measured at net asset value^(a)				
Investment funds				
Equity securities	9,640			
Fixed income	8,920			
Diversified growth	4,170			
Cash and cash equivalents	320			
Other ^(b)	90			
Total	\$ 26,260	\$ 3,120	\$ —	\$ —

^(a) Certain investments that are measured at fair value using the net asset value per share as a practical expedient have not been classified in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amount presented in the fair value of plan assets.

^(b) Comprised of investments in foreign government bonds.

The following benefit payments, which reflect expected future service, as appropriate, are expected to be paid (dollars in thousands):

	Pension Benefit
December 31, 2017	\$ 1,950
December 31, 2018	1,350
December 31, 2019	1,370
December 31, 2020	1,400
December 31, 2021	1,440
Years 2022-2025	7,680

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

16. Equity Awards

The Company maintains the following long-term equity incentive plans (collectively, the "Plans"):

Plan Names	Shares Approved for Issuance	Fungible Ratio
TriMas Corporation Director Retainer Share Election Program	100,000	N/A
2011 Omnibus Incentive Compensation Plan	3,246,588	1.75:1
2006 Long Term Equity Incentive Plan	2,870,221	2:1
2002 Long Term Equity Incentive Plan	2,111,567	1:1

The fungible ratio presented above applies to restricted shares of common stock. Stock options and stock appreciation rights have a fungible ratio of 1:1 (one granted option/appreciation right counts as one share against the aggregate available to issue) under each Plan, if applicable. The 2002 Long Term Equity Incentive Plan expired in 2012 and the 2006 Long Term Equity Incentive Plan expired as of December 31, 2016, such that, while existing grants remain outstanding until exercised, vested or cancelled, no new shares may be issued under these plans.

Spin-off of the Cequent businesses

On June 30, 2015, due to the spin-off of the Cequent businesses, stock options and restricted shares previously granted to Cequent participants were cancelled and transferred to Horizon. On July 1, 2015, the Company adjusted the number of shares outstanding, and the exercise price of stock options, as required by the anti-dilution provisions of the Plans, to maintain the intrinsic value of the outstanding equity awards immediately post spin-off.

Stock Options

The Company granted 150,000 stock option awards during the year ended December 31, 2016. The Company estimated the grant-date fair value of the awards using the Black-Scholes option pricing model using the following weighted average assumptions: risk-free rate of 1.1%, expected volatility of 32.3%, and an expected term of six years. The Company did not grant any stock options during 2015 and 2014.

Information related to stock options at December 31, 2016 is as follows:

	Number of Stock Options	Weighted Average Option Price	Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value
Outstanding at January 1, 2016	206,123	\$ 4.84		
Granted	150,000	17.87		
Exercised	(109,258)	1.57		
Cancelled	—	—		
Expired	(40,011)	19.42		
Outstanding at December 31, 2016	<u>206,854</u>	<u>\$ 13.19</u>	<u>7.5</u>	<u>\$ 2,131,675</u>

As of December 31, 2016, 56,854 stock options outstanding were exercisable under the Plans. There was approximately \$0.8 million of unrecognized compensation cost related to stock options that is expected to be recorded over a weighted average period of 2.6 years. No options vested during 2016 and 2015. The fair value of options which vested during 2014 was \$0.1 million.

The Company recognized approximately \$0.3 million of stock-based compensation expense related to stock options during 2016 and no significant stock-based compensation expense during 2015 and 2014. The stock-based compensation expense is included in selling, general and administrative expenses in the accompanying consolidated statement of income.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Restricted Shares

The Company awarded 2,800, 1,760 and 2,200 restricted stock grants to certain employees during 2016, 2015 and 2014, respectively. These shares are subject only to a service condition and vest on the first anniversary date of the award so long as the employee remains with the Company.

During 2016, 2015 and 2014, the Company issued 235,251, 209,825 and 23,226 shares, respectively, of its common stock to certain employees which are subject only to a service condition and vest ratably over three years so long as the employee remains with the Company.

The Company awarded 42,740, 42,937 and 40,837 restricted shares of common stock to certain employees during 2016, 2015 and 2014, respectively. These shares are subject only to a service condition and vest on the first anniversary date of the award. The awards were made to participants in the Company's Short-Term Incentive Compensation Plan ("STI"), where all STI participants whose target STI annual award exceeds \$20 thousand receive 80% of the value earned in cash and 20% in the form of a restricted stock award upon finalization of the award amount in the first quarter each year following the previous plan year.

During 2016, 2015 and 2014, the Company granted 41,174, 32,040 and 20,832 shares, respectively, of its common stock to its non-employee independent directors, which vest one year from date of grant so long as the director and/or Company does not terminate their service prior to the vesting date.

During the first quarter of 2016, the Company awarded 198,956 performance-based shares of common stock to certain Company key employees which vest three years from the grant date so long as the employee remains with the Company. The performance criteria for these awards is based on the Company's total shareholder return ("TSR") relative to the TSR of the common stock of a pre-defined industry peer-group, measured over a period beginning January 1, 2016 and ending December 31, 2018. TSR is calculated as the Company's average closing stock price for the 20-trading days at the end of the performance period plus Company dividends, divided by the Company's average closing stock price for the 20-trading days prior to the start of the performance period. Depending on the performance achieved, the amount of shares earned can vary from 0% of the target award to a maximum of 200% of the target award. The Company estimated the grant-date fair value and term of the awards subject to a market condition using a Monte Carlo simulation model, using the following weighted average assumptions: risk-free interest rate of 0.96% and annualized volatility of 35.8%

During the third quarter of 2015, the Company awarded 192,348 performance-based shares of common stock to certain Company key employees which vest on March 1, 2018, so long as the employee remains with the Company. The performance criteria for these awards is based on the Company's TSR relative to the TSR of the common stock of a pre-defined industry peer-group, measured over a period beginning September 10, 2015 and ending December 31, 2017. TSR is calculated as the Company's average closing stock price for the 20-trading days at the end of the performance period plus Company dividends, divided by the Company's average closing stock price for the 20-trading days prior to the start of the performance period. Depending on the performance achieved, the amount of shares earned can vary from 0% of the target award to a maximum of 200% of the target award. The Company estimated the grant-date fair value and term of the awards subject to a market condition using a Monte Carlo simulation model, using the following weighted average assumptions: risk-free interest rate of 0.85% and annualized volatility of 35.8%.

The Company awarded 243,124 restricted shares of common stock to certain Company key employees during the first quarter of 2014. Half of the restricted shares granted are service-based restricted stock units. These awards vest ratably over three years. The other half of the shares awarded were performance-based shares of common stock to certain Company key employees which were earned based upon the achievement of the Company's pre-spin earnings per share ("EPS") cumulative average growth rate ("EPS CAGR") and average return on invested capital performance metrics over a period of three calendar years, beginning January 1, 2014 and ending on December 31, 2016. In the third quarter of 2015, this award was modified due to the Company's spin-off of the Cequent businesses. At the time of the spin-off, the performance period was 50% complete; thus, the Company measured attainment for the half completed and cancelled the remaining performance shares. The Company determined that the original performance metrics resulted in a 30% attainment of the target on a weighted average basis, resulting in a reduction of 35,096 shares during the third quarter of 2015. The Company awarded new performance-based grants of 86,924 restricted shares to these key employees, with the performance criteria based upon the Company's total TSR relative to the TSR of the common stock of a pre-defined industry peer-group and measured over the period beginning September 10, 2015 and ending December 31, 2016. Depending on the performance achieved, the amount of shares earned can vary from 0% of the target award to a maximum of 200% of the target award. These awards vest on March 5, 2017, so long as the employee remains with the Company. The Company estimated the grant-date fair value and term of the awards subject to a market condition using a Monte Carlo simulation model, using the following weighted average assumptions: risk-free interest rate of 0.50% and annualized volatility of 38.8%.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

During 2013, the Company awarded performance-based shares of common stock to certain Company key employees which were earned based upon the achievement of earnings per share compound annual growth rate and cash generation performance metrics over a period of three calendar years, beginning January 1, 2013 and ending on December 31, 2015. The Company attained 50% of the target on a weighted average basis, resulting in a reduction of 35,850 shares during the first quarter of 2016.

The Company allows for its non-employee independent directors to make an annual election to defer all or a portion of their director fees and to receive the deferred amount in cash or equity. Certain of the Company's directors have elected to defer all or a portion of their director fees and to receive the amount in Company common stock at a future date. The Company issued 16,588, 11,026 and 10,140 shares in 2016, 2015 and 2014, respectively, related to director fee deferrals.

Information related to restricted shares at December 31, 2016 is as follows:

	Number of Unvested Restricted Shares	Weighted Average Grant Date Fair Value	Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value
Outstanding at January 1, 2016	765,314	\$ 23.73		
Granted	537,509	18.46		
Vested	(271,756)	24.55		
Cancelled	(385,407)	21.30		
Outstanding at December 31, 2016	<u>645,660</u>	<u>\$ 20.45</u>	<u>0.9</u>	<u>\$ 15,173,010</u>

As of December 31, 2016, there was approximately \$4.0 million of unrecognized compensation cost related to unvested restricted shares that is expected to be recorded over a weighted average period of 1.8 years.

The Company recognized stock-based compensation expense related to restricted shares of approximately \$6.7 million, \$6.3 million and \$7.1 million in 2016, 2015, and 2014, respectively. The stock-based compensation expense is included in selling, general and administrative expenses in the accompanying statement of operations.

17. Earnings per Share

Net income is divided by the weighted average number of common shares outstanding during the year to calculate basic earnings per share. Diluted earnings per share is calculated to give effect to stock options and restricted share awards. For the years ended December 31, 2016 and 2015, no restricted shares were included in the computation of net income (loss) per share because to do so would be anti-dilutive. Options to purchase 206,854, 206,123 and 251,667 shares of common stock were outstanding at December 31, 2016, 2015 and 2014, respectively. For the years ended December 31, 2016 and 2015, no options to purchase shares of common stock were included in the computation of net income (loss) per share because to do so would have been anti-dilutive. The following table summarizes the dilutive effect of restricted shares and options to purchase common stock:

	Year ended December 31,		
	2016	2015	2014
Weighted average common shares—basic	45,407,316	45,123,626	44,881,925
Dilutive effect of restricted share awards	—	—	245,828
Dilutive effect of stock options	—	—	141,656
Weighted average common shares—diluted	<u>45,407,316</u>	<u>45,123,626</u>	<u>45,269,409</u>

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

18. Other Comprehensive Income

Changes in AOCI by component for the year ended December 31, 2016 are summarized as follows, net of tax (dollars in thousands):

	Defined Benefit Plans	Derivative Instruments	Foreign Currency Translation	Total
Balance, December 31, 2015	\$ (12,370)	\$ (1,790)	\$ 2,860	\$ (11,300)
Net unrealized losses arising during the period ^(a)	(1,270)	(1,150)	(12,620)	(15,040)
Less: Net realized losses reclassified to net income ^(b)	(1,520)	(420)	—	(1,940)
Net current-period other comprehensive income (loss)	250	(730)	(12,620)	(13,100)
Balance, December 31, 2016	<u>\$ (12,120)</u>	<u>\$ (2,520)</u>	<u>\$ (9,760)</u>	<u>\$ (24,400)</u>

^(a) Defined benefit plans, net of income tax of \$0.3 million. See Note 15, "Employee Benefit Plans," for additional details. Derivative instruments, net of income tax of \$0.7 million. See Note 12, "Derivative Instruments," for further details.

^(b) Defined benefit plans, net of income tax of \$0.7 million. See Note 15, "Employee Benefit Plans," for additional details. Derivative instruments, net of income tax of \$0.3 million. See Note 12, "Derivative Instruments," for further details.

Changes in AOCI by component for the year ended December 31, 2015 are summarized as follows, net of tax (dollars in thousands):

	Defined Benefit Plans	Derivative Instruments	Foreign Currency Translation	Total
Balance, December 31, 2014	\$ (14,180)	\$ 610	\$ 23,790	\$ 10,220
Net unrealized losses arising during the period ^(a)	(1,320)	(3,610)	(12,370)	(17,300)
Less: Net realized losses reclassified to net income ^(b)	(3,130)	(960)	—	(4,090)
Net current-period other comprehensive income (loss)	1,810	(2,650)	(12,370)	(13,210)
Less: Distribution of the Cequent businesses	—	250	(8,560)	(8,310)
Balance, December 31, 2015	<u>\$ (12,370)</u>	<u>\$ (1,790)</u>	<u>\$ 2,860</u>	<u>\$ (11,300)</u>

^(a) Defined benefit plans, net of income tax of \$0.4 million. See Note 15, "Employee Benefit Plans," for additional details. Derivative instruments, net of income tax expense of \$1.9 million. See Note 12, "Derivative Instruments," for further details.

^(b) Defined benefit plans, net of income tax of \$1.8 million. See Note 15, "Employee Benefit Plans," for additional details. Derivative instruments, net of income tax expense of \$0.3 million. See Note 12, "Derivative Instruments," for further details.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

19. Segment Information

TriMas groups its operating segments into reportable segments that provide similar products and services. Each operating segment has discrete financial information evaluated regularly by the Company's chief operating decision maker in determining resource allocation and assessing performance. Within these reportable segments, there are no individual products or product families for which reported net sales accounted for more than 10% of the Company's consolidated net sales. See below for more information regarding the types of products and services provided within each reportable segment:

Packaging - Highly engineered closure and dispensing systems for a range of end markets, including steel and plastic industrial and consumer packaging applications.

Aerospace - Permanent blind bolts, temporary fasteners, highly engineered specialty fasteners and other precision machined parts used in the commercial, business and military aerospace industries.

Energy - Metallic and non-metallic industrial sealant products and fasteners for the petroleum refining, petrochemical and other industrial markets.

Engineered Components - High-pressure and low-pressure cylinders for the transportation, storage and dispensing of compressed gases, and natural gas engines, compressors, gas production equipment and chemical pumps engineered at well sites for the oil and gas industry.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Segment activity is as follows (dollars in thousands):

	Year ended December 31,		
	2016	2015	2014
Net Sales			
Packaging	\$ 341,340	\$ 334,270	\$ 337,710
Aerospace	174,920	176,480	121,510
Energy	158,990	193,390	206,720
Engineered Components	118,770	159,840	221,360
Total	<u>\$ 794,020</u>	<u>\$ 863,980</u>	<u>\$ 887,300</u>
Operating Profit (Loss)			
Packaging	\$ 77,840	\$ 78,470	\$ 77,850
Aerospace	(90,810)	28,320	17,830
Energy	(13,840)	(97,160)	(6,660)
Engineered Components	15,300	18,240	34,080
Corporate	(32,490)	(32,120)	(36,450)
Total	<u>\$ (44,000)</u>	<u>\$ (4,250)</u>	<u>\$ 86,650</u>
Capital Expenditures			
Packaging	\$ 19,880	\$ 13,670	\$ 13,730
Aerospace	3,950	5,010	4,430
Energy	2,800	7,610	2,690
Engineered Components	4,670	2,320	1,690
Corporate	30	50	460
Total	<u>\$ 31,330</u>	<u>\$ 28,660</u>	<u>\$ 23,000</u>
Depreciation and Amortization			
Packaging	\$ 22,120	\$ 20,920	\$ 20,410
Aerospace	14,090	13,290	7,630
Energy	4,280	4,790	4,600
Engineered Components	4,090	4,200	4,460
Corporate	280	340	340
Total	<u>\$ 44,860</u>	<u>\$ 43,540</u>	<u>\$ 37,440</u>
Total Assets			
Packaging	\$ 423,460	\$ 418,810	\$ 436,690
Aerospace	409,040	517,820	525,340
Energy	100,590	128,170	210,420
Engineered Components	78,570	88,320	100,560
Corporate	39,990	17,180	19,160
Subtotal from continuing operations	<u>1,051,650</u>	<u>1,170,300</u>	<u>1,292,170</u>
Discontinued operations	—	—	333,260
Consolidated total assets	<u>\$ 1,051,650</u>	<u>\$ 1,170,300</u>	<u>\$ 1,625,430</u>

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following table presents the Company's net sales for each of the years ended December 31 and long-lived assets at each year ended December 31, attributed to each subsidiary's continent of domicile (dollars in thousands).

	As of December 31,					
	2016		2015		2014	
	Net Sales	Long-lived Assets	Net Sales	Long-lived Assets	Net Sales	Long-lived Assets ^(a)
Non-U.S.						
Europe	\$ 65,490	\$ 45,050	\$ 70,760	\$ 50,930	\$ 75,350	\$ 58,250
Asia Pacific	32,230	51,060	30,280	49,830	24,660	59,450
Other Americas	13,620	7,800	17,000	5,840	23,370	13,190
Total non-U.S.	111,340	103,910	118,040	106,600	123,380	130,890
Total U.S.	682,680	604,250	745,940	727,320	763,920	804,080
Total	\$ 794,020	\$ 708,160	\$ 863,980	\$ 833,920	\$ 887,300	\$ 934,970

^(a) Excludes discontinued operations. See Note 5, "Discontinued Operations."

The Company's export sales from the U.S. approximated \$76.2 million, \$82.7 million and \$95.3 million in 2016, 2015 and 2014, respectively.

20. Income Taxes

The Company's income (loss) before income taxes and income tax expense (benefit) from continuing operations, each by tax jurisdiction, consisted of the following (dollars in thousands):

	Year ended December 31,		
	2016	2015	2014
Income (loss) before income taxes:			
Domestic	\$ (69,850)	\$ (3,150)	\$ 67,300
Foreign	11,620	(18,970)	2,300
Total income (loss) before income taxes	\$ (58,230)	\$ (22,120)	\$ 69,600
Current income tax expense:			
Federal	\$ 7,560	\$ 12,150	\$ 24,630
State and local	1,920	1,080	3,440
Foreign	4,250	2,060	1,170
Total current income tax expense	13,730	15,290	29,240
Deferred income tax expense (benefit):			
Federal	(28,180)	(1,980)	(9,370)
State and local	(2,550)	(1,530)	(40)
Foreign	(1,430)	(5,240)	2,880
Total deferred income tax expense	(32,160)	(8,750)	(6,530)
Income tax expense (benefit)	\$ (18,430)	\$ 6,540	\$ 22,710

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The components of deferred taxes are as follows (dollars in thousands):

	December 31, 2016	December 31, 2015
Deferred tax assets:		
Accounts receivable	\$ 780	\$ 550
Inventories	6,410	5,680
Goodwill and other intangible assets	3,120	—
Accrued liabilities and other long-term liabilities	26,110	27,550
Tax loss and credit carryforwards	6,680	4,660
Gross deferred tax asset	43,100	38,440
Valuation allowances	(5,670)	(3,060)
Net deferred tax asset	37,430	35,380
Deferred tax liabilities:		
Property and equipment	(14,580)	(16,340)
Goodwill and other intangible assets	—	(26,600)
Investment in foreign affiliates, including withholding tax	(1,140)	(870)
Other, principally deferred income	(1,330)	(2,580)
Gross deferred tax liability	(17,050)	(46,390)
Net deferred tax asset (liability)	\$ 20,380	\$ (11,010)

The following is a reconciliation of income tax expense (benefit) computed at the U.S. federal statutory rate to income tax expense (benefit) allocated to income (loss) from continuing operations before income taxes (dollars in thousands):

	Year ended December 31,		
	2016	2015	2014
U.S. federal statutory rate	35%	35%	35%
Tax at U.S. federal statutory rate	\$ (20,380)	\$ (7,740)	\$ 24,360
State and local taxes, net of federal tax benefit	(550)	(520)	2,520
Differences in statutory foreign tax rates	(1,930)	110	(200)
Change in recognized tax benefits	(1,410)	(460)	(2,490)
Goodwill and other intangible assets impairment	5,050	11,430	—
Nontaxable gains	(310)	(980)	—
Research and manufacturing incentives	(830)	(1,680)	(1,920)
Tax on undistributed foreign earnings	340	610	50
Net change in valuation allowance	2,140	3,770	3,270
Other, net	(550)	2,000	(2,880)
Income tax expense (benefit)	\$ (18,430)	\$ 6,540	\$ 22,710

The Company has recorded deferred tax assets on \$43.3 million of various state operating loss carryforwards and \$15.9 million of various foreign operating loss carryforwards. The majority of the state tax loss carryforwards expire between 2024 and 2027 and the majority of the foreign losses have indefinite carryforward periods.

The Company has not made a provision for U.S. or additional foreign withholding taxes related to investments in foreign subsidiaries that are indefinitely reinvested since any excess of the amount for financial reporting over the tax basis in these investments is not significant as of December 31, 2016.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Unrecognized tax benefits

The Company has approximately \$3.6 million and \$4.6 million of unrecognized tax benefits ("UTBs") as of December 31, 2016 and 2015, respectively. If the unrecognized tax benefits were recognized, the impact to the Company's effective tax rate would be to reduce reported income tax expense for the years ended December 31, 2016 and 2015 approximately \$3.0 million and \$4.1 million, respectively.

A reconciliation of the change in the UTBs and related accrued interest and penalties for the years ended December 31, 2016 and 2015 is as follows (dollars in thousands):

	Unrecognized Tax Benefits
Balance at December 31, 2014	\$ 5,270
Tax positions related to current year:	
Additions	240
Tax positions related to prior years:	
Additions	1,570
Reductions	(360)
Settlements	(390)
Lapses in the statutes of limitations	(1,720)
Balance at December 31, 2015	\$ 4,610
Tax positions related to current year:	
Additions	120
Tax positions related to prior years:	
Additions	80
Reductions	(10)
Settlements	—
Lapses in the statutes of limitations	(1,230)
Balance at December 31, 2016	\$ 3,570

In addition to the UTBs summarized above, the Company has recorded approximately \$2.0 million and \$2.2 million in potential interest and penalties associated with uncertain tax positions as of December 31, 2016 and 2015, respectively.

The Company is subject to U.S. federal, state and local, and certain non-U.S. income tax examinations for tax years 2011 through 2015. In addition, there are currently several state examinations and one foreign income tax examination in process. The Company does not believe that the results of these examinations will have a significant impact on the Company's tax position or its effective tax rate. During 2016, the Company concluded the 2013 U.S. examination of one of its recently acquired businesses. This examination resulted in no impact to the Company's tax position or its effective tax rate.

Management monitors changes in tax statutes and regulations and the issuance of judicial decisions to determine the potential impact to UTBs and is not aware of, nor does it anticipate, any material subsequent events that could have a significant impact on the Company's financial position during the next twelve months.

TRIMAS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

21. Summary Quarterly Financial Data

On June 30, 2015, the Company completed the spin-off of its Cequent businesses. The results of its operations have been presented as discontinued operations below for all periods presented (unaudited, dollars in thousands, except for per share data).

	As of December 31, 2016			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Net sales	\$ 202,880	\$ 203,320	\$ 202,290	\$ 185,530
Gross profit	55,920	57,080	58,050	39,430
Net income (loss) ^(a)	8,300	10,480	8,780	(67,360)
Earnings (loss) per share—basic:				
Net income (loss) per share	\$ 0.18	\$ 0.23	\$ 0.19	\$ (1.48)
Weighted average shares—basic	45,278,990	45,429,851	45,435,936	45,484,485
Earnings (loss) per share—diluted:				
Net income (loss) per share	\$ 0.18	\$ 0.23	\$ 0.19	\$ (1.48)
Weighted average shares—diluted	45,654,816	45,726,348	45,760,455	45,484,485

^(a) Net loss for the fourth quarter of 2016 includes pre-tax goodwill and indefinite-lived intangible asset impairment charges of \$98.9 million. See Note 7, "Goodwill and Other Intangible Assets", for further details.

	As of December 31, 2015			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Net sales	\$ 224,130	\$ 224,900	\$ 222,190	\$ 192,760
Gross profit	62,920	61,720	62,470	49,000
Income (loss) from continuing operations ^(a)	11,940	8,490	11,710	(60,800)
Income (loss) from discontinued operations, net of income taxes	2,040	(6,780)	—	—
Net income (loss)	13,980	1,710	11,710	(60,800)
Earnings (loss) per share—basic:				
Continuing operations	\$ 0.26	\$ 0.19	\$ 0.26	\$ (1.35)
Discontinued operations	0.05	(0.15)	—	—
Net income (loss) per share	\$ 0.31	\$ 0.04	\$ 0.26	\$ (1.35)
Weighted average shares—basic	44,997,961	45,150,827	45,157,412	45,188,303
Earnings (loss) per share—diluted:				
Continuing operations	\$ 0.26	\$ 0.19	\$ 0.26	\$ (1.35)
Discontinued operations	0.05	(0.15)	—	—
Net income (loss) per share	\$ 0.31	\$ 0.04	\$ 0.26	\$ (1.35)
Weighted average shares—diluted	45,400,843	45,418,907	45,499,104	45,188,303

^(a) Loss from continuing operations for the fourth quarter of 2015 includes pre-tax goodwill and indefinite-lived intangible asset impairment charges of \$75.7 million. See Note 7, "Goodwill and Other Intangible Assets", for further details.

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

Not applicable.

Item 9A. Controls and Procedures

Evaluation of disclosure controls and procedures

As of December 31, 2016, an evaluation was carried out by management, with the participation of our Chief Executive Officer and Chief Financial Officer, of the effectiveness of our disclosure controls and procedures (as such term is defined in Rule 13a-15 (e) and Rule 15d-15(e) of the Securities Exchange Act of 1934 (the "Exchange Act")), pursuant to Rule 13a-15 of the Exchange Act. Our disclosure controls and procedures are designed only to provide reasonable assurance that they will meet their objectives. Based upon that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that as of December 31, 2016, the Company's disclosure controls and procedures were effective to provide reasonable assurance that they would meet their objectives.

Management's Annual Report on Internal Control Over Financial Reporting

Management is responsible for the preparation and fair presentation of the consolidated financial statements included in this annual report. The consolidated financial statements have been prepared in conformity with United States generally accepted accounting principles and reflect management's judgments and estimates concerning events and transactions that are accounted for or disclosed.

Management is also responsible for establishing and maintaining effective internal control over financial reporting. The Company's internal control over financial reporting includes those policies and procedures that pertain to the Company's ability to record, process, summarize, and report reliable financial data. Management recognizes that there are inherent limitations in the effectiveness of any internal control and effective internal control over financial reporting can provide only reasonable assurance with respect to financial statement preparation. Additionally, because of changes in conditions, the effectiveness of internal control over financial reporting may vary over time.

In order to ensure that the Company's internal control over financial reporting is effective, management regularly assesses such controls and did so most recently for its financial reporting as of December 31, 2016. Management's assessment was based on criteria for effective internal control over financial reporting described in Internal Control—Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, management asserts that the Company has maintained effective internal control over financial reporting as of December 31, 2016.

Deloitte & Touche LLP, an independent registered public accounting firm, who audited the Company's consolidated financial statements, has also audited the effectiveness of the Company's internal control over financial reporting as of December 31, 2016, as stated in their report below.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of
TriMas Corporation
Bloomfield Hills, Michigan

We have audited the internal control over financial reporting of TriMas Corporation and subsidiaries (the "Company") as of December 31, 2016, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. 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 Annual 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 conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). 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.

A company's internal control over financial reporting is a process designed by, or under the supervision of, the company's principal executive and principal financial officers, or persons performing similar functions, and effected by the company's board of directors, management, and other personnel 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 the inherent limitations of internal control over financial reporting, including the possibility of collusion or improper management override of controls, material misstatements due to error or fraud may not be prevented or detected on a timely basis. Also, projections of any evaluation of the effectiveness of the internal control over financial reporting to future periods are subject to the risk that the controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on the criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated financial statements and financial statement schedule as of and for the year ended December 31, 2016, of the Company and our report dated February 28, 2017, expressed an unqualified opinion on those financial statements and financial statement schedule.

/s/ Deloitte & Touche LLP

Detroit, Michigan
February 28, 2017

Changes in disclosure controls and procedures

There have been no changes in the Company's internal control over financial reporting during the quarter ended December 31, 2016 that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

Item 9B. Other Information

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Information regarding our executive officers is included in Part I of this Form 10-K under the heading “*Executive Officers of the Company.*”

The Company's Code of Ethics and Business Conduct is applicable to its directors, officers and employees. The Code of Ethics and Business Conduct is available on the "Investors" portion of the Company's website under the "Corporate Governance" link. The Company's website address is www.trimascorp.com.

The information required by this item is incorporated by reference from our definitive proxy statement for the 2017 Annual Meeting of Shareholders.

Item 11. Executive Compensation

The information required by this item is incorporated by reference from our definitive proxy statement for the 2017 Annual Meeting of Shareholders.

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

The information required by this item is incorporated by reference from our definitive proxy statement for the 2017 Annual Meeting of Shareholders.

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

The information required by this item is incorporated by reference from our definitive proxy statement for the 2017 Annual Meeting of Shareholders.

Item 14. Principal Accountant Fees and Services

The information required by this item is incorporated by reference from our definitive proxy statement for the 2017 Annual Meeting of Shareholders.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) Listing of Documents

(1) Financial Statements

The Company's Financial Statements included in Item 8 hereof, as required at December 31, 2016 and December 31, 2015, and for the periods ended December 31, 2016, December 31, 2015 and December 31, 2014, consist of the following:

Balance Sheet
Statement of Operations
Statement of Comprehensive Income
Statement of Cash Flows
Statement of Shareholders' Equity
Notes to Financial Statements

(2) Financial Statement Schedules

Financial Statement Schedule of the Company appended hereto, as required for the periods ended December 31, 2016, December 31, 2015 and December 31, 2014, consists of the following:

Valuation and Qualifying Accounts

All other schedules are omitted because they are not applicable, not required, or the information is otherwise included in the financial statements or the notes thereto.

(3) Exhibits

See the Exhibits Index at the end of this Form 10-K, which is incorporated by reference.

Item 16. Form 10-K Summary

None.

SIGNATURES

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

TRIMAS CORPORATION
(Registrant)

BY: /s/ THOMAS A. AMATO

DATE:

February 28, 2017

Name: Thomas A. Amato
Title: *President and Chief Executive Officer*

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

<u>Name</u>	<u>Title</u>	<u>Date</u>
/s/ THOMAS A. AMATO Thomas A. Amato	President and Chief Executive Officer (Principal Executive Officer) and Director	February 28, 2017
/s/ ROBERT J. ZALUPSKI Robert J. Zalupski	Chief Financial Officer (Principal Financial Officer)	February 28, 2017
/s/ PAUL A. SWART Paul A. Swart	Vice President Business Planning, Controller and Chief Accounting Officer (Principal Accounting Officer)	February 28, 2017
/s/ SAMUEL VALENTI III Samuel Valenti III	Chairman of the Board of Directors	February 28, 2017
/s/ RICHARD M. GABRYS Richard M. Gabrys	Director	February 28, 2017
/s/ NANCY S. GOUGARTY Nancy S. Gougarty	Director	February 28, 2017
/s/ EUGENE A. MILLER Eugene A. Miller	Director	February 28, 2017
/s/ HERBERT K. PARKER Herbert K. Parker	Director	February 28, 2017
/s/ NICK L. STANAGE Nick L. Stanage	Director	February 28, 2017
/s/ DANIEL P. TREDWELL Daniel P. Tredwell	Director	February 28, 2017

SCHEDULE II
PURSUANT TO ITEM 15(a)(2)
OF FORM 10-K VALUATION AND QUALIFYING ACCOUNTS FOR THE YEARS ENDED
December 31, 2016, 2015 AND 2014

DESCRIPTION	BALANCE AT BEGINNING OF PERIOD	ADDITIONS		DEDUCTIONS ^(B)	BALANCE AT END OF PERIOD
		CHARGED TO COSTS AND EXPENSES	CHARGED (CREDITED) TO OTHER ACCOUNTS ^(A)		
Allowance for doubtful accounts deducted from accounts receivable in the balance sheet					
Year ended December 31, 2016	\$ 3,710,000	\$ 2,770,000	\$ (90,000)	\$ 1,810,000	\$ 4,580,000
Year ended December 31, 2015	\$ 2,220,000	\$ 2,380,000	\$ (40,000)	\$ 850,000	\$ 3,710,000
Year ended December 31, 2014	\$ 1,300,000	\$ 2,200,000	\$ 80,000	\$ 1,360,000	\$ 2,220,000

^(A) Allowance of companies acquired, and other adjustments, net.

^(B) Deductions, representing uncollectible accounts written-off, less recoveries of amounts written-off in prior years.

Item 15. Exhibits.

Exhibits Index:

- 2.1(n) Purchase Agreement dated as of February 24, 2012, among Rieke-Arminak Corp., HRA Holding Corporation, NC Holding, LLC, Helga Arminak, Armin Arminak, Roger Abadjian and Arminak & Associates, LLC.**
- 2.2(v) Purchase Agreement dated as of March 11, 2014, among Rieke-Arminak Corp., HRA Holding Corporation, NC Holding, LLC, Helga Arminak, Armin Arminak, Roger Abadjian, and Arminak & Associates, LLC.**
- 2.3(z) Stock Purchase Agreement dated as of September 19, 2014, among TriMas UK Aerospace Holdings Limited, TriMas Corporation, Allfast Fastening Systems, Inc., The James and Eleanor Randall Trust dated June 1, 1993 and James H. Randall.**
- 2.4(aa) Separation and Distribution Agreement, dated as of June 30, 2015, by and between Horizon Global Corporation and TriMas Corporation.**
- 3.1(e) Fourth Amended and Restated Certificate of Incorporation of TriMas Corporation.
- 3.2(k) Third Amended and Restated By laws of TriMas Corporation.
- 10.1(a) Stock Purchase Agreement dated as of May 17, 2002, among Heartland Industrial Partners, L.P., TriMas Corporation and Metaldyne Company LLC.
- 10.2(d) Amendment No. 1 to Stock Purchase Agreement dated as of August 31, 2006, among Heartland Industrial Partners, L.P., TriMas Corporation and Metaldyne Corporation.
- 10.3(f) Amendment No. 2 to Stock Purchase Agreement dated as of November 27, 2006, among Heartland Industrial Partners, L.P., TriMas Corporation and Metaldyne Corporation.
- 10.4(b) Asset Purchase Agreement dated as of May 9, 2003, among TriMas Corporation, Metaldyne Corporation and Metaldyne Company LLC.
- 10.5(t) Credit Agreement, dated October 16, 2013, by and among TriMas Corporation, TriMas Company LLC and JPMorgan Chase bank, N.A., as Administrative Agent and Collateral Agent, and the various lenders from time to time thereto.
- 10.6(z) Incremental Facility Agreement and Amendment dated as of October 17, 2014, among TriMas Company LLC, the other Loan Parties party thereto, JPMorgan Chase Bank, N.A., as administrative agent, the Incremental Tranche A Term Lenders and the other Lenders party thereto.
- 10.7(aa) Replacement Facility Amendment, dated as of June 30, 2015, among TriMas Company LLC, the other Loan Parties party thereto, JPMorgan Chase Bank, N.A., as administrative agent, and the Lenders party thereto.
- 10.8(i) Amended and Restated Receivables Purchase Agreement dated as of December 29, 2009, among TriMas Corporation, the Sellers named therein and TSPC, Inc. as Purchaser.
- 10.9(m) Amendment No. 1 dated as of September 15, 2011 to the Amended and Restated Receivables Purchase Agreement.
- 10.10(o) Amendment No. 2 dated as of December 21, 2011 to the Amended and Restated Receivables Purchase Agreement.
- 10.11(o) Amendment No. 3 dated as of June 29, 2012 to the Amended and Restated Receivables Purchase Agreement.
- 10.12(w) Amendment No. 4 dated as of April 17, 2014 to the Amended and Restated Receivables Purchase Agreement.
- 10.13(ab) Amendment No. 5, effective as of February 28, 2015, to the Amended and Restated Receivables Purchase Agreement.
- 10.14(ad) Amendment No. 6, effective as of June 29, 2015, to the Amended and Restated Receivables Purchase Agreement.
- 10.15(m) Amended and Restated Receivables Transfer Agreement dated as of September 15, 2011, among TSPC, Inc., as Transferor, TriMas Corporation, as Collection Agent, TriMas Company LLC, as Guarantor, the persons party thereto from time to time as Purchasers and Wells Fargo Bank, National Association, as LC Issuer and Administrative Agent.
- 10.16(o) Amendment No. 1 dated as of June 29, 2012 to the Amended and Restated Receivables Transfer Agreement.

- 10.17(p) Amendment No. 2 dated as of December 17, 2012 to the Amended and Restated Receivables Transfer Agreement.
- 10.18(w) Amendment No. 3 dated as of April 17, 2014 to the Amended and Restated Receivables Transfer Agreement.
- 10.19(af) Amendment No. 4 dated as of November 26, 2014 to the Amended and Restated Receivables Transfer Agreement.
- 10.20(ab) Amendment No. 5, effective as of February 28, 2015, to the Amended and Restated Receivables Transfer Agreement.
- 10.21(ad) Amendment No. 6, effective as of June 29, 2015, to the Amended and Restated Receivables Transfer Agreement.
- 10.22(aj) Amendment No. 7, effective as of December 16, 2015, to the Amended and Restated Receivables Transfer Agreement.
- 10.23(w) Second Amended and Restated Fee Letter dated as of April 17, 2014, among Wells Fargo Bank, National Association, as Administrative Agent, TSPC, Inc., as Transferor, TriMas Corporation, as Collection Agent, TriMas Company LLC, as Guarantor, and the persons from time to time party thereto as Purchasers.
- 10.24(af) Third Amended and Restated Fee Letter dated as of November 26, 2014, among Wells Fargo Bank, National Association, as Administrative Agent, TSPC, Inc., as Transferor, TriMas Corporation, as Collection Agent, TriMas Company LLC, as Guarantor, and the persons from time to time party thereto as Purchasers.
- 10.25(aj) Fourth Amended and Restated Fee Letter dated as of June 29, 2015, among Wells Fargo Bank, National Association, as Administrative Agent, TSPC, Inc., as Transferor, TriMas Corporation, as Collection Agent, TriMas Company LLC, as Guarantor, and the persons from time to time party thereto as Purchasers.
- 10.26(aj) Fifth Amended and Restated Fee Letter dated as of December 16, 2015, among Wells Fargo Bank, National Association, as Administrative Agent, TSPC, Inc., as Transferor, TriMas Corporation, as Collection Agent, TriMas Company LLC, as Guarantor, and the persons from time to time party thereto as Purchasers.
- 10.27(c) 2004 Form of Indemnification Agreement.*
- 10.28(j) TriMas Corporation 2006 Long Term Equity Incentive Plan Composite Plan Document.*
- 10.29(g) TriMas Corporation Long Term Equity Incentive Plan Non-Qualified Stock Option Agreement.*
- 10.30(h) Flexible Cash Allowance Policy.*
- 10.31(l) 2011 TriMas Corporation Omnibus Incentive Compensation Plan.*
- 10.32(r) Amendment No. 1 to the TriMas Corporation 2011 Omnibus Incentive Compensation Plan.*
- 10.33(q) Form of Performance Stock Unit Agreement - 2013 LTI - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.34(q) Form of Performance Unit Agreement - 2013 LTI - under the 2006 Long Term Equity Incentive Plan.*
- 10.35(q) Form of Restricted Stock Agreement - 2013 LTI - under the 2006 Long Term Equity Incentive Plan.*
- 10.36(q) Form of Restricted Stock Agreement - 2013 LTI - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.37(q) Form of Restricted Stock Agreement - 2013 LTI (Board of Directors) - under the 2006 Long Term Equity Incentive Plan.*
- 10.38(x) Form of Restricted Stock Agreement - 2014 LTI - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.39(x) Form of Restricted Stock Agreement - 2014 LTI (Board of Directors) - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.40(x) Form of Performance Stock Unit Agreement - 2014 LTI - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.41(ab) Form of Restricted Stock Unit Agreement - 2015 (One-Year Vest) - under the 2006 Long Term Equity Incentive Plan.*
- 10.42(ab) Form of Restricted Stock Unit Agreement - 2015 (Board of Directors) - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.43(ab) Form of Restricted Stock Unit Agreement - 2015 (One-Year Vest) - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.44(ab) Form of Restricted Stock Unit Agreement - 2015 (Three-Year Vest) - under the 2011 Omnibus Incentive Compensation Plan.*

- 10.45(ae) Form of Performance Stock Unit Award - 2014 LTI (Second Half) - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.46(ae) Form of Performance Stock Unit Award - 2015 LTI - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.47(s) Executive Severance / Change of Control Policy.*
- 10.48(ag) Form of Performance Stock Unit Agreement - 2016 LTI - under the 2006 Long Term Equity Incentive Plan.*
- 10.49(ag) Form of Performance Stock Units Agreement - 2016 LTI - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.50(ag) Form of Restricted Stock Units Agreement (Three-Year Vest) - 2016 LTI - under the 2006 Long Term Equity Incentive Plan.*
- 10.51(ag) Form of Restricted Stock Units Agreement (Three-Year Vest) - 2016 LTI - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.52(ag) Form of Restricted Stock Units Agreement (Board Of Directors) (One-Year Vest) - 2016 LTI - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.53(ag) Form of Restricted Stock Units Agreement (Key Personnel) (Three-Year Vest) - 2016 LTI - under the 2006 Long Term Equity Incentive Plan.*
- 10.54(ag) Form of Restricted Stock Unit Agreement (Key Personnel) (Three-Year Vest) - 2016 LTI - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.55(ag) Form of Restricted Stock Unit Agreement (One-Year Vest) - 2016 LTI - under the 2011 Omnibus Incentive Compensation Plan.*
- 10.56(ag) Form of Restricted Stock Unit Agreement (One-Year Vest) - 2016 LTI - under the 2006 Long Term Equity Incentive Plan.*
- 10.57(ai) Form of Non-Qualified Stock Option Agreement under the 2011 Omnibus Incentive Compensation Plan.*
- 10.58(y) Letter Agreement dated as of August 12, 2014, between TriMas Corporation and Lynn Brooks.*
- 10.59(u) 2013 Form of Indemnification Agreement.*
- 10.60(ac) Settlement Agreement, dated as of February 24, 2015, by and among TriMas Corporation and Engaged Capital Master Feeder I, LP, Engaged Capital Master Feeder II, LP, Engaged Capital I, LP, Engaged Capital I Offshore, Ltd., Engaged Capital II, LP, Engaged Capital, LLC, Engaged Capital Holdings, LLC, Glenn Welling and Herbert Parker.
- 10.61(ah) Amended and Restated Agreement dated April 13, 2016, by and among TriMas Corporation and Engaged Capital Master Feeder I, LP, Engaged Capital Master Feeder II, LP, Engaged Capital I, LP, Engaged Capital I Offshore, Ltd., Engaged Capital II, LP, Engaged Capital, LLC, Engaged Capital Holdings, LLC, and Glenn Welling.
- 10.62(aa) Tax Sharing Agreement, dated as of June 30, 2015, by and between Horizon Global Corporation and TriMas Corporation.
- 10.63(aa) Employee Matters Agreement, dated as of June 30, 2015, by and between Horizon Global Corporation and TriMas Corporation.
- 10.64(aa) Transition Services Agreement, dated as of June 30, 2015, by and between Horizon Global Corporation and TriMas Corporation.
- 10.65(aa) Noncompetition and Nonsolicitation Agreement, dated as of June 30, 2015, by and between Horizon Global Corporation and TriMas Corporation.
- 10.66(ai) Separation and Release Agreement between TriMas Corporation and David M. Wathen dated August 8, 2016.
- 10.67(ai) Offer Letter between TriMas Corporation and Thomas A. Amato dated July 23, 2016.
- 10.68 Separation and Release Agreement between TriMas Corporation and Colin Hindman dated November 9, 2016.
- 21.1 TriMas Corporation Subsidiary List.
- 23.1 Consent of Independent Registered Public Accounting Firm.
- 31.1 Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 302 of the Sarbanes Oxley Act of 2002.
- 31.2 Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 302 of the Sarbanes Oxley Act of 2002.

32.1	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes Oxley Act of 2002.
32.2	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes Oxley Act of 2002.
101.INS	XBRL Instance Document.
101.SCH	XBRL Taxonomy Extension Schema Document.
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	XBRL Taxonomy Extension Label Linkbase Document.
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document.

*Management contracts and compensatory plans or arrangements required to be filed as an exhibit pursuant to Item 15(b) of Form 10-K.

** Certain exhibits and schedules have been omitted and the Company agrees to furnish supplementally to the Securities and Exchange Commission a copy of any omitted exhibits and schedules upon request.

- (a) Incorporated by reference to the Exhibits filed with our Registration Statement on Form S-4 filed on October 4, 2002 (File No. 333-100351).
- (b) Incorporated by reference to the Exhibits filed with our Registration Statement on Form S-4 filed June 9, 2003 (File No. 333-105950).
- (c) Incorporated by reference to the Exhibits filed with Amendment No. 3 to our Registration Statement on Form S-1/A filed on June 29, 2004 (File No. 333-113917).
- (d) Incorporated by reference to the Exhibits filed with Amendment No. 1 to our Registration Statement on Form S-1 filed on September 19, 2006 (File No. 333-136263).
- (e) Incorporated by reference to the Exhibits filed with our Quarterly Report on Form 10-Q filed on August 3, 2007 (File No. 001-10716).
- (f) Incorporated by reference to the Exhibits filed with our Quarterly Report on Form 10-Q filed on August 7, 2008 (File No. 001-10716).
- (g) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on March 6, 2009 (File No. 001-10716).
- (h) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on December 10, 2009 (File No. 001-10716).
- (i) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on January 15, 2010 (File No. 001-10716).
- (j) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on March 26, 2010 (File No. 001-10716).
- (k) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on December 18, 2015 (File No. 001-10716).
- (l) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on April 4, 2011 (File No. 001-10716).
- (m) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on September 21, 2011 (File No. 001-10716).
- (n) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on February 28, 2012 (File No. 001-10716).
- (o) Incorporated by reference to the Exhibits filed with our Quarterly Report on Form 10-Q filed on July 30, 2012 (File No. 001-10716).
- (p) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on December 20, 2012 (File No. 001-10716).
- (q) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on February 25, 2013 (File No. 001-10716).
- (r) Incorporated by reference to Appendix A filed with our Definitive Proxy Statement on Schedule 14A filed on April 5, 2013 (File No. 001-10716).
- (s) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on August 23, 2013 (File No. 001-10716).

- (t) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on October 21, 2013 (File No. 001-10716).
- (u) Incorporated by reference to the Exhibits filed with our Report on Form 8-K filed on November 13, 2013 (File No. 001-10716).
- (v) Incorporated by reference to the Exhibits filed with our Current Report on Form 8-K filed on March 17, 2014 (File No. 001-10716).
- (w) Incorporated by reference to the Exhibits filed with our Current Report on Form 8-K filed on April 22, 2014 (File No. 001-10716).
- (x) Incorporated by reference to the Exhibits filed with our Quarterly Report on Form 10-Q filed on April 29, 2014 (File No. 001-10716).
- (y) Incorporated by reference to the Exhibits filed with our Current Report on Form 8-K filed on August 18, 2014 (File No. 001-10716).
- (z) Incorporated by reference to the Exhibits filed with our Current Report on Form 8-K filed on October 20, 2014 (File No. 001-10716).
- (aa) Incorporated by reference to the Exhibits filed with our Current Report on Form 8-K filed on July 6, 2015 (File No. 001-10716).
- (ab) Incorporated by reference to the Exhibits filed with our Quarterly Report on Form 10-Q filed on April 28, 2015 (File No. 001-10716).
- (ac) Incorporated by reference to the Exhibits filed with our Current Report on Form 8-K filed on February 25, 2015 (File No. 001-10716).
- (ad) Incorporated by reference to the Exhibits filed with our Quarterly Report on Form 10-Q filed on August 4, 2015 (File No. 001-10716).
- (ae) Incorporated by reference to the Exhibits filed with our Quarterly Report on Form 10-Q filed on October 29, 2015 (File No. 001-10716).
- (af) Incorporated by reference to the Exhibits filed with our Annual Report on Form 10-K filed on February 26, 2015 (File No. 001-10716).
- (ag) Incorporated by reference to the Exhibits filed with our Quarterly Report on Form 10-Q filed on April 28, 2016 (File No. 001-10716).
- (ah) Incorporated by reference to the Exhibits filed with our Current Report on Form 8-K filed on April 15, 2016 (File No. 001-10716).
- (ai) Incorporated by reference to the Exhibits filed with our Quarterly Report on Form 10-Q filed on October 27, 2016 (File No. 001-10716).
- (aj) Incorporated by reference to the Exhibits filed with our Annual Report on Form 10-K filed on February 26, 2016 (File No. 001-10716).

CORPORATE AND INVESTOR INFORMATION

DIRECTORS

Samuel Valenti III

Chairman, TriMas Corporation
Chairman and Chief Executive Officer
Valenti Capital

Thomas A. Amato

President and Chief Executive Officer
TriMas Corporation

Richard M. Gabrys

Former Vice Chairman, Deloitte & Touche

Nancy S. Gougarty

Chief Executive Officer
Westport Fuel Systems, Inc.

Eugene A. Miller

Former Chairman and Chief Executive Officer, Comerica Incorporated and Comerica Bank

Herbert K. Parker

Former Executive Vice President, Operational Excellence, Harman International

Nick L. Stanage

President and Chief Executive Officer
Hexcel Corporation

Daniel P. Tredwell

Managing Member, CoveView Advisors LLC and CoveView Capital LLC

EXECUTIVE OFFICERS

Thomas A. Amato

President and Chief Executive Officer

Robert J. Zalupski

Chief Financial Officer

Joshua A. Sherbin

Senior Vice President, General Counsel
Chief Compliance Officer and Secretary

TRIMAS CORPORATION

Corporate Headquarters
39400 Woodward Avenue, Suite 130
Bloomfield Hills, MI 48304
(248) 631-5450
www.trimascorp.com

INVESTOR RELATIONS CONTACT

Sherry Lauderback

Vice President of Investor Relations and Communications
(248) 631-5506
sherrylauderback@trimascorp.com
Information about the Company's performance may also be found at www.trimascorp.com under the "Investors" section.

STOCK LISTING

NASDAQ
Ticker Symbol: TRS

TRANSFER AGENT AND REGISTRAR

Inquiries regarding your account share balance, changes in registration or address, lost certificates and other shareholder account matters should be directed to:
Computershare
PO Box 30170
College Station, TX 77845-3170
Telephone: (800) 368-5948
Online inquiries:
<https://www-us.computershare.com/investor/contact>

ANNUAL MEETING

TriMas' Annual Meeting of Shareholders will be held at 8:00 a.m. on May 11, 2017 at:
TriMas Corporation
Corporate Headquarters
39400 Woodward Avenue, Suite 130
Bloomfield Hills, MI 48304

This document contains "forward-looking" statements, as that term is defined by the federal securities laws, about our financial condition, results of operations and business. Forward-looking statements include certain anticipated, believed, planned, forecasted, expected, targeted and estimated results along with TriMas' outlook concerning future results. These forward-looking statements involve risks and uncertainties that could cause TriMas' actual results, performance or achievements to differ materially from those expressed or implied by the forward-looking statements. TriMas does not undertake any responsibility to update its forward-looking statements or risk factors to reflect future events or circumstances except as required by law. Please refer to additional forward-looking statements and risk factors language in TriMas Corporation's Form 10-K attached herein.



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