PHH CORP
Form 4
February 29, 2016

FORM 4

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

OMB APPROVAL

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STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP OF SECURITIES

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934, Section 17(a) of the Public Utility Holding Company Act of 1935 or Section 30(h) of the Investment Company Act of 1940

(Print or Type Responses)

1. Name and Address of Reporting Person *
Ruggieri Kathryn M

(Last) (First) (Middle)

C/O PHH CORPORATION, 3000 LEADENHALL ROAD

(Street)

MT. LAUREL, NJ 08054

(City) (State) (Zip)

2. Issuer Name **and** Ticker or Trading Symbol
PHH CORP [PHH]

3. Date of Earliest Transaction (Month/Day/Year)
02/25/2016

4. If Amendment, Date Original Filed(Month/Day/Year)

5. Relationship of Reporting Person(s) to Issuer

(Check all applicable)

_____ Director _____ 10% Owner
__X__ Officer (give title below) _____ Other (specify below)
SVP and Chief HR Officer

6. Individual or Joint/Group Filing(Check Applicable Line)
_X_ Form filed by One Reporting Person
___ Form filed by More than One Reporting Person

Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

1.Title of Security (Instr. 3)	2. Transaction Date (Month/Day/Year)	2A. Deemed Execution Date, if any (Month/Day/Year)	3. Transaction Code (Instr. 8)		4. Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5)			5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4)	6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	7. Nature of Indirect Beneficial Ownership (Instr. 4)
			Code	V	Amount	(A) or (D)	Price			
Common Stock	02/25/2016		F		516 (1)	D	$ 8.83	22,848	D	

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

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SEC 1474 (9-02)

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned
(*e.g.*, puts, calls, warrants, options, convertible securities)

1. Title of Derivative Security (Instr. 3)	2. Conversion or Exercise Price of Derivative Security	3. Transaction Date (Month/Day/Year)	3A. Deemed Execution Date, if any (Month/Day/Year)	4. Transaction Code (Instr. 8)		5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4, and 5)		6. Date Exercisable and Expiration Date (Month/Day/Year)		7. Title and Amount of Underlying Securities (Instr. 3 and 4)		8. Price of Derivative Security (Instr. 5)	9. Nu Deriv Secur Bene Owne Follo Repo Trans (Instr
				Code	V	(A)	(D)	Date Exercisable	Expiration Date	Title	Amount or Number of Shares		

Reporting Owners

Reporting Owner Name / Address	Relationships			
	Director	10% Owner	Officer	Other
Ruggieri Kathryn M C/O PHH CORPORATION 3000 LEADENHALL ROAD MT. LAUREL, NJ 08054			SVP and Chief HR Officer	

Signatures

William F. Brown, Attorney-in-Fact	02/29/2016
**Signature of Reporting Person	Date

Explanation of Responses:

* If the form is filed by more than one reporting person, *see* Instruction 4(b)(v).

** Intentional misstatements or omissions of facts constitute Federal Criminal Violations. *See* 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

(1) Represents shares withheld to pay taxes on Restricted Stock Units that vested on February 25, 2016.

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, *see* Instruction 6 for procedure.
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Coulthards Lane

Gateshead, England

Manufacturing facilities and offices 274,000 on 10 acres Steel framed, metal and brick*Åkers Sweden AB*

Bruksallén 12SE-647 51

Åkers Styckebruk, Sweden

Manufacturing facilities and offices 394,000 on 162 acres Steel framed, metal and brick*Åkers Valji Ravne d.o.o.*

Koro ka c. 14

SI-2390 Ravne na Koro kem, Slovenia

Manufacturing facilities and offices 106,000 on 2.1 acres Brick*Akers National Roll Company*

400 Railroad Avenue

Avonmore, PA 15618

Manufacturing facilities and offices 140,000 on 29.5 acres Metal and steel*Vertical Seal Company*

162 Chapman Road

Pleasantville, PA 16341

Manufacturing facilities and offices 52,000 on 57 acres Metal, steel and concrete*Shanxi Åkers TISCO Roll Co. Ltd.*

No. 2 Jian Cao Ping

Taiyuan, Shanxi, China

Manufacturing facilities and offices 338,000 on 14.6 acres Metal, steel and brick*Alloys Unlimited and Processing, LLC*

3760 Oakwood Avenue

Austintown, Ohio 44515

Manufacturing facilities and offices 69,800* Steel framed and cement block*ASW Steel Inc.*

42 Centre Street

Welland, ON, Canada L3B 5N9

Manufacturing facilities and offices 813,500 on 76 acres Metal and steel

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Company and Location	Principal Use	Approximate Square Footage	Type of Construction
AIR AND LIQUID PROCESSING SEGMENT			
Air & Liquid Systems Corporation			
Aerofin Division			
4621 Murray Place Lynchburg, VA 24506	Manufacturing facilities and offices	146,000 on 15.3 acres	Brick, concrete and steel
Buffalo Air Handling Division Zane Snead Drive Amherst, VA 24531	Manufacturing facilities and offices	89,000 on 19.5 acres	Metal and steel
Buffalo Pumps Division 874 Oliver Street N. Tonawanda, NY 14120	Manufacturing facilities and offices	94,000 on 9 acres	Metal, brick and cement block

** Facility is leased.*

The Corporation leases office space from Union Electric Steel Corporation. The Corporation subleases a portion of its office space to Air & Liquid Systems Corporation for use as its headquarters. All of the owned facilities are adequate and suitable for their respective purposes.

The Forged and Cast Engineered Products segment s facilities operated within 60% to 70% of their normal capacity during 2016. The facilities of the Air and Liquid Processing segment operated within 60% to 70% of their normal capacity. Normal capacity is defined as capacity under approximately normal conditions with allowances made for unavoidable interruptions, such as lost time for repairs, maintenance, breakdowns, set-up, failure, supply delays, labor shortages and absences, Sundays, holidays, vacation, inventory taking. The number of work shifts is also taken into consideration.

ITEM 3. LEGAL PROCEEDINGS

LITIGATION

The Corporation and its subsidiaries are involved in various claims and lawsuits incidental to their businesses and are also subject to asbestos litigation as described below. In addition, in February 2017, the Corporation, its indirect subsidiary Åkers National Roll Corporation, as well as the Åkers National Roll Company Health & Welfare Benefits Plan were named as defendants in a class action complaint filed in the United States District Court for the Western District of Pennsylvania, where the plaintiffs (currently retired former employees of Åkers National Roll Company, as well as United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial, and Service Workers International Union, AFL-CIO) alleged that the defendants breached collective bargaining agreements and violated the benefit plan by modifying medical benefits of the plaintiffs and similarly situated retirees. The complaint seeks class certification. We believe the lawsuit is without merit and intend to vigorously defend it. While no assurance can be given as to the ultimate outcome of this matter, we believe that the final resolution of this action will not have a material adverse effect on our results of operations, financial position, liquidity or capital resources.

Asbestos Litigation

Claims have been asserted alleging personal injury from exposure to asbestos-containing components historically used in some products of predecessors of Air & Liquid Systems Corporation (Asbestos Liability). Those subsidiaries, and in some cases the Corporation, are defendants (among a number of defendants, often in excess of 50) in cases filed in various state and federal courts.

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Asbestos Claims

The following table reflects approximate information about the claims for Asbestos Liability against the subsidiaries and the Corporation for the two years ended December 31, 2016 and 2015.

(dollars in thousands)	**2016**	2015
Total claims pending at the beginning of the period	**6,212**	8,457
New claims served	**1,452**	1,424
Claims dismissed	**(782)**	(3,339)
Claims settled	**(264)**	(330)
Total claims pending at the end of the period (1)	**6,618**	6,212
Gross settlement and defense costs (in 000 s)	**$ 17,960**	$ 19,199
Average gross settlement and defense costs per claim resolved (in 000 s)	**$ 17.17**	$ 5.23

(1) Included as open claims are approximately 444 and 430 claims in 2016 and 2015, respectively, classified in various jurisdictions as inactive or transferred to a state or federal judicial panel on multi-district litigation, commonly referred to as the MDL.

A substantial majority of the settlement and defense costs reflected in the above table was reported and paid by insurers. Because claims are often filed and can be settled or dismissed in large groups, the amount and timing of settlements, as well as the number of open claims, can fluctuate significantly from period to period.

Asbestos Insurance

The Corporation and its Air & Liquid Systems Corporation (Air & Liquid) subsidiary are parties to a series of settlement agreements (Settlement Agreements) with insurers that have coverage obligations for Asbestos Liability (the Settling Insurers). Under the Settlement Agreements, the Settling Insurers accept financial responsibility, subject to the terms and conditions of the respective agreements, including overall coverage limits, for pending and future claims for Asbestos Liability. The Settlement Agreements encompass the substantial majority of insurance policies that provide coverage for claims for Asbestos Liability.

The Settlement Agreements include acknowledgements that Howden North America, Inc. (Howden) is entitled to coverage under policies covering Asbestos Liability for claims arising out of the historical products manufactured or distributed by Buffalo Forge, a former subsidiary of the Corporation (the Products). The Settlement Agreements do not provide for any prioritization on access to the applicable policies or any sublimits of liability as to Howden or the Corporation and Air & Liquid, and, accordingly, Howden may access the coverage afforded by the Settling Insurers for any covered claim arising out of a Product. In general, access by Howden to the coverage afforded by the Settling Insurers for the Products will erode coverage under the Settlement Agreements available to the Corporation and Air & Liquid for Asbestos Liability.

On February 24, 2011, the Corporation and Air & Liquid filed a lawsuit in the United States District Court for the Western District of Pennsylvania against thirteen domestic insurance companies, certain underwriters at Lloyd s, London and certain London market insurance companies, and Howden. The lawsuit sought a declaratory judgment regarding the respective rights and obligations of the parties under excess insurance policies that were issued to the Corporation from 1981 through 1984 as respects claims against the Corporation and Air & Liquid for Asbestos Liability and as respects asbestos bodily-injury claims against Howden arising from the Products. By September 2013, the Corporation and Air & Liquid had reached Settlement Agreements with all but two of the defendant insurers in the coverage action. Those Settlement Agreements specify the terms and conditions upon which the insurer parties are to contribute to defense and indemnity costs for claims for Asbestos Liability. One of the Settlement Agreements entered into by the Corporation and Air & Liquid also provided for the dismissal of claims, without prejudice, regarding two upper-level excess policies issued by one of the insurers. The Court entered Orders dismissing all claims in the action filed against each other by the Corporation and Air & Liquid, on the one hand, and by the settling insurers, on the other. Howden also reached an agreement with eight domestic insurers addressing asbestos-related bodily injury claims arising from the Products, and claims as to those insurers and Howden were also dismissed. Various counterclaims, cross claims and third party claims had been filed in the litigation and remained pending as of September 27, 2013 although only two domestic insurers and Howden remained in the litigation as to the Corporation and Air & Liquid at that time. On September 27, 2013, the Court issued a memorandum opinion and order granting in part and

denying in part cross motions for summary judgment filed by the Corporation and Air & Liquid, Howden, and the insurer parties still

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in the litigation. On February 26, 2015, the Court issued final judgment. One insurer filed a notice of appeal from the judgment to the U.S. Court of Appeals to the Third Circuit; as a result, several other insurers, Howden, the Corporation, and Air & Liquid filed notices of appeal. On November 2, 2016, the Corporation and Air & Liquid reached a settlement with one of the two insurer defendants that remained in the litigation as to them. Thereafter, the U.S. Court of Appeals issued an order of dismissal of the case on November 23, 2016 by agreement of all parties.

Asbestos Valuations

In 2006, the Corporation retained Hamilton, Rabinovitz & Associates, Inc. (HR&A), a nationally recognized expert in the valuation of asbestos liabilities, to assist the Corporation in estimating the potential liability for pending and unasserted future claims for Asbestos Liability. Based on this analysis, the Corporation recorded a reserve for Asbestos Liability claims pending or projected to be asserted through 2013 as of December 31, 2006. HR&A s analysis has been periodically updated since that time. Most recently, the HR&A analysis was updated in 2016, and additional reserves were established by the Corporation as of December 31, 2016 for Asbestos Liability claims pending or projected to be asserted through 2026. The methodology used by HR&A in its projection in 2016 of the operating subsidiaries liability for pending and unasserted potential future claims for Asbestos Liability, which is substantially the same as the methodology employed by HR&A in prior estimates, relied upon and included the following factors:

- HR&A s interpretation of a widely accepted forecast of the population likely to have been exposed to asbestos;
- epidemiological studies estimating the number of people likely to develop asbestos-related diseases;
- HR&A s analysis of the number of people likely to file an asbestos-related injury claim against the subsidiaries and the Corporation based on such epidemiological data and relevant claims history from January 1, 2014 to September 9, 2016;
- an analysis of pending cases, by type of injury claimed and jurisdiction where the claim is filed;
- an analysis of claims resolution history from January 1, 2014 to September 9, 2016 to determine the average settlement value of claims, by type of injury claimed and jurisdiction of filing; and
- an adjustment for inflation in the future average settlement value of claims, at an annual inflation rate based on the Congressional Budget Office s ten year forecast of inflation.

Using this information, HR&A estimated in 2016 the number of future claims for Asbestos Liability that would be filed through the year 2026, as well as the settlement or indemnity costs that would be incurred to resolve both pending and future unasserted claims through 2026. This methodology has been accepted by numerous courts.

In conjunction with developing the aggregate liability estimate referenced above, the Corporation also developed an estimate of probable insurance recoveries for its Asbestos Liabilities. In developing the estimate, the Corporation considered HR&A s projection for settlement or indemnity costs for Asbestos Liability and management s projection of associated defense costs (based on the current defense to indemnity cost ratio), as well as a number of additional factors. These additional factors included the Settlement Agreements then in effect, policy exclusions, policy limits, policy provisions regarding coverage for defense costs, attachment points, prior impairment of policies and gaps in the coverage, policy exhaustions, insolvencies among certain of the insurance carriers, and the nature of the underlying claims for Asbestos Liability asserted against the subsidiaries and the Corporation as reflected in the Corporation s asbestos claims database, as well as estimated erosion of insurance limits on account of claims against Howden arising out of the Products. In addition to consulting with the Corporation s outside legal counsel on these insurance matters, the Corporation consulted with a nationally-recognized insurance consulting firm it retained to assist the Corporation with certain policy allocation matters that also are among the several factors considered by the Corporation when analyzing potential recoveries from relevant historical insurance for Asbestos Liabilities. Based upon all of the factors considered by the Corporation, and taking into account the Corporation s analysis of publicly available information regarding the credit-worthiness of various insurers, the Corporation estimated the probable insurance recoveries for Asbestos Liability and defense costs through 2026. Although the Corporation believes that the assumptions employed in the insurance valuation were reasonable and previously consulted with its outside legal counsel and insurance consultant regarding

those assumptions, there are other assumptions that could have been employed that would have resulted in materially lower insurance recovery projections.

Based on the analyses described above, the Corporation s reserve at December 31, 2016 for the total costs, including defense costs, for Asbestos Liability claims pending or projected to be asserted through 2026 was $171 million of which approximately 70% was attributable to settlement costs for unasserted claims projected to be filed through 2026 and future defense costs. While it is reasonably possible that the Corporation will incur additional charges for Asbestos Liability and defense costs in excess of the

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amounts currently reserved, the Corporation believes that there is too much uncertainty to provide for reasonable estimation of the number of future claims, the nature of such claims and the cost to resolve them beyond 2026. Accordingly, no reserve has been recorded for any costs that may be incurred after 2026.

The Corporation s receivable at December 31, 2016 for insurance recoveries attributable to the claims for which the Corporation s Asbestos Liability reserve has been established, including the portion of incurred defense costs covered by the Settlement Agreements in effect through December 31, 2016, and the probable payments and reimbursements relating to the estimated indemnity and defense costs for pending and unasserted future Asbestos Liability claims, was $116 million.

The following table summarizes activity relating to insurance recoveries for each of the years ended December 31, 2016 and 2015.

	2016	2015
Insurance receivable asbestos, beginning of the year	**$ 125,423**	$ 140,651
Settlement and defense costs paid by insurance carriers [(1)]	**(23,138)**	(15,228)
Changes in estimated coverage	**13,660**	0
Insurance receivable asbestos, end of the year	**$ 115,945**	$ 125,423

(1) Settlement and defense costs paid by insurance carriers for 2016, includes a lump sum cash settlement with an insurance carrier of $9,808.

The insurance receivable recorded by the Corporation does not assume any recovery from insolvent carriers and a substantial majority of the insurance recoveries deemed probable was from insurance companies rated A (excellent) or better by A.M. Best Corporation. There can be no assurance, however, that there will not be further insolvencies among the relevant insurance carriers, or that the assumed percentage recoveries for certain carriers will prove correct. The difference between insurance recoveries and projected costs is not due to exhaustion of all insurance coverage for Asbestos Liability. The Corporation and the subsidiaries have substantial additional insurance coverage which the Corporation expects to be available for Asbestos Liability claims and defense costs that the subsidiaries and it may incur after 2026. However, this insurance coverage also can be expected to have gaps creating significant shortfalls of insurance recoveries against claims expense, which could be material in future years.

The amounts recorded by the Corporation for Asbestos Liabilities and insurance receivables rely on assumptions that are based on currently known facts and strategy. The Corporation s actual expenses or insurance recoveries could be significantly higher or lower than those recorded if assumptions used in the Corporation s or HR&A s calculations vary significantly from actual results. Key variables in these assumptions are identified above and include the number and type of new claims to be filed each year, the average cost of disposing of each such new claim, average annual defense costs, compliance by relevant parties with the terms of the Settlement Agreements, the resolution of remaining coverage issues with insurance carriers, and the solvency risk with respect to the relevant insurance carriers. Other factors that may affect the Corporation s Asbestos Liability and ability to recover under its insurance policies include uncertainties surrounding the litigation process from jurisdiction to jurisdiction and from case to case, reforms that may be made by state and federal courts, and the passage of state or federal tort reform legislation.

The Corporation intends to evaluate its estimated Asbestos Liability and related insurance receivables as well as the underlying assumptions on a regular basis to determine whether any adjustments to the estimates are required. Due to the uncertainties surrounding asbestos litigation and insurance, these regular reviews may result in the Corporation incurring future charges; however, the Corporation is currently unable to estimate such future charges. Adjustments, if any, to the Corporation s estimate of its recorded Asbestos Liability and/or insurance receivables could be material to operating results for the periods in which the adjustments to the liability or receivable are recorded, and to the Corporation s liquidity and consolidated financial position.

ENVIRONMENTAL

The Corporation is currently performing certain remedial actions in connection with the sale of real estate previously owned and appropriate reserves have been established.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

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PART II

ITEM 5. MARKET FOR REGISTRANT S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

The shares of common stock of Ampco-Pittsburgh Corporation are traded on the New York Stock Exchange (symbol AP). Cash dividends have been paid on common shares in every year since 1965.

	2016 Per Share			2015 Per Share		
	Common Stock Price			Common Stock Price		
Quarter	**High**	**Low**	**Dividends Declared**	High	Low	Dividends Declared
First	**$ 14.68**	**$ 8.88**	**$ 0.09**	$ 19.44	$ 16.19	$ 0.18
Second	**19.22**	**10.38**	**0.00**	17.63	14.51	0.18
Third	**13.65**	**9.34**	**0.18**	15.80	10.55	0.18
Fourth	**18.25**	**10.22**	**0.09**	12.57	9.66	0.18
Year	**19.22**	**8.88**	**0.36**	19.44	9.66	0.72

The number of registered shareholders at December 31, 2016 and 2015 equaled 392 and 373, respectively.

STOCK PERFORMANCE GRAPH

Comparison of Five Year Cumulative Total Return*

Standard & Poors 500 Index, NYSE Composite and Morningstar s Steel Industry

Performance Results through December 2016

Assumes $100 invested at the close of trading on the last trading day preceding January 1, 2011 in Ampco-Pittsburgh Corporation common stock, Standard & Poors 500 Index, NYSE Composite Index and Morningstar s Steel Industry group.

**Cumulative total return assumes reinvestment of dividends.*

In the above graph, the Corporation has used Morningstar s Steel Industry group for its peer comparison. The diversity of products produced by subsidiaries of the Corporation makes it difficult to match to any one product-based peer group. Although not totally comparable, the Steel Industry group was chosen because the largest percentage of the Corporation s sales is to the global steel industry. Historical stock price performance shown on the above graph is not necessarily indicative of future price performance.

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ITEM 6. SELECTED FINANCIAL DATA

Our selected financial data includes the results of operations of Åkers from March 3, 2016 and ASW from November 1, 2016, their respective dates of acquisition, and their financial position as of December 31, 2016. Accordingly, our selected data for 2016 is not fully comparable to earlier years and may not be indicative of our future results of operations or financial position. The information set forth below should be read in conjunction with Item 7, Management s Discussion and Analysis of Financial Condition and Results of Operations and Item 8, Financial Statements and Supplementary Data and notes thereto.

	Year Ended December 31,				
(dollars, except per share amounts, and shares outstanding in thousands)	**2016**	2015	2014	2013	2012
Net sales	**$ 331,866**	$ 238,480	$ 272,858	$ 281,050	$ 292,905
Net (loss) income attributable to Ampco-Pittsburgh[(1)]	**(79,820)**	1,373	(1,187)	12,437	8,355
Total assets	**565,889**	506,156	536,409	502,673	533,179
Long-term obligations	**25,389**	0	0	0	0
Ampco-Pittsburgh shareholders equity	**147,918**	211,423	205,148	234,995	192,093
Net (loss) income per common share attributable to Ampco-Pittsburgh:					
Basic[(1)]	**(6.68)**	0.13	(0.11)	1.20	0.81
Diluted	**(6.68)**	0.13	(0.11)	1.20	0.80
Per common share:					
Cash dividends declared	**0.36**	0.72	0.72	0.72	0.72
Ampco-Pittsburgh shareholders equity	**12.05**	20.25	19.68	22.65	18.57
Market price at year end	**16.75**	10.26	19.25	19.45	19.98
Weighted average common shares outstanding	**11,951**	10,435	10,405	10,358	10,338
Number of registered shareholders	**392**	373	400	423	454
Number of employees	**1,915**	1,027	1,076	1,109	1,178

(1) Net (loss) income and net (loss) income per common share (basic) includes:

2016 After-tax charges of $26,676 or $2.23 per common share principally for the write-off of goodwill in the Forged and Cast Engineered Products reporting unit deemed to be impaired (see Note 2 to Consolidated Financial Statements), $30,405 or $2.54 per common share to recognize a valuation allowance against certain deferred income tax assets (see Note 15 to Consolidated Financial Statements), and $4,565 or $0.38 per common share for estimated costs of asbestos-related litigation through 2026 net of estimated insurance recoveries (see Note 19 to Consolidated Financial Statements) and a settlement with an insurance carrier for an amount in excess of the receivable estimated.

2015 After-tax asbestos-related proceeds of $9,316 or $0.89 per common share received from two insurance carriers in rehabilitation.

2014 An after-tax charge of $2,916 or $0.28 per common share for estimated costs of asbestos-related litigation through 2024 net of estimated insurance recoveries.

2013 An after-tax credit of $10,621 or $1.03 per common share for estimated additional insurance recoveries expected to be available to satisfy asbestos liabilities through 2022 resulting from settlement agreements reached with various insurance carriers offset by an after-tax charge of $4,165 or $0.40 per common share to recognize an other-than-temporary impairment of our investment in a forged roll joint venture company for a net increase to net income of $6,456 or $0.63 per common share.

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ITEM 7. MANAGEMENT S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATION

(in thousands, except per share amounts)

EXECUTIVE OVERVIEW

Ampco-Pittsburgh Corporation and its subsidiaries (the Corporation) manufacture and sell highly engineered, high-performance specialty metal products and customized equipment utilized by industry throughout the world. We operate in two business segments the Forged and Cast Engineered Products segment and the Air and Liquid Processing segment.

Forged and Cast Engineered Products

The Forged and Cast Engineered Products segment historically consisted of Union Electric Steel Corporation (Union Electric Steel or UES) and Union Electric Steel UK Limited (UES-UK). In March 2016, UES acquired the stock of Åkers AB and certain of its affiliated companies, including Åkers AB s 60% equity interest in a Chinese joint venture company (collectively, Åkers). Åkers has been a leader in the production of forged and cast rolls since 1806. Collectively doing business as Union Electric Åkers, the segment produces ingot and forged products and cast products that service a wide variety of industries globally. They specialize in the production of forged hardened steel rolls used mainly for cold rolling by producers of steel, aluminum and other metals and cast rolls for hot and cold strip mills, medium/heavy section mills and plate mills in a variety of iron and steel qualities.

The segment also produces ingot and open-die forged products (other forging products) which are used in the oil and gas industry and the aluminum and plastic extrusion industries. In July 2015, UES acquired the assets of Alloys Unlimited & Processing, Inc. (AUP) and, in November 2016, the stock of ASW Steel Inc. (ASW). AUP is a supplier of specialty tool, alloy, and carbon steel round bar and is located in the United States. ASW is a specialty steel producer based in Canada. Both acquisitions support our diversification efforts in the open-die forging market.

The segment has operations in the United States, England, Sweden, Slovenia, Canada and an equity interest in three joint venture companies in China. Collectively, the segment primarily competes with European, Asian and North and South American companies in both domestic and foreign markets and distributes a significant portion of its products through sales offices located throughout the world. The consolidated financial statements of the Corporation include the financial position and results of operations of the acquired companies from their respective dates of acquisition.

The Forged and Cast Engineered Products segment has been operating at levels significantly below capacity due to an overall reduction in demand for roll product. Market conditions in the United States, Europe and other world regions remain difficult due to weaknesses in our customer base, which is suffering from excess steelmaking capacity and an over-supply of rolls worldwide. The strengthening of the U.S. dollar against most major currencies has further hampered opportunity. With the global steelmaking industry operating below capacity, customer emphasis has been on roll cost versus performance. Accordingly, pricing has suffered and profit margins have decreased. By the latter part of 2016, however, demand and pricing have begun to increase. Additionally, many of our customers have announced improved results which should lead to ongoing improvement in demand and pricing for us in the future. Efforts continue to diversify our other forging products. While weak crude oil pricing affected demand for the majority of the year, there has been some increase in sales activities during the fourth quarter.

Air and Liquid Processing

The Air and Liquid Processing segment includes Aerofin, Buffalo Air Handling and Buffalo Pumps, all divisions of Air & Liquid Systems Corporation (Air and Liquid), a wholly owned subsidiary of the Corporation. Aerofin produces custom-engineered finned tube heat exchange coils and related heat transfer products for a variety of industries including OEM/Commercial, fossil fuel power generation, nuclear power generation and industrial manufacturing. Buffalo Air Handling produces large custom-designed air handling systems for institutional (e.g., hospital, university), pharmaceutical and general industrial building markets. Buffalo Pumps manufactures centrifugal pumps for the fossil fuel power generation, marine defense and industrial refrigeration industries. The segment has operations in Virginia and New York with headquarters in Carnegie, Pennsylvania. The segment distributes a significant portion of its products through a common independent group of sales offices located throughout the United States and Canada.

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For the Air and Liquid Processing segment, business activity in the specialty centrifugal pump industry continues to be strong while a decline in the fossil-fueled power generation market and the OEM/Commercial market is negatively affecting our heat exchange business. The downturn in the fossil-fueled power generation market is due to a decline in spending for coal-fired power plants while the OEM/Commercial market is being impacted by lower spending and increased competition from low cost producers. Demand for custom air handling systems has improved while competitive pricing pressures continue. The focus for this segment is to grow revenues, increase margins, strengthen engineering and manufacturing capabilities, and continuing to improve the sales distribution network.

CONSOLIDATED RESULTS OF OPERATIONS OVERVIEW

The Corporation

		2016			2015			2014	
Net Sales:									
Forged and Cast Engineered Products	**$**	**247,652**	**75%**	$	152,267	64%	$	179,388	66%
Air and Liquid Processing		**84,214**	**25%**		86,213	36%		93,470	34%
Consolidated	**$**	**331,866**	**100%**	$	238,480	100%	$	272,858	100%
(Loss) Income from Operations:									
Forged and Cast Engineered Products[1]	**$**	**(42,878)**		$	(3,444)		$	4,380	
Air and Liquid Processing[2]		**5,123**			23,166			4,222	
Corporate costs		**(16,775)**			(14,675)			(8,522)	
Consolidated	**$**	**(54,530)**		$	5,047		$	80	
Backlog:									
Forged and Cast Engineered Products	**$**	**196,512**	**84%**	$	106,582	75%	$	131,118	78%
Air and Liquid Processing		**37,078**	**16%**		35,243	25%		36,830	22%
Consolidated	**$**	**233,590**	**100%**	$	141,825	100%	$	167,948	100%

(1) (Loss) income from operations for the Forged and Cast Engineered Products segment for 2016 includes a pre-tax charge of $26,676 principally for the write-off of goodwill in the Forged and Cast Engineered Products reporting unit deemed to be impaired (see Note 2 to Consolidated Financial Statements).

(2) (Loss) income from operations for the Air and Liquid Processing segment includes: for 2016, a net pre-tax charge of $4,565 for estimated costs of asbestos-related litigation through 2026 net of estimated insurance recoveries (see Note 19 to Consolidated Financial Statements) and a settlement with an insurance carrier for an amount in excess of the receivable estimated; for 2015, a pre-tax credit of $14,333 for asbestos-related proceeds received from two insurance carriers in rehabilitation; and, for 2014, a pre-tax charge of $4,487 for estimated costs of asbestos-related litigation through 2024 net of estimated insurance recoveries.

Consolidated net sales and (loss) income from operations for 2016 include the net sales and operating results of Åkers and ASW from their respective dates of acquisition in 2016, or approximately $128,602 of net sales and a loss of $37,207 from operations, including the write-off of goodwill in the Forged and Cast Engineered Products reporting unit deemed to be impaired. Consolidated (loss) income from operations for 2016 also includes a net pre-tax charge of $4,565 comprised of $5,632 for the estimated costs of asbestos-related litigation through 2026, net of estimated insurance recoveries, offset by $1,067 of asbestos-related proceeds received from a settlement with an insurance carrier in excess of the receivable amount estimated. By comparison, consolidated (loss) income from operations for 2015 includes pre-tax asbestos-related proceeds of $14,333 received from two insurance carriers in rehabilitation and 2014 includes a pre-tax charge of $4,487 for estimated costs of asbestos-related litigation through 2024 net of estimated insurance recoveries. Corporate expenses increased in the current year due to higher employee-related costs, including a full year effect of centralizing the back office functions, which transferred approximately $800 of additional costs from the operating entities to Corporate, and higher professional fees resulting primarily from the acquisition of Åkers and ASW. Corporate expenses increased in 2015 from 2014 primarily due to the effect of centralizing back office functions of approximately $1,600 and acquisition-related costs. Acquisition-related costs approximated $3,056 and $3,383 in 2016 and 2015, respectively. No significant acquisition costs were incurred in 2014. A discussion of sales, (loss) income from operations and backlog for the Corporation s two segments is included below.

Gross margin, excluding depreciation and amortization, as a percentage of net sales, was 16.7%, 17.8% and 19.9% for 2016, 2015 and 2014, respectively. The decrease is principally due to the acquisition of Åkers and unfavorable effects from purchase accounting. The

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decrease in 2015 from 2014 is primarily attributable to our Forged and Cast Engineered Products segment which was impacted by a lower volume of shipments, a reduction in the level of production and ongoing price concessions to remain competitive.

Selling and administrative expenses totaled $58,175 (17.5% of net sales), $39,510 (16.6% of net sales) and $37,380 (13.7% of net sales) for 2016, 2015 and 2014, respectively. The increase for 2016 is primarily due to the addition of Åkers and ASW, which approximated $17,145 including a reserve of $1,513 for a customer who filed for Chapter 11 bankruptcy protection, and higher Corporate expenses. The increase in 2015 from 2014 is principally attributable to acquisition-related costs of $3,383.

The charge for asbestos litigation in 2016 represents an extension of the estimated costs of pending and future asbestos claims, net of additional insurance recoveries, from 2024 to the end of 2026 partly offset by asbestos-related proceeds received from a settlement with an insurance carrier in excess of the amount estimated and included as an insurance receivable. The credit for asbestos litigation in 2015 represents asbestos-related proceeds received from two insurance carriers in rehabilitation which, because of their potential insolvency, were not included in the insurance receivable previously recorded. The charge for asbestos litigation in 2014 represents an extension of the estimated costs of pending and future asbestos claims, net of additional insurance recoveries, from 2022 to the end of 2024. The claims result from alleged personal injury from exposure to asbestos-containing components historically used in some products manufactured by certain companies which now operate as divisions of the Air and Liquid Processing segment. See Note 19 to Consolidated Financial Statements.

The charge for impairment in 2016 represents primarily the write-off of goodwill in the Forged and Cast Engineered Products reporting unit deemed to be impaired. Goodwill is not amortized but is tested for impairment at the reporting unit level at least annually, as of October 1, or whenever events and circumstances indicate the carrying amount may not be recoverable. In connection with our strategic planning process and goodwill impairment testing completed in the fourth quarter of 2016, we determined that goodwill in the Forged and Cast Engineered Products reporting unit was fully impaired primarily as a result of depressed market conditions.

Interest expense increased for the current year when compared to the prior years principally as a result of interest on the (1) notes issued in connection with the purchase of Åkers, (2) the loan payable to the non-controlling shareholder of the Åkers Chinese joint venture, and (3) the unused portion of the revolving credit facility.

Other income (expense) fluctuated primarily as a result of changes in foreign exchange losses and credits (charges) related to operations discontinued years ago. During the year, the U.S. dollar strengthened and the British pound sterling continued to fall, contributing, in part, to losses on foreign exchange transactions of approximately $(1,161) in 2016 in comparison to $(324) and $(488) for 2015 and 2014, respectively. Credits (charges) related to operations discontinued years ago equaled $82, $(144) and $(443), respectively.

Our income tax provision for 2016 includes valuation allowances against certain of our deferred income tax assets. To determine whether a valuation allowance was needed, we assessed available positive and negative evidence and estimated whether sufficient future taxable income would be generated to permit use of the existing deferred income tax assets. However, during 2016, we incurred three years of cumulative losses, inclusive of the acquired Åkers businesses as if the businesses were held during the entire three-year period. Such objective evidence limits our ability to consider other subjective evidence, such as projections for future growth and profitability. On the basis of this evaluation, we established valuation allowances of $30,405 to reduce the estimated portion of deferred income tax assets to an amount that is more likely than not to be realized. The valuation allowance is a non-cash charge and the deferred income tax assets remain available to offset future income tax payments. Additionally, if and when we return to a level of sustained profitability sufficient to conclude that it is more likely than not that deferred tax assets will be realized, we will reduce the valuation allowance accordingly.

Our U.S. federal statutory income tax rate equals 35%. The effective income tax rate for 2016 is higher than our federal statutory income rate principally due to the recognition of valuation allowances against certain of our deferred income tax assets and the write-off of goodwill, which is non-deductible for tax purposes until the associated entities are sold. The effective income tax rate for 2015 is higher than our federal statutory income rate due to the non-deductibility of acquisition-related costs, state income taxes and a lower statutory income tax rate in jurisdictions where foreign operations incurred a net loss (thereby generating less of a tax benefit). The effective income tax rate for 2014 is greater than our federal statutory income tax rate due to a reduction in current year earnings, which caused permanent adjustments to have a greater impact on the overall effective income tax rate, and the revaluation of deferred income tax assets associated with decreases in the state income tax rates for New York and Indiana.

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Equity gains (losses) in the Chinese joint venture represent Union Electric Steel s share of the income/losses of Union Electric Steel MG Roll Co., Ltd (UES-MG) and, for 2016, a gain on the sale of a portion of Union Electric Steel s interest in the joint venture (see Note 3 to Consolidated Financial Statements).

As a result of the above, for 2016, we incurred a net loss of $79,820, or $6.68 per common share, which includes after-tax charges of $26,676, or $2.23 per common share, principally for the write-off of goodwill in the Forged and Cast Engineered Products reporting unit deemed to be impaired; $30,405, or $2.54 per common share, for valuation allowances established against certain of our deferred income tax assets; and $4,565, or $0.38 per common share, for estimated costs of asbestos-related litigation through 2026 net of estimated insurance recoveries estimated (see Note 19 to Consolidated Financial Statements) and a settlement with an insurance carrier for an amount in excess of the receivable estimated. For 2015, we earned $1,373, or $0.13 per common share, which includes an after-tax credit of $9,316, or $0.89 per common share, for the net benefit of proceeds received from insurance carriers in rehabilitation. For 2014, we lost $1,187, or $0.11 per common share, which includes an after-tax charge of $2,916, or $0.28 per common share, for estimated costs of asbestos-related litigation through 2024 net of estimated insurance recoveries.

Forged and Cast Engineered Products

	2016	2015	2014
Net sales	**$ 247,652**	$ 152,267	$ 179,388
Operating (loss) income	**$ (42,878)**	$ (3,444)	$ 4,380
Backlog	**$ 196,512**	$ 106,582	$ 131,118

Net sales for 2016 include net sales of Åkers and ASW of $128,602. Net sales of legacy businesses decreased primarily as a result of an ongoing decline in traditional roll shipments (approximately $48,200 over the two-year period) and other forging products (approximately $3,600 over the two-year period). Additionally, the exchange rate used to translate sales of our U.K. operations from the British pound to the U.S. dollar continued to weaken, reducing 2016 net sales by approximately $4,500 when compared to 2015 and $8,500 over the two-year period.

Operating (loss) income includes the operating results of Åkers and ASW of approximately $(37,207), including the write-off of goodwill in the Forged and Cast Engineered Products reporting unit deemed to be impaired, integration-related restructuring expenses and unfavorable effects from purchase accounting. With respect to our legacy businesses, weaker margins for forged and cast roll shipments and other forging products further affected operating results by $3,003. While operating results were also impacted by a lower volume of shipments of cast rolls and other forging products, the effect was offset by a higher volume of forged roll shipments. Additionally, a full year benefit of centralized back office costs, which began in 2015 and transferred employee-related costs from the segment to Corporate, also improved segment earnings by an additional $700.

For 2015 versus 2014, the decrease in the volume of shipments impacted operating results by approximately $4,800. Weaker margins and an under-recovery of costs resulting from lower production levels adversely affected earnings by approximately $7,200. Lower freight and commission costs of approximately $1,100, collection of accounts receivable written off in the previous year of approximately $750 and savings from the centralization of back office functions of approximately $1,400 helped to offset the impact of lower volumes and weaker margins. The effect from the decrease in the exchange rates used to translate operating results of our U.K. operations from the British pound to the U.S. dollar operating was not significant to either of the years.

Backlog at December 31, 2016 includes backlog for Åkers and ASW of $88,590. Although order intake improved for both legacy forged and cast rolls during the fourth quarter of 2016, the benefit was offset by a lower exchange rate used to convert the backlog of our U.K. operations from the British pound to the U.S. dollar. The decrease in backlog at December 31, 2015 compared to December 31, 2014 is principally due to lower demand. As of December 31, 2016, approximately $11,890 of the backlog is expected to be released after 2017.

Air and Liquid Processing

	2016	2015	2014
Net sales	**$ 84,214**	$ 86,213	$ 93,470
Operating income	**$ 5,123**	$ 23,166	$ 4,222
Backlog	**$ 37,078**	$ 35,243	$ 36,830

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For 2016, net sales for the segment dropped by approximately 2% when compared to 2015 and 10% when compared to 2014. Sales of heat exchange coils fell by approximately 28% over the two-year period primarily attributable to a reduced level of shipments to the fossil-fueled utility, industrial and OEM/commercial markets resulting from lower demand and increased competition. Sales of air handling systems remained relatively flat over the three-year period. While demand improved, competitive pricing pressures continued. Sales of centrifugal pumps improved by approximately 10% over the two-year period principally due to a higher level of activity with U.S. Navy shipbuilders.

Operating income includes asbestos-related items in each of the years. For 2016, operating income includes a pre-tax charge of $5,632 for estimated costs of asbestos-related litigation through 2026, net of estimated insurance recoveries, offset by proceeds received from an asbestos-related insurance carrier greater than the receivable estimated of $1,067. For 2015, operating income includes $14,333 of proceeds received from two insurance carriers in rehabilitation which, because of their potential insolvency, were not included in the insurance receivable previously recorded. For 2014, operating income includes a pre-tax charge of $4,487 for estimated costs of asbestos-related litigation through 2024 net of estimated insurance recoveries. Despite the decline in net sales, operating income for 2016 and 2015 benefited principally from a better product mix, cost containment efforts and centralization of back office functions which transferred approximately $300 and $200, respectively, of employee-related costs from the segment to Corporate when compared to 2014.

Backlog at the end of 2016 improved from the previous two years as a result of an increase in orders for air handling units and pumps attributable to improved market demand. Backlog for heat exchange coils decreased from the previous two years primarily due to a decline in orders for the fossil-fueled utility, industrial and OEM/commercial markets. The majority of the year-end backlog is scheduled to ship in 2017.

LIQUIDITY AND CAPITAL RESOURCES

Net cash flows (used in) provided by operating activities for 2016 equaled $(5,634) compared to $20,505 and $19,975 for 2015 and 2014, respectively. In 2016, we recognized non-cash charges for: (1) the write-off of goodwill in the Forged and Cast Engineered Products reporting unit deemed to be impaired; (2) valuation allowances to reduce our deferred income tax assets to an amount that is more likely than not to be realized; and (3) the revaluation of our asbestos-related liabilities and insurance receivables. In 2014, we took a similar non-cash charge to adjust our asbestos-related liabilities and insurance receivables. While these non-cash charges impacted earnings, they did not affect cash flows by the same amount. Instead, since goodwill represents the excess of the purchase price of a business over the fair value of net tangible and intangible assets acquired and liabilities assumed, cash flow is affected at the time the consideration is paid. Additionally, the deferred income tax assets remain available to offset future income tax payments. Finally, the asbestos liability, net of insurance recoveries, will be paid over a number of years and will generate tax benefits. Net asbestos-related payments equaled $4,630, $3,971 and $3,642 in 2016, 2015 and 2014, respectively, and are expected to approximate $5,000 in 2017. Also, in 2016, we received proceeds of $1,067 from a settlement with an asbestos-related insurance carrier in excess of the receivable amount estimated and, in 2015, proceeds of $14,333 from two asbestos-related insurance carriers in rehabilitation.

Net cash flows used in investing activities were $40,878, $14,299 and $13,219 in 2016, 2015 and 2014, respectively. The purchase price for Åkers, after a post-closing purchase price adjustment made in accordance with the purchase agreement, approximated $74,155 and was comprised of $29,399 in cash, $22,619 in the form of three-year promissory notes, and 1,776,604 shares of common stock of the Corporation which, based on the closing price of our common stock as of the date of closing, had a fair value of $22,137. The notes bear interest at 6.5%, compounding annually, with principal and interest payable at maturity on March 3, 2019. The purchase price for ASW approximated $13,116, consisting of $3,500 in cash and $9,616 in the assumption of outstanding indebtedness which was repaid in 2017. See Note 22 to Consolidated Financial Statements. The purchase of AUP in 2015 approximated $5,000. The majority of the capital expenditures are for our Forged and Cast Engineered Products segment unit and, as of December 31, 2016, expected future capital expenditures approximated $4,006 which are anticipated to be spent over the next 12 months.

Net cash outflows from financing activities include the payment of dividends of $0.36 per common share during 2016 and $0.72 per common share in 2015 and 2014. During 2016, we incurred debt issuance costs associated primarily with our new five-year Revolving Credit and Security Agreement and had payment and borrowing activity associated with the debt of our acquired businesses. In 2014, stock options were exercised resulting in proceeds from the issuance of common stock and excess tax benefits.

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The effect of exchange rate changes on cash and cash equivalents is primarily attributable to the fluctuation of the British pound and Swedish krona against the U.S. dollar.

As a result of the above, cash and cash equivalents decreased by $56,543 in 2016 and ended the year at $38,579 in comparison to $95,122 and $97,098 at December 31, 2015 and 2014, respectively. Cash held by our foreign operations approximated $12,539, $10,785 and $9,479 at December 31, 2016, 2015 and 2014, respectively. Repatriation of foreign funds may result in us accruing and paying additional income tax; however, the majority of foreign funds is currently deemed to be permanently reinvested and no additional provision for income tax has been made. Funds on hand, funds generated from future operations and availability under our revolving credit facility (approximately $54,000 at December 31, 2016 which remained undrawn) are expected to be sufficient to finance our operational and capital expenditure requirements. While the revolving credit agreement limits the amount of distributions upstream, we have not historically relied on or have been dependent on distributions from our subsidiaries and are not expected to be in the future. Additionally, we had approximately $750 (£250 in the United Kingdom and   400 in Belgium) under short-term lines of credit at December 31, 2016.

We had the following contractual obligations outstanding as of December 31, 2016:

		Payments Due by Period				
	Total	**<1 year**	**1 3 years**	**3 5 years**	**>5 years**	**Other**
Debt[1]	**$ 50,053**	$ 12,898	$ 23,844	$ 4,120	$ 9,191	$ 0
Fixed Rate Interest[2]	**4,809**	50	4,752	7	0	0
Capital Lease Obligations	**2,161**	616	999	546	0	0
Operating Lease Obligations	**3,432**	719	1,100	809	804	0
Capital Expenditures	**4,006**	4,006	0	0	0	0
Pension and Other Postretirement Benefit Obligations[3]	**74,428**	3,831	16,156	23,389	31,052	0
Purchase Obligations[4]	**2,995**	2,963	16	16	0	0
Unrecognized Tax Benefits[5]	**236**	0	0	0	0	236
Total	**$ 142,120**	$ 25,083	$ 46,867	$ 28,887	$ 41,047	$ 236

(1) *Represents principal only. Although the Industrial Revenue Bonds (IRBs) begin to mature in 2020, the IRBs are remarketed periodically. If the IRBs are not able to be remarketed, the bondholders can put back the bonds to the Corporation and seek reimbursement from letters of credit which serve as collateral for the bonds. See Note 8 to Consolidated Financial Statements.*

(2) *Represents fixed rate interest only. Variable interest rates averaged less than 1% in the current year. See Note 8 to Consolidated Financial Statements.*

(3) *Represents estimated contributions to our pension and other postretirement plans. Actual required contributions are contingent on a number of variables including future investment performance of the plans   assets and may differ from these estimates. Contributions to the U.S. defined benefit plans are based on the projected funded status of the plans including anticipated normal costs, amortization of unfunded liabilities and an expected return on plan assets ranging between 6.90% and 7.75%. A significant portion of the U.S. defined benefit plans has been frozen as of December 31, 2016. With respect to the U.K. defined benefit plan, the Trustees and UES-UK have agreed to a recovery plan that estimates the amount of employer contributions, based on U.K. regulations, necessary to eliminate the funding deficit of the plan over an agreed period. See Note 9 to Consolidated Financial Statements.*

(4) *Represents primarily commitments by one of our Forged and Cast Engineered Products subsidiaries for the purchase of natural gas for 2017 covering approximately 24% of anticipated needs (see Note 13 to Consolidated Financial Statements) and commitments for scrap and alloys.*

(5) *Represents uncertain tax positions. Amount included as   Other   represents portion for which the period of cash settlement cannot be reasonably estimated. See Note 15 to Consolidated Financial Statements.*

With respect to environmental matters, we are currently performing certain remedial actions in connection with the sale of real estate previously owned and periodically incur costs to maintain compliance with environmental laws and regulations. Environmental exposures are difficult to assess and estimate for numerous reasons, including lack of reliable data, the multiplicity of possible solutions, the years of remedial and monitoring activity required, and the identification of new sites. However, we believe the potential liability for all environmental compliance measures of approximately $2,457 accrued at December 31, 2016 is considered adequate based on information known to date (see Note 20 to

Consolidated Financial Statements).

The nature and scope of our business brings us into regular contact with a variety of persons, businesses and government agencies in the ordinary course of business. Consequently, we and certain of our subsidiaries from time to time are named in various legal actions. Generally, we do not anticipate that our financial condition or liquidity will be materially affected by the costs of known, pending or threatened litigation (see Note 19 to Consolidated Financial Statements). However, claims have been asserted, principally against Air and Liquid, alleging personal injury from exposure to asbestos-containing components historically used in some products and there can be no assurance that future claims will not present significantly greater and longer lasting financial exposure than presently contemplated.

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OFF-BALANCE SHEET ARRANGEMENTS

Our off-balance sheet arrangements include operating leases, capital expenditures and purchase obligations disclosed in the contractual obligations table and the letters of credit unrelated to the Industrial Revenue Bonds as discussed in Note 10 to the Consolidated Financial Statements. These arrangements are not considered significant to our liquidity, capital resources, market risk or credit risk.

EFFECTS OF INFLATION

While inflationary and market pressures on costs are likely to be experienced, it is anticipated that ongoing improvements in manufacturing efficiencies and cost savings efforts will mitigate the effects of inflation on 2017 operating results. The ability to pass on increases in the price of commodities to the customer is contingent upon current market conditions with us potentially having to absorb some portion to all of the increase. Product pricing for the Forged and Cast Engineered Products segment is reflective of current costs with a majority of orders subject to a variable-index surcharge program which helps to protect the segment and its customers against the volatility in the cost of certain raw materials. Additionally, long-term labor agreements exist at each of the key locations (see Note 10 to Consolidated Financial Statements). Finally, commitments have been executed for natural gas usage and certain commodities (copper and aluminum) to cover a portion of orders in the backlog (see Note 13 to Consolidated Financial Statements).

APPLICATION OF CRITICAL ACCOUNTING POLICIES

We have identified critical accounting policies that are important to the presentation of our financial condition, changes in financial condition and results of operations and involve the most complex or subjective assessments. Critical accounting policies relate to assessing recoverability of property, plant and equipment and accounting for business combinations (including intangibles and goodwill and the recoverability thereof), pension and other postretirement benefits, litigation and loss contingencies, and income taxes.

Property, plant and equipment is reviewed for recoverability whenever events or circumstances indicate the carrying amount of the long-lived assets may not be recoverable. If the undiscounted cash flows generated from the use and eventual disposition of the assets are less than their carrying value, then the asset value may not be fully recoverable potentially resulting in a write-down of the asset value. Estimates of future cash flows are based on expected market conditions over the remaining useful life of the primary asset(s). Accordingly, assumptions are made about pricing, volume and asset-resale values. Actual results may differ from these assumptions. We believe the amounts recorded in the accompanying consolidated financial statements for property, plant and equipment are recoverable and are not impaired as of December 31, 2016.

Business combinations are accounted for under the purchase method of accounting. Accordingly, the amount paid for an acquisition is initially allocated to the tangible assets acquired and liabilities assumed based on their estimated fair values as of the date of acquisition. The purchase price in excess of net tangible assets acquire is then allocated to identifiable intangible assets based on detailed valuations. Any excess purchase price over the fair value of the net tangible and intangible assets acquired and liabilities assumed is allocated to goodwill.

Significant judgments and assumptions are required in determining the estimated fair value of assets acquired and liabilities assumed. We utilize third-party valuation specialists and actuaries to assist in determining the fair value of assets acquired and liabilities assumed based on information and assumptions provided by us. The valuation of purchased intangible assets is based upon estimates of future performance and cash flows of the acquired business. Each asset is measured at fair value from the perspective of a market participant. The valuation of employee benefit obligations is consistent with the critical accounting policy outlined below. Significant business and valuation assumptions used in the purchase price allocation include, but are not limited to, the valuation methodology, projected revenues and expenses and related growth rates, and discount rates. If different assumptions are used, it could materially impact the estimated fair values of assets acquired and liabilities assumed. Additionally, initial estimates of the fair value of assets acquired and liabilities assumed are provisional and could change as additional information is received. We finalize our valuations as soon as practicable, but not later than one year from the date of acquisition. Any subsequent changes to the purchase price allocations could result in a corresponding adjustment to goodwill. We believe the amounts recorded in the accompanying consolidated financial statements for the assets acquired and liabilities assumed are appropriate as of December 31, 2016.

Intangible assets with definite lives are amortized using the straight-line method over their estimated useful life, which is determined by identifying the period over which most of the cash flows are expected to be generated. Additionally, intangible assets, both definite and indefinite lived, are assessed for impairment at least annually, as of October 1, or whenever events or circumstances indicate the carrying amount may not be recoverable. If the undiscounted cash flows attributable to the assets are less than their carrying value, then the asset value may not be fully recoverable potentially resulting in a write-down of the asset value. In assessing recoverability, we make assumptions regarding estimated future cash flows and discount rates. If these estimates or related assumptions change in the future, we may be required to record an impairment charge. Also, if the estimate of an intangible asset s remaining useful life changes, we will amortize the remaining carrying value of the intangible asset prospectively over the revised remaining useful life. We believe the amounts recorded in the accompanying consolidated financial statements for intangible assets are recoverable and are not impaired as of December 31, 2016.

Goodwill is not amortized but is tested for impairment at the reporting unit level annually, as of October 1, or whenever events or circumstances indicate the carrying amount may not be recoverable. Determination of whether goodwill is impaired requires judgment, including: the identification of the reporting units; determination of the estimated fair value of each reporting unit; the assignment of assets, liabilities and goodwill to each reporting unit; and estimates and assumptions regarding future cash flows and discount rates. Assumptions in estimating future cash flows are subject to a high degree of judgment and complexity. A discounted cash flow model is used to determine the estimated fair value of the reporting units. Estimating fair value requires the use of significant unobservable inputs, representative of a Level 3 fair value measurement, including market growth and market share, sales volumes and prices, costs to produce, discount rate and estimated capital needs. We consider historical experience and available information at the time the fair values of our reporting units are estimated. Additionally, we use a third-party valuation specialist to assist with the impairment analyses. In connection with our testing in the current year, we determined that the goodwill reported in the Forged and Cast Engineered Products reporting unit was fully impaired, primarily due to depressed market conditions, and written off accordingly as of December 31, 2016.

See Note 2 to the Consolidated Financial Statements.

Accounting for pension and other postretirement benefits involves estimating the cost of benefits to be provided well into the future and attributing that cost over the time period each employee works. To accomplish this, input from our actuaries is evaluated and extensive use is made of assumptions about inflation, long-term rate of return on plan assets, longevity, rates of increases in compensation, employee turnover and discount rates. The curtailment of various U.S. defined benefit plans and amendment of various other postretirement benefit plans in 2015 and 2016 will help to mitigate the volatility in net periodic pension and other postretirement benefit costs resulting from changes in these assumptions.

The expected long-term rate of return on plan assets is an estimate of average rates of earnings expected to be earned on funds invested or to be invested to provide for the benefits included in the projected benefit obligation. Since these benefits will be paid over many years, the expected long-term rate of return is reflective of current investment returns and investment returns over a longer period. Also, consideration is given to target and actual asset allocations, inflation and real risk-free return. We believe the expected long-term rate of return ranging between 6.90% and 7.75% for our domestic plans and 5.40% for our UES-UK plan to be reasonable. Actual returns on plan assets for 2016 ranged between 4.71% and 7.96% for our domestic plans and 16.00% for our UES-UK plan. As part of the Åkers acquisition, we assumed the obligations of two foreign plans; however, these plans are not funded and the obligations are not significant.

The discount rates used in determining future pension obligations and other postretirement benefits for each of our plans are based on rates of return for high-quality fixed-income investments currently available and expected to be available during the period to maturity of pension and other postretirement benefits. High-quality fixed-income investments are defined as those investments which have received one of the two highest ratings given by a recognized rating agency with maturities of 10+ years. We believe the assumed discount rates ranging between 4.02% and 4.25% for our domestic plans, 3.90% and 4.13% for our other postretirement benefits plans and 2.50% and 2.65% for our foreign plans as of December 31, 2016 to be reasonable.

We believe that the amounts recorded in the accompanying consolidated financial statements related to pension and other postretirement benefits are based on appropriate assumptions although actual outcomes could differ. A percentage point decrease in the expected long-term rate of return would increase annual pension expense by approximately $2,200. A 1/4 percentage point

decrease in the discount rate would increase projected and accumulated benefit obligations by approximately $11,500. Conversely, an increase in the expected long-term rate of return would decrease annual pension expense and an increase in the discount rate would decrease projected and accumulated benefit obligations.

Litigation and loss contingency accruals are made when it is determined that it is probable that a liability has been incurred and the amount can be reasonably estimated. Specifically, we and certain of our subsidiaries are involved in various claims and lawsuits incidental to their businesses. In addition, claims have been asserted, principally against Air and Liquid, alleging personal injury from exposure to asbestos-containing components historically used in some products manufactured by certain companies which now operate as divisions of Air & Liquid. To assist us in determining whether an estimate could be made of the potential liability for pending and unasserted future claims for Asbestos Liability along with applicable insurance coverage, and the amounts of any estimates, we hire a nationally-recognized asbestos-liability expert and insurance consultant. Based on their analyses, reserves for probable and reasonably estimable costs of Asbestos Liabilities including defense costs and receivables for the insurance recoveries that are deemed probable are established. These amounts rely on assumptions which are based on currently known facts and strategy.

In 2016, we undertook a review of Asbestos Liability claims, defense costs and the likelihood for insurance recoveries. Key variables in these assumptions are summarized in Note 19 to the Consolidated Financial Statements and include the number and type of new claims to be filed each year, the average cost of disposing of each new claim, average annual defense costs, the resolution of coverage issues with insurance carriers, and the solvency risk with respect to the relevant insurance carriers. Other factors that may affect the Asbestos Liability and our ability to recover under our insurance policies include uncertainties surrounding the litigation process from jurisdiction to jurisdiction and from case to case, reforms that may be made by state and federal courts, and the passage of state or federal tort reform legislation. Actual expenses or insurance recoveries could be significantly higher or lower than those recorded if assumptions used in the calculations vary significantly from actual results.

We intend to evaluate the estimated Asbestos Liability and related insurance receivables as well as the underlying assumptions on a regular basis to determine whether any adjustments to the estimates are required. Due to the uncertainties surrounding asbestos litigation and insurance, these regular reviews may result in the incurrence of future charges; however, we are currently unable to estimate such future charges. Adjustments, if any, to our estimate of recorded Asbestos Liability and/or insurance receivables could be material to our operating results for the periods in which the adjustments to the liability or receivable are recorded, and to our liquidity and consolidated financial position when such liabilities are paid.

Accounting for income taxes includes our evaluation of the underlying accounts, permanent and temporary differences, our tax filing positions and interpretations of existing tax law. A valuation allowance is recorded against deferred income tax assets to reduce them to the amount that is more likely than not to be realized. In doing so, assumptions are made about the future profitability of our operations and the nature of that profitability. Actual results may differ from these assumptions. If we determined we would not be able to realize all or part of the deferred income tax assets in the future, an adjustment to the valuation allowance would be established resulting in a charge to net income (loss). Likewise, if we determined we would be able to realize deferred income tax assets in excess of the net amount recorded, we would release a portion of the existing valuation allowance resulting in a credit to net income (loss). During 2016, we established valuation allowances of $30,405 to reduce our deferred income tax assets to an amount that is more likely than not to be realized. As of December 31, 2016, we have net deferred income tax assets approximating $4,233.

We do not recognize a tax benefit in the financial statements related to a tax position taken or expected to be taken in a tax return unless it is more likely than not that the tax authorities will sustain the tax position solely on the basis of the position s technical merits. Consideration is given primarily to legislation and statutes, legislative intent, regulations, rulings and case law as well as their applicability to the facts and circumstances of the tax position when assessing the sustainability of the tax position. In the event a tax position no longer meets the more likely than not criteria, we would reverse the tax benefit by recognizing a liability and recording a charge to earnings. Conversely, if we subsequently determined that a tax position meets the more likely than not criteria, we would recognize the tax benefit by reducing the liability and recording a credit to earnings. As of December 31, 2016, based on information known to date, we believe the amount of unrecognized tax benefits of $236 for tax positions taken or expected to be taken in a tax return which may be challenged by the tax authorities is adequate.

See Note 15 to the Consolidated Financial Statements.

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RECENTLY IMPLEMENTED ACCOUNTING PRONOUNCEMENTS

In September 2015, the Financial Accounting Standards Board (FASB) issued ASU 2015-16, *Simplifying the Accounting for Measurement-Period Adjustments*, which simplifies the treatment of adjustments, identified during the measurement period, to provisional amounts recognized in connection with a business combination. The guidance requires the acquirer to record, and disclose, the effect on earnings resulting from changes in depreciation, amortization, or other income effects due to changes to the provisional amounts, calculated as if the accounting had been completed as of the acquisition date. The amended guidance became effective for us on January 1, 2016. See Note 2 to Consolidated Financial Statements.

In April 2015, the FASB issued ASU 2015-03, *Simplifying the Presentation of Debt Issuance Costs*, which requires entities to present debt issuance costs related to a recognized debt liability as a direct deduction from the carrying amount of that debt liability. However, ASU 2015-03 did not address presentation or subsequent measurement of debt issuance costs related to line-of-credit arrangements. In August 2015, the FASB subsequently issued ASU 2015-15, *Presentation and Subsequent Measurement of Debt Issuance Costs Associated with Line-of-Credit Arrangements*, which permits an entity to defer and present debt issuance costs as an asset and amortize the deferred debt issuance costs ratably over the term of the line-of-credit arrangement, regardless of whether there are any outstanding borrowings on the line-of-credit arrangement. The amended guidance became effective for us on January 1, 2016. See Note 8 to Consolidated Financial Statements.

RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments*, which clarifies guidance on the classification of certain cash receipts and payments in the statement of cash flows. The amended guidance will be effective for interim and annual periods beginning after December 15, 2017; however, early adoption is permitted if all provisions are adopted in the same period. We are currently evaluating the impact the guidance will have on the presentation of our cash flow statement. It will not, however, affect our financial position or liquidity.

In May 2016, April 2016, March 2016 and May 2014, the FASB issued ASUs 2016-12, 2016-10, 2016-08 and 2014-09, respectively, *Revenue from Contracts with Customers*, which provides a common revenue standard for U.S. GAAP and IFRS. The guidance establishes principles for reporting information about the nature, amount, timing and uncertainty of revenue and cash flows arising from a company s contracts with customers. It requires companies to apply a five-step model when recognizing revenue relating to the transfer of goods or services to customers in an amount that reflects the consideration that the company expects to be entitled to receive for those goods and services. It also requires comprehensive disclosures regarding revenue recognition. The guidance becomes effective for us January 1, 2018. While we are currently assessing the impact the guidance will have on our business processes, business and accounting systems and consolidated financial statements and disclosures, we anticipate there will be some changes to revenue recognition for certain of our customer contracts. We expect to complete our analysis, including implementing any necessary changes to existing business processes and systems to accommodate these new standards, during 2017.

In March 2016, the FASB issued ASU 2016-09, *Improvements to Employee Share-Based Payment Accounting*, which requires all income tax effects of awards to be recognized in the income statement when the awards vest or are settled. The guidance also requires presentation of excess tax benefits as an operating activity on the statement of cash flows rather than as a financing activity, and can be applied retroactively or prospectively. The amended guidance will be effective for us January 1, 2017. We do not expect the guidance will have a significant impact on our financial position, operating results and liquidity.

In February 2016, the FASB issued ASU 2016-02, *Leases*, which requires lessees to recognize assets and liabilities on the balance sheet for the rights and obligations created by all leases with a term of more than one year. Accounting by lessors will remain similar to existing generally accepted accounting principles. The guidance becomes effective for us January 1, 2019. We are currently evaluating the impact the guidance will have on our financial position, operating results and liquidity.

In July 2015, the FASB issued ASU 2015-11, *Simplifying the Measurement of Inventory*, which revises the measurement of inventory at the lower of cost or market. Currently, market could be replacement cost, net realizable value, or net realizable value less an approximately normal profit margin. In accordance with ASU 2015-11, an entity will measure inventory at the lower of cost and net realizable value which is defined as the estimated selling price in the ordinary course of business less reasonably predictable costs of completion, disposal and transportation. The amendment does not apply to inventory that is measured using last-in, first out (LIFO). The guidance becomes effective for us January 1, 2017 and will not have a significant impact on our financial position, operating results and liquidity.

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ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We view our primary market risk exposures to be changes in foreign currency exchange rates and commodity prices. To manage certain foreign currency exchange exposures, our policy is to hedge a portion of our foreign currency denominated sales and receivables, primarily U.S. sales denominated in euros and U.K. sales denominated in U.S. dollars and euros. Although strengthening of the U.S. dollar could result in a lower volume of exports from the United States and at reduced margins, exports of our foreign operations may increase and gross margins might improve. Additionally, strengthening of the British pound could result in a lower volume of exports from the United Kingdom and at reduced margins; however, exports for our domestic operations may increase and gross margins might improve. A weakening of the euro, as compared to the U.S. dollar and British pound, could result in a lower volume of exports and at reduced margins.

To reduce the effect of price changes for certain of our raw materials and energy, we enter into contracts for particular commodities (copper and aluminum) and purchase a portion of our energy usage in advance. Based on estimated annual purchases, a 10% fluctuation in commodity prices (including electricity, natural gas, steel scrap and ferroalloys) would have impacted 2016 and 2015 by approximately $8,000 (or approximately $11,000 if the Åkers and ASW acquisitions were completed as of the beginning of the year) and $6,500, respectively. There is no guarantee that fluctuations in commodity prices will be limited to 10%. The ability to pass on increases in the price of commodities to the customer is contingent upon current market conditions with us potentially having to absorb a portion to all of such increase. However, a sales price surcharge mechanism is in place with a majority of the customers of our Forged and Cast Engineered Products segment which helps to protect against the volatility in the cost of certain raw materials.

See also Note 13 to the Consolidated Financial Statements.

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ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

CONSOLIDATED BALANCE SHEETS

(in thousands, except par value)	December 31, **2016**	2015
Assets		
Current assets:		
Cash and cash equivalents	**$ 38,579**	$ 95,122
Receivables, less allowance for doubtful accounts of $2,228 in 2016 and $983 in 2015	**72,233**	44,877
Inventories	**83,579**	59,734
Insurance receivable asbestos	**13,000**	17,000
Other current assets	**14,073**	2,949
Total current assets	**221,464**	219,682
Property, plant and equipment, net	**214,408**	146,913
Insurance receivable asbestos	**102,945**	108,423
Deferred income tax assets	**4,824**	20,569
Investments in joint ventures	**2,019**	3,097
Intangible assets net	**11,601**	1,193
Other noncurrent assets	**8,628**	6,279
Total assets	**$ 565,889**	$ 506,156
Liabilities and Shareholders Equity		
Current liabilities:		
Accounts payable	**$ 37,104**	$ 13,959
Accrued payrolls and employee benefits	**20,166**	9,183
Debt current portion	**26,825**	13,311
Asbestos liability current portion	**18,000**	21,000
Other current liabilities	**42,197**	23,880
Total current liabilities	**144,292**	81,333
Employee benefit obligations	**91,947**	63,702
Asbestos liability	**153,181**	148,849
Deferred income tax liabilities	**591**	0
Long-term debt	**25,389**	0
Other noncurrent liabilities	**655**	849
Total liabilities	**416,055**	294,733
Commitments and contingent liabilities (Note 10)		
Shareholders equity:		
Common stock par value $1; authorized 20,000 shares; issued and outstanding 12,271 shares in 2016 and 10,440 shares in 2015	**12,271**	10,440
Additional paid-in capital	**151,089**	128,840
Retained earnings	**45,443**	129,742
Accumulated other comprehensive loss	**(60,885)**	(57,599)
Total Ampco-Pittsburgh shareholders equity	**147,918**	211,423
Noncontrolling interest	**1,916**	0
Total shareholders equity	**149,834**	211,423
Total liabilities and shareholders equity	**$ 565,889**	$ 506,156

See Notes to Consolidated Financial Statements.

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CONSOLIDATED STATEMENTS OF OPERATIONS

	For The Year Ended December 31,		
(in thousands, except per share amounts)	**2016**	2015	2014
Net sales	**$ 331,866**	$ 238,480	$ 272,858
Operating costs and expenses:			
Costs of products sold (excluding depreciation and amortization)	**276,496**	196,091	218,597
Selling and administrative	**58,175**	39,510	37,380
Depreciation and amortization	**20,463**	11,787	11,818
Charge (credit) for asbestos litigation	**4,565**	(14,333)	4,487
Charges for impairment	**26,676**	0	0
Loss on disposition of assets	**21**	378	496
	386,396	233,433	272,778
(Loss) income from operations	**(54,530)**	5,047	80
Other income (expense):			
Investment-related income	**481**	174	171
Interest expense	**(2,397)**	(226)	(236)
Other net	**(1,074)**	(475)	(907)
	(2,990)	(527)	(972)
(Loss) income before income taxes and equity gains (losses) in Chinese joint venture	**(57,520)**	4,520	(892)
Income tax (provision) benefit	**(22,712)**	(2,633)	766
Equity income (losses) in Chinese joint venture, including gain on sale (Note 3)	**423**	(514)	(1,061)
Net (loss) income	**(79,809)**	1,373	(1,187)
Less: Net income attributable to noncontrolling interest	**11**	0	0
Net (loss) income attributable to Ampco-Pittsburgh	**$ (79,820)**	$ 1,373	$ (1,187)
Net (loss) income per common share attributable to Ampco-Pittsburgh:			
Basic	**$ (6.68)**	$ 0.13	$ (0.11)
Diluted	**$ (6.68)**	$ 0.13	$ (0.11)
Weighted average number of common shares outstanding:			
Basic	**11,951**	10,435	10,405
Diluted	**11,951**	10,447	10,405

See Notes to Consolidated Financial Statements.

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CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

(in thousands)	For The Year Ended December 31, **2016**	2015	2014
Net (loss) income	**$ (79,809)**	$ 1,373	$ (1,187)
Other comprehensive (loss) income, net of income tax where applicable:			
Adjustments for changes in:			
Foreign exchange translation	**(14,580)**	(3,967)	(4,703)
Unrecognized employee benefit costs (including effects of foreign currency translation)	**9,397**	10,713	(21,392)
Unrealized holding gains (losses) on marketable securities	**405**	(239)	88
Fair value of cash flow hedges	**398**	(475)	(323)
Reclassification adjustments for items included in net (loss) income:			
Amortization of unrecognized employee benefit costs	**1,910**	4,740	3,458
Realized gains from sale of marketable securities	**(1,038)**	(53)	(111)
Realized losses from settlement of cash flow hedges	**108**	435	95
Other comprehensive (loss) income	**(3,400)**	11,154	(22,888)
Comprehensive (loss) income	(83,209)	12,527	(24,075)
Less: Comprehensive loss attributable to noncontrolling interest	**(103)**	0	0
Comprehensive (loss) income attributable to Ampco-Pittsburgh	**$ (83,106)**	$ 12,527	$ (24,075)

See Notes to Consolidated Financial Statements.

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CONSOLIDATED STATEMENTS OF SHAREHOLDERS EQUITY

(in thousands, except per share amounts)	Common Stock	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Noncontrolling Interest	Total
Balance January 1, 2014	$ 10,373	$ 125,852	$ 144,635	$ (45,865)	$ 0	$ 234,995
Stock-based compensation		835				835
Comprehensive loss:						
Net loss			(1,187)			(1,187)
Other comprehensive loss				(22,888)		(22,888)
Comprehensive loss						(24,075)
Issuance of common stock including excess tax benefits of $60	53	839				892
Cash dividends ($0.72 per share)			(7,499)			(7,499)
Balance, December 31, 2014	10,426	127,526	135,949	(68,753)	0	205,148
Stock-based compensation		1,103				1,103
Comprehensive income:						
Net income			1,373			1,373
Other comprehensive income				11,154		11,154
Comprehensive income						12,527
Issuance of common stock including excess tax benefits of $0	14	211				225
Cash dividends ($0.72 per share)			(7,580)			(7,580)
Balance December 31, 2015	10,440	128,840	129,742	(57,599)	0	211,423
Noncontrolling interest associated with Åkers acquisition (Note 2)					2,019	2,019
Stock-based compensation		1,482				1,482
Comprehensive loss:						
Net (loss) income			(79,820)		11	(79,809)
Other comprehensive loss				(3,286)	(114)	(3,400)
Comprehensive loss					(103)	(83,209)
Issuance of common stock including excess tax benefits of $0	1,831	20,767				22,598
Cash dividends ($0.36 per share)			(4,479)			(4,479)
Balance December 31, 2016	**$ 12,271**	**$ 151,089**	**$ 45,443**	**$ (60,885)**	**$ 1,916**	**$ 149,834**

See Notes to Consolidated Financial Statements.

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CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)	For The Year Ended December 31, 2016	2015	2014
Cash flows from operating activities:			
Net (loss) income	**$ (79,809)**	$ 1,373	$ (1,187)
Adjustments to reconcile net (loss) income to net cash flows from operating activities:			
Depreciation and amortization	**20,463**	11,787	11,818
Charges for impairment	**26,676**	0	0
Charge (credit) for asbestos litigation	**5,631**	0	4,487
Deferred income tax provision, including valuation allowance	**23,407**	(2,302)	(4,556)
Difference between pension and other post retirement expense and contributions	**(1,948)**	4,972	5,248
Stock-based compensation	**2,332**	1,328	1,102
Equity (income) losses in Chinese joint venture, including gain on sale (Note 3)	**(423)**	514	1,061
Provisions for bad debts and inventories	**2,348**	862	2,343
Provision for warranties net of settlements	**(1,015)**	(159)	(36)
Excess tax benefits from the exercise of stock options	**0**	0	(60)
Loss on disposition of assets	**21**	378	496
Gain on sale of long-term marketable securities	**(1,404)**	0	0
Other net	**(279)**	577	51
Changes in assets/liabilities:			
Receivables	**5,697**	9,391	(6,863)
Inventories	**8,308**	(4,527)	7,125
Other assets, including insurance receivable asbestos	**20,466**	15,300	18,161
Accounts payable	**(8,819)**	(3,003)	1,588
Accrued payrolls and employee benefits	**1,051**	452	(938)
Other liabilities, including asbestos liability	**(28,337)**	(16,438)	(19,865)
Net cash flows (used in) provided by operating activities	**(5,634)**	20,505	19,975
Cash flows from investing activities:			
Purchases of property, plant and equipment	**(10,566)**	(9,407)	(13,309)
Purchase of Åkers AB, net of cash acquired (Note 2)	**(27,031)**	0	0
Purchase of ASW Steel Inc., net of cash acquired (Note 2)	**(3,265)**	0	0
Purchase of Alloys Unlimited & Processing, Inc.	**0**	(5,000)	0
Purchases of long-term marketable securities	**(4,662)**	(631)	(843)
Proceeds from the sale of long-term marketable securities	**4,646**	728	748
Other	**0**	11	185
Net cash flows used in investing activities	**(40,878)**	(14,299)	(13,219)
Cash flows from financing activities:			
Dividends paid	**(5,206)**	(7,512)	(7,489)
Debt issuance costs (Note 8)	**(1,247)**	0	0
Repayment of debt	**(962)**	0	0
Proceeds from credit facility	**9,756**	0	0
Payments on credit facility	**(11,217)**	0	0
Proceeds from the issuance of common stock	**0**	0	581
Excess tax benefits from the exercise of stock options	**0**	0	60
Net cash flows used in financing activities	**(8,876)**	(7,512)	(6,848)
Effect of exchange rate changes on cash and cash equivalents	**(1,155)**	(670)	(720)
Net decrease in cash and cash equivalents	**(56,543)**	(1,976)	(812)
Cash and cash equivalents at beginning of year	**95,122**	97,098	97,910
Cash and cash equivalents at end of year	**$ 38,579**	$ 95,122	$ 97,098
Supplemental disclosures of cash flow information:			
Income tax payments	**$ 4,404**	$ 3,247	$ 3,418
Interest payments	**957**	225	237
Non-cash investing activities:			
Purchases of property, plant and equipment in accounts payable	**$ 996**	$ 329	$ 387
Non-cash financing activities:			
Issuance of common stock to acquire net assets of Åkers (Note 2)	**$ 22,137**	$ 0	$ 0
Issuance of debt to acquire net assets of Åkers (Note 2)	**22,619**	0	0

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(in thousands, except share and per share amounts)

Description of Business

Ampco-Pittsburgh Corporation and its subsidiaries (the Corporation) manufacture and sell highly engineered, high performance specialty metal products and customized equipment utilized by industry throughout the world. It operates in two business segments, the Forged and Cast Engineered Products segment and the Air and Liquid Processing segment.

The *Forged and Cast Engineered Products* segment historically consisted of Union Electric Steel Corporation (Union Electric Steel or UES) and Union Electric Steel UK Limited (UES-UK). UES is a forged hardened steel roll producer headquartered in Carnegie, Pennsylvania, with three manufacturing facilities in Pennsylvania and one in Indiana. UES-UK is a cast roll producer located in Gateshead, England. In March 2016, UES acquired the stock of Åkers AB and certain of its affiliated companies, including Åkers AB s 60% equity interest in a Chinese joint venture company (collectively, Åkers). Headquartered in Styckebruk, Sweden, Åkers has been a leader in the production of forged and cast rolls since 1806. Collectively doing business as Union Electric Åkers, the group produces ingot and forged products and cast products that service a wide variety of industries globally. They specialize in the production of forged hardened steel rolls used mainly for cold rolling by manufacturers of steel, aluminum and other metals and cast rolls for hot and cold strip mills, medium/heavy section mills and plate mills in a variety of iron and steel qualities.

In addition, Union Electric Steel produces ingot and open-die forged products (other forging products) which are used in the oil and gas industry and the aluminum and plastic extrusion industries. In July 2015, UES acquired the assets of Alloys Unlimited & Processing, Inc. (AUP) and, in November 2016, the stock of ASW Steel Inc. (ASW). AUP is a supplier of specialty tool, alloy, and carbon steel round bar located in Ohio. ASW is a specialty steel producer based in Ontario, Canada. Both acquisitions support the Corporation s diversification efforts in the open-die forging market.

The segment primarily competes with European, Asian and North and South American companies in both domestic and foreign markets and distributes a significant portion of its products through sales offices located throughout the world. The consolidated financial statements of the Corporation include the financial position and results of operations of the acquired companies from their respective dates of acquisition.

The *Air and Liquid Processing* segment includes Aerofin, Buffalo Air Handling and Buffalo Pumps, all divisions of Air & Liquid Systems Corporation (Air and Liquid), a wholly-owned subsidiary of the Corporation. Aerofin produces custom-engineered finned tube heat exchange coils and related heat transfer products for a variety of industries including OEM/Commercial, fossil fuel, nuclear power generation and industrial process. Buffalo Air Handling produces large custom-designed air handling systems for institutional (e.g., hospital, university), pharmaceutical and general industrial building markets. Buffalo Pumps manufactures centrifugal pumps for the fossil fuel power generation, marine defense and industrial refrigeration industries. The segment has operations in Virginia and New York with headquarters in Carnegie, Pennsylvania. The segment distributes a significant portion of its products through a common independent group of sales offices located throughout the United States and Canada.

NOTE 1 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

The Corporation s accounting policies conform to accounting principles generally accepted in the United States of America. The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant items subject to estimates and assumptions include assessing the carrying value of long-lived assets, determining the fair value of assets acquired and liabilities assumed in a business combination (including intangibles and goodwill and the recoverability thereof), valuing the assets and obligations related to employee benefit plans, accounting for loss contingencies associated with claims and lawsuits, and accounting for income taxes. Actual results could differ from those estimates. A summary of the significant accounting policies followed by the Corporation is presented below. Certain amounts for the preceding periods have been reclassified for comparative purposes.

Consolidation

The accompanying consolidated financial statements include the assets, liabilities, revenues and expenses of all majority owned subsidiaries and joint ventures over which the Corporation exercises control and, when applicable, entities for which the Corporation

has a controlling financial interest or is the primary beneficiary. Investments in joint ventures where the Corporation owns 20% to 50% of the voting stock and has the ability to exercise significant influence over the operating and financial policies of the joint venture are accounted for using the equity method of accounting. Investments in joint ventures whereby the Corporation does not have the ability to exercise significant influence over the operating and financial policies of the joint venture are accounted for using the cost method of accounting. Investments in joint ventures are reviewed for impairment whenever events or circumstances indicate the carrying amount of the investment may not be recoverable. If the estimated fair value of the investment is less than the carrying amount and such decline is determined to be other than temporary, then the investment may not be fully recoverable potentially resulting in a write-down of the investment value. Intercompany accounts and transactions are eliminated.

Cash and Cash Equivalents

Securities with purchased original maturities of three months or less are considered to be cash equivalents. The Corporation maintains cash and cash equivalents at various financial institutions which may exceed federally insured amounts.

Inventories

Inventories are valued at the lower of cost or market. Cost includes the cost of raw materials, direct labor and overhead for those items manufactured but not yet sold or for which title has not yet transferred. Fixed production overhead is allocated to inventories based on normal capacity of the production facilities. In periods of abnormally high production, the amount of fixed overhead allocated to each unit of production is decreased so that inventories are not measured above cost. The amount of fixed overhead allocated to inventories is not increased as a consequence of abnormally low production or idle plant. Costs for abnormal amounts of spoilage, handling costs and freight costs are charged to expense when incurred. Cost of domestic raw materials, work-in-process and finished goods inventories is primarily determined by the last-in, first-out (LIFO) method. Cost of domestic supplies and foreign inventories is determined primarily by the first-in, first-out (FIFO) method.

Property, Plant and Equipment

Property, plant and equipment purchased new is recorded at cost with depreciation computed using the straight-line method over the following estimated useful lives: land improvements 15 to 20 years, buildings 25 to 50 years and machinery and equipment 3 to 25 years. Property, plant and equipment acquired as part of a business combination is recorded at its estimated fair value with depreciation computed using the straight-line method over the estimated remaining useful lives based in part on third party valuations. Expenditures that extend economic useful lives are capitalized. Routine maintenance is charged to expense. Gains or losses are recognized on retirements or disposals. Property, plant and equipment are reviewed for impairment at least annually, or whenever events or changes in circumstances indicate the carrying amount of the asset may not be recoverable. If the undiscounted cash flows generated from the use and eventual disposition of the assets are less than their carrying value, then the asset value may not be fully recoverable potentially resulting in a write-down of the asset value. Estimates of future cash flows are based on expected market conditions over the remaining useful life of the primary asset(s). In addition, the remaining depreciation period for the impaired asset would be reassessed and, if necessary, revised. Proceeds from government grants are recorded as a reduction in the purchase price of the underlying assets and amortized against depreciation over the lives of the related assets.

Intangible Assets

Intangible assets primarily consist of developed technology, customer relationships and trade name. Intangible assets with definite lives are amortized using the straight-line method over their estimated useful life, which is determined by identifying the period over which most of the cash flows are expected to be generated. Additionally, intangible assets, both definite and indefinite lived, are reviewed for impairment at least annually, as of October 1, or whenever events or changes in circumstances indicate the carrying amount of the asset may not be recoverable. If the undiscounted cash flows attributable to the assets are less than their carrying value, then the asset value may not be fully recoverable potentially resulting in a write-down of the asset value. Also, if the estimate of an intangible asset s remaining useful life changes, the remaining carrying value of the intangible asset will be amortized prospectively over the revised remaining useful life.

Goodwill

Goodwill represents the consideration paid in a business combination in excess of the values assigned to the net assets of the acquired entity. Goodwill is not amortized but is tested for impairment at the reporting unit level annually, as of October 1, or whenever events or changes in circumstances indicate the carrying amount may not be recoverable. Goodwill is evaluated for impairment either

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qualitatively or quantitatively using a two-step approach. Under step one, the fair value of the reporting unit is determined using both a market and income approach. If the fair value of the reporting unit is less than the carrying value of the reporting unit, then goodwill may be impaired causing the second step of the analysis to be completed. Under step two, the fair value of the reporting is allocated to the assets and liabilities of the reporting unit. The unallocated fair value (implied goodwill), if any, is compared to the recorded value of goodwill. If the implied goodwill exceeds the recorded value of goodwill, then goodwill is deemed not to be impaired. If the implied goodwill is less than the recorded value of goodwill, then goodwill is deemed to be impaired by the amount that goodwill exceeds implied goodwill. Estimating the fair value of a reporting unit requires the use of significant unobservable inputs, representative of a Level 3 fair value measurement, including market growth and market share, sales volumes and prices, costs to produce, discount rate and estimated capital needs. Management considers historical experience and all available information at the time the fair value of the reporting unit is estimated. Assumptions used to estimate future cash flows are subject to a high degree of judgment and complexity.

Debt Issuance Costs

Debt issuance costs are amortized as interest expense over the scheduled maturity period of the debt. The costs related to our line-of-credit arrangement are amortized over the term of the arrangement, regardless of whether there are any outstanding borrowings. Unamortized debt issuance costs are either recognized as a direct deduction from the carrying amount of the related debt or, if related to a line-of-credit facility, as an other noncurrent asset.

Product Warranty

Provisions for product warranties are recognized at the time the underlying sale is recorded. The provision is based on historical experience as a percentage of sales adjusted for potential claims when a liability is probable and for known claims.

Employee Benefit Plans

Funded Status

If the fair value of the plan assets exceeds the projected benefit obligation, the over-funded projected benefit obligation is recognized as an asset (prepaid pensions) on the consolidated balance sheet. Conversely, if the projected benefit obligation exceeds the fair value of the plan assets, the under-funded projected benefit obligation is recognized as a liability (employee benefit obligations) on the consolidated balance sheet. Gains and losses arising from the difference between actuarial assumptions and actual experience and unamortized prior service costs are recorded as a separate component of accumulated other comprehensive loss.

Net Periodic Pension and Other Postretirement Costs

Net periodic pension and other postretirement costs includes service cost, interest cost, expected rate of return on the market-related value of plan assets, amortization of prior service costs and recognized actuarial gains or losses. When actuarial gains or losses exceed 10% of the greater of the projected benefit obligation or the market-related value of plan assets, they are amortized to net periodic pension and other postretirement costs over the average remaining service period of employees expected to receive benefits under the plan. When the actuarial gains or losses are less than 10% of the greater of the projected benefit obligation or the market-related value of plan assets, they are included in net periodic pension and other postretirement costs indirectly as a result of lower/higher interest costs arising from a decrease/increase in the projected benefit obligation. The market-related value of plan assets is determined using a five-year moving average which recognizes 20% of unrealized gains and losses each year.

Other Comprehensive Income (Loss)

Other comprehensive income (loss) includes changes in assets and liabilities from non-owner sources including foreign currency translation adjustments, unamortized prior service costs and unrecognized actuarial gains and losses associated with employee benefit plans, unrealized holding gains and losses on securities designated as available for sale, and changes in the fair value of derivatives designated and effective as cash flow hedges. Certain components of other comprehensive income (loss) are presented net of income tax. Foreign currency translation adjustments exclude the effect of income tax since earnings of non-U.S. subsidiaries are deemed to be reinvested for an indefinite period of time.

Reclassification adjustments are amounts which are realized during the year and, accordingly, are deducted from other comprehensive income (loss) in the period in which they are included in net income (loss) or when a transaction no longer qualifies as a cash flow hedge. Foreign currency translation adjustments are included in net income (loss) upon sale or upon complete or substantially

complete liquidation of an investment in a foreign entity. With respect to employee benefit plans, unamortized prior service costs are included in net income (loss) either immediately upon curtailment of the employee benefit plan or over the average remaining service period of employees expected to receive benefits and unrecognized actuarial gains and losses are included in net income (loss) indirectly as a result of lower/higher interest costs arising from a decrease/increase in the projected benefit obligation. Unrealized holding gains and losses on securities are included in net income (loss) when the underlying security is sold. Changes in the fair value of derivatives are included in net income (loss) when the projected sale occurs or, if a foreign currency purchase contract, over the estimated useful life of the underlying asset.

Foreign Currency Translation

Assets and liabilities of the Corporation s foreign operations are translated at year-end exchange rates and the statements of operations are translated at the average exchange rates for the year. Gains or losses resulting from translating foreign currency financial statements are accumulated as a separate component of accumulated other comprehensive loss until the entity is sold or substantially liquidated.

Revenue Recognition

Revenue from sales is recognized when persuasive evidence of an arrangement exists, delivery has occurred, the sales price is fixed or determinable, and collectability is reasonably assured. Persuasive evidence of an arrangement identifies the final understanding between the parties as to the specific nature and terms of the agreed-upon transaction that creates enforceable obligations. It can be in the form of an executed purchase order from the customer, sales agreement issued by the Corporation or a similar arrangement deemed to be normal and customary business practice for that particular customer or class of customer (collectively, a sales agreement).

Delivery and performance is considered to have occurred when the customer has taken title and assumed the risks and rewards of ownership of the product. Typically, this occurs when the product is shipped to the customer (i.e., FOB shipping point), delivered to the customer (i.e., FOB destination), or, for foreign sales, in accordance with trading guidelines known as Incoterms. Incoterms are standard trade definitions used in international contracts and are developed, maintained and promoted by the ICC Commission on Commercial Law and Practice.

The sales price required to be paid by the customer is fixed or determinable from the sales agreement. It is not subject to refund or adjustment except for a variable-index surcharge provision which increases or decreases, as applicable, the selling price of a rolling mill roll for corresponding changes in the published index cost of certain raw materials. The variable-index surcharge is recognized as revenue when the corresponding revenue for the inventory is recognized. Likelihood of collectability is assessed prior to acceptance of an order. There are no customer-acceptance provisions other than customer inspection and testing prior to shipment. Post-shipment obligations are insignificant.

Amounts billed to the customer for shipping and handling are recorded within net sales and the related costs are recorded within costs of products sold (excluding depreciation and amortization). Amounts billed for taxes assessed by various government authorities (e.g., sales tax, value-added tax, etc.) are excluded from the determination of net income (loss) and instead are recorded as a liability until remitted to the government authority.

Stock-Based Compensation

Stock-based compensation, such as stock options, restricted stock units and performance shares, is recognized over the vesting period based upon the fair value of the award at the date of grant. For stock options, the fair value is determined by the BlackScholes option pricing model and is expensed over the vesting period of three years. For restricted stock units, the fair value is equal to the closing price of the Corporation s common stock on the New York Stock Exchange (NYSE) on the date of grant and is expensed over the vesting period of three years. For performance share awards that vest subject to a performance condition, the fair value is equal to the closing price of the Corporation s stock on the NYSE on the date of grant. For performance share awards that vest subject to a market condition, fair value is determined using a Monte Carlo simulation model. The fair value of performance share awards is expensed over the performance period when it is probable that the performance condition will be achieved.

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Derivative Instruments

Derivative instruments which include forward exchange (for foreign currency sales and purchases) and futures contracts are recorded on the consolidated balance sheet as either an asset or a liability measured at their fair value. The accounting for changes in the fair value of a derivative depends on the use of the derivative. To the extent that a derivative is designated and effective as a cash flow hedge of an exposure to future changes in value, the change in the fair value of the derivative is deferred in accumulated other comprehensive loss. Any portion considered to be ineffective, including that arising from the unlikelihood of an anticipated transaction to occur, is reported as a component of earnings (other income/expense) immediately.

Upon occurrence of the anticipated sale, the foreign currency sales contract designated and effective as a cash flow hedge is de-designated as a fair value hedge and the change in fair value previously deferred in accumulated other comprehensive loss is reclassified to earnings (net sales) with subsequent changes in fair value recorded as a component of earnings (other income/expense). Upon occurrence of the anticipated purchase, the foreign currency purchase contract is settled and the change in fair value deferred in accumulated other comprehensive loss is reclassified to earnings (depreciation and amortization expense) over the life of the underlying assets. Upon settlement of a futures contract, the change in fair value deferred in accumulated other comprehensive loss is reclassified to earnings (costs of products sold, excluding depreciation and amortization) when the corresponding inventory is sold and revenue is recognized. To the extent that a derivative is designated and effective as a hedge of an exposure to changes in fair value, the change in the derivative s fair value will be offset in the statement of operations by the change in the fair value of the item being hedged and is recorded as a component of earnings (other income/expense). Cash flows associated with the derivative instruments are recorded as a component of operating activities on the consolidated statement of cash flows.

The Corporation does not enter into derivative transactions for speculative purposes and, therefore, holds no derivative instruments for trading purposes.

Fair Value

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants as of the measurement date. A hierarchy of inputs is used to determine fair value measurements with three levels. Level 1 inputs are quoted prices in active markets for identical assets or liabilities and are considered the most reliable evidence of fair value. Level 2 inputs are observable prices that are not quoted on active exchanges. Level 3 inputs are unobservable inputs used for measuring the fair value of assets or liabilities.

Legal Costs

Legal costs expected to be incurred in connection with loss contingencies are accrued when such costs are probable and estimable.

Income Taxes

Income taxes are recognized during the year in which transactions enter into the determination of financial statement income. Deferred income tax assets and liabilities are recognized for the future tax consequences of temporary differences between the book carrying amount and the tax basis of assets and liabilities including net operating loss carryforwards. Unremitted earnings of the Corporation s non-U.S. subsidiaries and affiliates are deemed to be permanently reinvested and, accordingly, no deferred income tax liability is recorded. A valuation allowance is provided against a deferred income tax asset when it is more likely than not the asset will not be realized. Similarly, if a determination is made that it is more likely than not the deferred income tax asset will be realized, the related valuation allowance would be reduced and a benefit to earnings would be recorded. Penalties and interest are recognized as a component of the income tax provision.

Tax benefits are recognized in the financial statements for tax positions taken or expected to be taken in a tax return when it is more likely than not that the tax authorities will sustain the tax position solely on the basis of the position s technical merits. Consideration is given primarily to legislation and statutes, legislative intent, regulations, rulings and case law as well as their applicability to the facts and circumstances of the tax position when assessing the sustainability of the tax position. In the event a tax position no longer meets the more likely than not criteria, the tax benefit is reversed by recognizing a liability and recording a charge to earnings. Conversely, if a tax position subsequently meets the more likely than not criteria, a tax benefit would be recognized by reducing the liability and recording a credit to earnings.

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Earnings Per Common Share

Basic earnings per common share is computed by dividing net income (loss) by the weighted average number of common shares outstanding for the period. The computation of diluted earnings per common share is similar to basic earnings per common share except that the denominator is increased to include the dilutive effect of the net additional common shares that would have been outstanding assuming exercise of outstanding stock awards, calculated using the treasury stock method. The computation of diluted earnings per share would not assume the exercise of an outstanding stock award if the effect on earnings per common share would be antidilutive. Similarly, the computation of diluted earnings per share would not assume the exercise of outstanding stock awards if the Corporation incurred a net loss since the effect on earnings per common share would be antidilutive. The weighted average number of common shares outstanding assuming exercise of dilutive stock awards was 11,951,181 for 2016, 10,447,066 for 2015 and 10,404,744 for 2014. Weighted-average outstanding stock awards excluded from the diluted earnings per common share calculation, since the effect would have been antidilutive, were 1,163,396 for 2016, 1,138,287 for 2015 and 1,242,545 for 2014.

Recently Implemented Accounting Pronouncements

In September 2015, the Financial Accounting Standards Board (FASB) issued ASU 2015-16, *Simplifying the Accounting for Measurement-Period Adjustments*, which simplifies the treatment of adjustments, identified during the measurement period, to provisional amounts recognized in connection with a business combination. The guidance requires the acquirer to record, and disclose, the effect on earnings resulting from changes in depreciation, amortization, or other income effects due to changes to the provisional amounts, calculated as if the accounting had been completed as of the acquisition date. The amended guidance became effective for the Corporation January 1, 2016. See Note 2.

In April 2015, the FASB issued ASU 2015-03, *Simplifying the Presentation of Debt Issuance Costs*, which requires entities to present debt issuance costs related to a recognized debt liability as a direct deduction from the carrying amount of that debt liability. However, ASU 2015-03 did not address presentation or subsequent measurement of debt issuance costs related to line-of-credit arrangements. In August 2015, the FASB subsequently issued ASU 2015-15, *Presentation and Subsequent Measurement of Debt Issuance Costs Associated with Line-of-Credit Arrangements*, which permits an entity to defer and present debt issuance costs as an asset and amortize the deferred debt issuance costs ratably over the term of the line-of-credit arrangement, regardless of whether there are any outstanding borrowings on the line-of-credit arrangement. The amended guidance became effective for the Corporation January 1, 2016. See Note 8.

Recently Issued Accounting Pronouncements

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments*, which clarifies guidance on the classification of certain cash receipts and payments in the statement of cash flows. The amended guidance will be effective for interim and annual periods beginning after December 15, 2017; however, early adoption is permitted if all provisions are adopted in the same period. The Corporation is currently evaluating the impact the guidance will have on the presentation of its cash flow statement. It will not, however, affect the Corporation s financial position or liquidity.

In May 2016, April 2016, March 2016 and May 2014, the FASB issued ASUs 2016-12, 2016-10, 2016-08 and 2014-09, respectively, *Revenue from Contracts with Customers*, which provides a common revenue standard for U.S. GAAP and IFRS. The guidance establishes principles for reporting information about the nature, amount, timing and uncertainty of revenue and cash flows arising from a company s contracts with customers. It requires companies to apply a five-step model when recognizing revenue relating to the transfer of goods or services to customers in an amount that reflects the consideration that the company expects to be entitled to receive for those goods and services. It also requires comprehensive disclosures regarding revenue recognition. The guidance becomes effective for the Corporation January 1, 2018. While the Corporation is currently assessing the impact the guidance will have on its business processes, business and accounting systems and consolidated financial statements and disclosures, it anticipates there will be some changes to revenue recognition for certain of its customer contracts. The Corporation currently expects to complete its analysis, including implementing any necessary changes to existing business processes and systems to accommodate these new standards, during 2017.

In March 2016, the FASB issued ASU 2016-09, *Improvements to Employee Share-Based Payment Accounting*, which requires all income tax effects of awards to be recognized in the income statement when the awards vest or are settled and will be applied on a prospective basis. The guidance also requires presentation of excess tax benefits as an operating activity on the statement of cash

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flows rather than as a financing activity, and can be applied retroactively or prospectively. The amended guidance will be effective for the Corporation January 1, 2017. The Corporation does not expect the guidance will have a significant impact on its financial position, operating results and liquidity.

In February 2016, the FASB issued ASU 2016-02, *Leases*, which requires lessees to recognize assets and liabilities on the balance sheet for the rights and obligations created by all leases with a term of more than one year. Accounting by lessors will remain similar to existing generally accepted accounting principles. The guidance becomes effective for the Corporation January 1, 2019. The Corporation is currently evaluating the impact the guidance will have on its financial position, operating results and liquidity.

In July 2015, the FASB issued ASU 2015-11, *Simplifying the Measurement of Inventory*, which revises the measurement of inventory at the lower of cost or market. Currently, market could be replacement cost, net realizable value, or net realizable value less an approximately normal profit margin. In accordance with ASU 2015-11, an entity will measure inventory at the lower of cost and net realizable value which is defined as the estimated selling price in the ordinary course of business less reasonably predictable costs of completion, disposal and transportation. The amendment does not apply to inventory that is measured using last-in, first out (LIFO). The guidance becomes effective for the Corporation January 1, 2017 and will not have a significant impact on its financial position, operating results and liquidity.

NOTE 2 ACQUISITIONS:

Acquisition of Åkers

On March 3, 2016, the Corporation acquired 100% of the voting equity interest of Åkers from Altor Fund II GP Limited. The purchase price, after the post-closing purchase price adjustment made in accordance with the purchase agreement of $3,100, approximated $74,155 and was comprised of $29,399 in cash, $22,619 in the form of three-year promissory notes (Note 8), and 1,776,604 shares of common stock of the Corporation which, based on the closing price of the Corporation s common stock as of the date of closing, had a fair value of $22,137.

The acquisition adds roll production facilities in Sweden, the United States, Slovenia, and China; a number of sales offices; and a service capability in the United States. It enables cast roll production in the United States, forged roll production in Europe, and a low-cost product alternative for customers.

Operating results of the acquired entities are included in the Forged and Cast Engineered Products segment from the date of acquisition. For the ten months ended December 31, 2016, net sales for Åkers approximated $121,079 and loss before income taxes, including the effects of purchase accounting, approximated $10,130.

The Corporation s financial position as of March 31, 2016, included the acquired assets and assumed liabilities of Åkers at their provisional fair value estimates. Since the initial disclosure, adjustments have been made to the provisional fair value estimates as follows:

- Recorded the post-closing purchase price adjustment which reduced the outstanding principal balance of the three-year promissory notes by $3,100;
- Finalized the valuations of property, plant and equipment which increased the fair value of property, plant and equipment by $3,700;
- Completed a separate valuation of the Chinese joint venture company which reduced the value of the noncontrolling interest by $9,600;
- Finalized valuations of intangible assets, resolved pre-acquisition contingencies and recalculated deferred income taxes which, collectively, approximated $7,400.

None of these adjustments had a material impact on the Corporation s consolidated statement of operations for 2016.

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The resulting fair value of assets acquired and liabilities assumed as of the date of acquisition is as follows:

Current assets (excluding inventories)	$ 41,703
Inventories	30,332
Property, plant and equipment	71,871
Intangible assets	11,784
Other noncurrent assets	8,068
Current liabilities	(71,690)
Noncurrent liabilities	(43,153)
Net assets acquired	48,915
Noncontrolling interest	(2,019)
Goodwill	27,259
Base purchase price	$ 74,155

The fair values for property, plant and equipment, intangible assets and noncontrolling interest were based, in part, on third party valuations which have been finalized as of December 31, 2016. The fair value of obligations assumed in connection with the employee benefit plans were actuarially determined. Intangible assets consist of $4,429 for developed technology, $4,736 for customer relationships, and $2,619 for trade name. The economic life of the acquired intangible assets is estimated to be 5 years for developed technology, 20 years for customer relationships, and indefinite for the trade name.

Included in current liabilities is a loan payable to the noncontrolling shareholder of the Chinese joint venture company which, with accrued interest, approximated $7,468 as of the date of acquisition (see Note 8).

Goodwill is not amortized but is tested for impairment at the reporting unit level annually, as of October 1, or whenever events or changes in circumstances indicate the carrying amount may not be recoverable. Based on the first step of the two-step quantitative goodwill impairment test performed as of October 1, 2016, the Corporation determined that the carrying value of the Forged and Cast Engineered Products reporting unit was greater than its estimated fair value, and the second step of the two-step quantitative goodwill impairment test was performed to determine the amount of the impairment charge.

For purposes of determining the goodwill impairment, the Corporation estimated the fair value of each reporting unit using both market and income approaches, which includes the use of significant unobservable inputs, representative of a Level 3 fair value measurement, such as market growth and market share, sales volumes and prices, costs to produce, discount rate and estimated capital needs. The market approach consists of the guideline public company method which is a valuation technique where the fair value is calculated based on market prices obtained from a detailed market analysis of publicly traded companies that provide a reasonable basis of comparison for each reporting unit. The income approach is a valuation technique where the fair value is calculated based on forecasted future cash flows within the projection period discounted to the present value with appropriate risk adjusted discount rates, which represent the weighted-average cost of capital for each reporting unit.

As a result of the second step evaluation, the Corporation determined that the goodwill reported in the Forged and Cast Engineered Products reporting unit was fully impaired, primarily due to depressed market conditions and limitations inherent in its current market capitalization, and, accordingly, recorded a goodwill impairment charge of $26,261 for the year ended December 31, 2016. The goodwill impairment charge represents a full impairment and differs from the amount recognized as of the acquisition date due to changes in foreign currency exchange rates used to translate goodwill from the entities local currency to the U.S. dollar.

Acquisition of ASW

On November 1, 2016, the Corporation acquired 100% of the voting equity interest of ASW from CK Pearl Fund, Ltd., CK Pearl Fund L.P. and White Oak Strategic Master Fund, L.P. The purchase price of $13,116 consisted of $3,500 in cash and $9,616 in the assumption of outstanding indebtedness. The estimated fair value of assets acquired and liabilities assumed as of the date of the acquisition is summarized below.

Current assets (excluding inventories)	$ 6,525
Inventories	6,956
Property, plant and equipment	10,310
Current liabilities	(10,675)
Outstanding indebtedness	(9,616)
Base purchase price	$ 3,500

The estimated fair values primarily for property, plant and equipment and pre-acquisition contingencies are provisional amounts based, in part, on third party valuations and are expected to be finalized by June 30, 2017. For the two months ended December 31, 2016, net sales for ASW approximated $7,523 and loss before income taxes approximated $1,781.

Acquisition-Related Transaction Costs

Acquisition-related transaction costs of $3,056 and $3,383 for the year ended December 31, 2016 and 2015, respectively, were incurred relating principally to the purchase of Åkers and ASW and are included in selling and administrative costs.

Pro Forma Financial Information for the Åkers and ASW Acquisitions (unaudited)

The following financial information presents the combination of the results of operations of Ampco, Åkers and ASW as though the acquisition date for both of the business combinations had occurred as of January 1, 2015. Pro forma adjustments have been made to (1) include the net incremental depreciation and amortization expense associated with recording property, plant and equipment and definite-lived intangible assets at fair value and (2) remove debt-related expenses associated with previous debt facilities not assumed by the Corporation. The following pro forma financial information is presented for informational purposes only and is not necessarily indicative of the results of operations that would have been achieved had the acquisition occurred at the beginning of 2015:

	Year Ended December 31,	
	2016	2015
Net sales	$ 393,243	$ 440,265
Loss before income taxes (includes noncontrolling interest)	$ (63,498)	$ (11,945)
Net loss attributable to Ampco-Pittsburgh	$ (85,778)	$ (24,740)
Net loss per common share (basic) attributable to Ampco-Pittsburgh	$ (6.94)	$ (2.03)

Other Acquisition

On July 29, 2015, the Corporation acquired the assets of AUP. The purchase price of $5 million was funded by available cash. The pro forma impact on Corporation s net sales and loss before income taxes was not significant to its consolidated results for 2015.

NOTE 3 INVESTMENTS IN JOINT VENTURES:

As of December 31, 2016, the Corporation has interests in three joint ventures:

Shanxi Åkers TISCO Roll Co., Ltd. (ATR) a cast roll joint venture in China for which the Corporation accounts using the consolidated method of accounting. ATR principally manufactures and sells cast rolling mill rolls for the hot strip mill, steckel mill and medium plate mill.

Union Electric Steel MG Roll Co., Ltd (UES-MG) a forged roll joint venture in China for which the Corporation accounts using the equity method of accounting. UES-MG principally manufactures and sells forged backup rolling mill rolls of a size and weight currently that UES is not currently able to produce.

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Jiangsu Gongchang Roll Co., Ltd (Gongchang) a cast roll joint venture in China for which the Corporation accounts using the cost method of accounting. Gongchang principally manufactures and sells cast rolling mill rolls for hot and cold strip mills, medium/heavy section mills and plate mills.

ATR

In 2007, Åkers AB entered into an agreement with Taiyuan Iron & Steel Co., Ltd. (TISCO) to form ATR, with Åkers AB owning 59.88% and TISCO owning 40.12%. Since Åkers AB is the majority shareholder and has voting rights proportional to its ownership interest, Åkers AB is considered the primary beneficiary and, accordingly, accounts for its investment in ATR on the consolidated method of accounting.

UES-MG

In 2007, a subsidiary of UES entered into an agreement with Maanshan Iron & Steel Company Limited (Maanshan) to form UES-MG, with UES owning 49% and Maanshan owning 51%. Both companies contributed cash for their respective interests (which equated to $14,700 for UES). In November 2016, in connection with an equity restructuring of UES-MG, UES transferred 16% of its equity interest in UES-MG to Gongchang for $2,400, payable in installments over the next three years.

UES has not guaranteed any of the obligations of the joint venture; accordingly, its maximum exposure of loss is limited to its remaining investment. Since UES is a minority shareholder and allocation of earnings and voting rights is proportional to ownership interests, UES is not considered the primary beneficiary and, accordingly, accounts for its interest in the joint venture under the equity method of accounting. Prior to the restructuring, the overall financial strength of the joint venture was weak with a significant reliance on the majority shareholder or entities controlled by the majority shareholder to provide financing and working capital. In addition, a significant portion of its sales to date has been to the majority shareholder or entities controlled by the majority shareholder and the majority of its raw materials purchases has been from the majority shareholder or entities controlled by the majority shareholder. The Corporation will continue to monitor the carrying value of the investment to determine if an impairment charge is necessary. The carrying amount of the investment at December 31, 2016 was less than $700.

The Corporation recognizes its share of earnings and losses of UES-MG in its consolidated statements of operations. As a result of the transfer of a portion of its equity interest in the joint venture, the Corporation recognized its share of earnings (49%) from October 1, 2015 through the date of transfer, November 2016, which approximated $111. Losses of the joint venture for the twelve-month period ended September 30, 2015 and 2014 approximated $(1,050) and $(2,165), respectively, Assets, liabilities and shareholders equity of the joint venture as of November 30, 2016, and September 30, 2015 are summarized below. The difference between the carrying amount of the investment and the value of the underlying equity in the net assets of the joint venture relates primarily to an impairment charge recognized in 2013 and elimination of intercompany profit on the sale of technology from UES to the joint venture in earlier years which will be recognized when realized outside of the controlled group.

	2016	2015
Assets:		
Current assets (includes receivables from related parties of $187 and $935, respectively)	**$ 7,856**	$ 8,332
Noncurrent assets	**16,080**	28,993
	$ 23,936	$ 37,325
Liabilities and Shareholders Equity:		
Current liabilities (includes liabilities to related parties of $3,651 and $17,230, respectively)	**$ 4,551**	$ 17,455
Noncurrent liabilities (includes liabilities to related parties of $813 and $0, respectively)	**813**	0
Shareholders equity	**18,572**	19,870
	$ 23,936	$ 37,325

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Gongchang

The Corporation has a 24% interest in Gongchang which is recorded at cost, or $1,340. The Corporation does not participate in the management or daily operation of Gongchang, has not guaranteed any of its obligations and has no ongoing responsibilities to it. Dividends may be declared by the Board of Directors of the joint venture after allocation of after-tax profits to various funds equal to the minimum amount required under Chinese law. Approximately $395 of dividends were declared and received in 2016. No dividends were declared or received in 2015 or 2014.

NOTE 4 INVENTORIES:

	2016	2015
Raw materials	**$ 23,964**	$ 18,314
Work-in-progress	**29,198**	21,583
Finished goods	**20,046**	9,897
Supplies	**10,371**	9,940
	$ 83,579	$ 59,734

At December 31, 2016 and 2015, approximately 45% and 60%, respectively, of the inventories were valued using the LIFO method. The LIFO reserve approximated $(15,139) and $(24,647) at December 31, 2016 and 2015, respectively. During each of the years, inventory quantities decreased for various locations resulting in a liquidation of LIFO layers which were at lower costs. The effect of the liquidations was to decrease costs of products sold (excluding depreciation and amortization) by approximately $936, $216 and $2,196 for 2016, 2015 and 2014, respectively, which reduced net loss by approximately $936 or $0.08 per common share for 2016, increased net income by approximately $141 or $0.01 per common share for 2015, and reduced net loss by approximately $1,427 or $0.14 per common share for 2014.

NOTE 5 PROPERTY, PLANT AND EQUIPMENT:

	2016	2015
Land and land improvements	**$ 11,747**	$ 5,223
Buildings	**66,017**	44,570
Machinery and equipment	**323,684**	266,358
Construction-in-process	**2,595**	3,566
Other	**7,495**	7,774
	411,538	327,491
Accumulated depreciation and amortization	**(197,130)**	(180,578)
	$ 214,408	$ 146,913

The majority of the assets of the Corporation, except real property including the land and building of UES-UK, is pledged as collateral for the Corporation s Revolving Credit and Security Agreement (see Note 8). Land and buildings of UES-UK, equal to approximately $2,556 (£2,072) at December 31, 2016, are held as collateral by the trustees of the UES-UK defined benefit pension plan (see Note 9). The gross value of assets under capital lease and the related accumulated amortization as of December 31, 2016, approximated $3,610 and $691, respectively.

NOTE 6 INTANGIBLE ASSETS:

	2016	2015
Customer relationships	**$ 6,244**	$ 1,245
Developed technology	**4,248**	0
Trade name	**2,537**	0
	13,029	1,245
Accumulated amortization	**(1,428)**	(52)
	$ 11,601	$ 1,193

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The following summarizes changes in intangible assets for the year ended December 31:

	2016	2015
Balance at the beginning of the year	**$ 1,193**	$ 0
Changes in intangible assets	**11,784**	1,245
Amortization of intangible assets	**(1,106)**	(52)
Other, primarily impact from changes in foreign currency exchange rates	**(270)**	0
Balance at the end of the year	**$ 11,601**	$ 1,193

Changes during the year primarily represent intangible assets identified as part of the Åkers acquisition. Intangible assets include an indefinite-lived trade name of $2,537 as of December 31, 2016, that is not subject to amortization. The estimated future amortization expense of identifiable intangible assets is $1,150 for 2017, $1,150 for 2018, $1,150 for 2019, $1,150 for 2020, $485 for 2021 and $3,979 thereafter.

NOTE 7 OTHER CURRENT LIABILITIES:

	2016	2015
Customer-related liabilities	**$ 21,564**	$ 12,195
Accrued interest payable	**2,274**	3
Income taxes payable	**0**	3,256
Accrued sales commissions	**1,693**	1,506
Other	**16,666**	6,920
	$ 42,197	$ 23,880

Customer-related liabilities include liabilities for product warranty claims and deposits received on future orders. The following summarizes changes in the liability for product warranty claims for the year ended December 31:

	2016	2015	2014
Balance at the beginning of the year	**$ 6,358**	$ 6,672	$ 6,899
Acquisitions opening balance sheet liability for warranty claims	**7,130**	0	0
Satisfaction of warranty claims	**(4,297)**	(2,452)	(2,335)
Provision for warranty claims	**3,282**	2,293	2,300
Other, primarily impact from changes in foreign currency exchange rates	**(952)**	(155)	(192)
Balance at the end of the year	**$ 11,521**	$ 6,358	$ 6,672

NOTE 8 BORROWING ARRANGEMENTS:

In May 2016, the Corporation entered into a five-year Revolving Credit and Security Agreement (the Agreement) with a syndicate of banks. The Agreement provides for a senior secured asset-based revolving credit facility that replaces the Corporation s existing line of credit and letter of credit facilities. The Agreement provides for initial borrowings not to exceed $100,000 with an option to increase the credit facility by an additional $50,000 at the request of the Corporation and with the approval of the banks. In October, 2016, the Corporation amended the Agreement to provide additional intercompany lending capacity to its Excluded Subsidiaries and expand available currencies for its letters of credits. As amended to date, the Agreement includes sublimits for letters of credit, not to exceed $40,000, European borrowings not to exceed $15,000, and Canadian borrowings not to exceed $15,000. See Note 22.

Availability under the Agreement is based on eligible accounts receivable, inventory and fixed assets. Amounts outstanding under the credit facility bear interest at the Corporation s option at either (1) LIBOR plus an applicable margin ranging between 1.25% to 1.75% based on the quarterly average excess availability or (2) the Base Rate plus an applicable margin ranging between 0.25% to 0.75% based on the quarterly average excess availability. Additionally, the Corporation is required to pay a commitment fee ranging between 0.25% and 0.375% based on the daily unused portion of the credit facility. As of December 31, 2016, the Corporation had utilized a portion of the credit facility for letters of credit (Note 10) and had remaining availability of approximately $54,000. The Agreement is collateralized by a first priority perfected security interest in substantially all of the assets of the Corporation and its subsidiaries (other than real property). Additionally, the Agreement contains customary affirmative and negative covenants and limitations

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including but not limited to investments in Excluded Subsidiaries, payment of dividends, incurrence of additional indebtedness, upstreaming distributions from subsidiaries, and acquisitions and divestures. The Corporation must also maintain a certain level of excess availability. If excess availability falls below the established threshold, or in an event of default, the Corporation will be required to maintain a minimum fixed charge coverage ratio of not less than 1.00 to 1.00. The Corporation was in compliance with the applicable bank covenants as of December 31, 2016.

Outstanding borrowings of the Corporation as of December 31, 2016 and 2015 consisted of the following:

	2016	2015
Industrial Revenue Bonds	**$ 13,311**	$ 13,311
Promissory notes (and interest)	**23,844**	0
Minority shareholder loan	**4,990**	0
Credit facility	**7,146**	0
Term loan	**762**	0
Capital leases	**2,161**	0
	52,214	13,311
Current portion	**(26,825)**	(13,311)
	$ 25,389	$ 0

Future principal payments, assuming demand loans are called in 2017 and the Industrial Revenue Bonds are not able to be remarketed, are $26,825 for 2017, $585 for 2018, $24,257 for 2019, $337 for 2020 and $210 for 2021. The Corporation also had short-term lines of credit of approximately $750 (£250 in the United Kingdom and 400 in Belgium). No amounts were outstanding under these lines of credit as of December 31, 2016 and 2015. Deferred financing fees of approximately $1,250 have been incurred for the Agreement and are being amortized over the life of the Agreement.

Industrial Revenue Bonds

As of December 31, 2016, the Corporation had the following Industrial Revenue Bonds (IRBs) outstanding: (1) $4,120 tax-exempt IRB maturing in 2020, interest at a floating rate which averaged 0.50% during the current year; (2) $7,116 taxable IRB maturing in 2027, interest at a floating rate which averaged 0.65% during the current year; and (3) $2,075 tax-exempt IRB maturing in 2029, interest at a floating rate which averaged 0.59% during the current year. The IRBs are secured by letters of credit of equivalent amounts and are remarketed periodically at which time interest rates are reset. If the IRBs are not able to be remarketed, although considered remote by the Corporation and its bankers, the bondholders can seek reimbursement from the letters of credit which serve as collateral for the bonds.

Promissory Notes

In connection with the acquisition of Åkers, the Corporation issued three-year promissory notes amounting to $22,619. The notes bear interest at 6.5%, compounding annually, with principal and interest payable at maturity on March 3, 2019. As of December 31, 2016, accrued interest approximated $1,225 which is included in long-term debt on the consolidated balance sheet.

Minority Shareholder Loan

ATR has a $4,990 (RMB 34,655) loan outstanding with its minority shareholder. The loan originally matured in 2008 but has been renewed continually for one-year periods. Interest does not compound and has accrued on the outstanding balance, since inception, at the three-to-five-year loan interest rate set by the People s Bank of China in effect at the time of renewal. The interest rate for 2016 approximated 4.90% and accrued interest as of December 31, 2016 approximated $2,265 (RMB 15,730), which is recorded in other current liabilities on the consolidated balance sheet.

Credit Facility and Term Loan

ASW has a credit facility which provides for borrowings of up to $20,000, based on eligible accounts receivable and inventory, payable on demand. Amounts outstanding under the credit facility bear interest at 4% plus the higher of LIBOR or 1% and a collateral fee of 1.20%. ASW is also required to pay a commitment fee of approximately 0.5% based on the daily unused portion of the credit

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facility. The effective interest rate for the two months ended December 31, 2016 approximated 5.11%. As of December 31, 2016, ASW had borrowed $7,146, the maximum available under the facility. Additionally, at December 31, 2016, ASW had $762 outstanding under a $5,000 fixed-rate term facility which bears interest at 7.25% plus the higher of LIBOR or 1%. The effective interest rate for the two months ended December 31, 2016 approximated 9.16%. The credit facility and term loan mature in June 2017. In the event of an early termination, the Corporation will incur a fee equal to 2% of the credit facility or $400. The agreements contain customary affirmative and negative covenants and is collateralized by a first priority perfected security interest in substantially all of the assets of ASW. As of December 31, 2016, ASW was in compliance with the terms of the agreements and its amendments. See Note 22.

Capital Leases

The Corporation leases equipment under various noncancelable lease agreements ending 2018 to 2021. Effective interest rates range between 1.20% and 5.30%.

NOTE 9   PENSION AND OTHER POSTRETIREMENT BENEFITS:

U.S. Pension Benefits

Historically, the Corporation had one qualified domestic defined benefit pension plan (legacy plan   ). As part of the Åkers acquisition, the Corporation assumed the obligations for two additional U.S. plans (Åkers plans   ). Collectively, the plans cover substantially all of its U.S. employees. Effective June 1, 2016, the Åkers salary plan was amended to freeze benefit accruals and participation in the plan and replace benefit accruals with employer non-elective contributions equaling 3% of compensation. The plan change resulted in remeasurement of the liability, reducing the liability by approximately $1,181 as of December 31, 2016, and a curtailment gain of $887 for the year ended December 31, 2016. Additionally, effective July 1, 2015, the legacy plan was amended to freeze benefit accruals and participation in the plan for non-union hourly and salaried participants and, effective January 1, 2016, for employees of the Union Electric Steel Carnegie Steelworkers Location. Benefits under the legacy plan were replaced with employer contributions of a 3% non-elective base contribution and a matching contribution of up to 4% to the defined contribution plan. The plan changes resulted in a remeasurement of the plan liability, reducing the liability by approximately $10,306 as of December 31, 2015, and curtailment losses of $1,303 for the year ended December 31, 2015. Additionally, the legacy plan was amended in both of the years to permit lump sum distributions to deferred vested participants and deferred beneficiaries who were not previously offered a lump sum. Employer contributions to the defined contribution plans totaled $2,466 and $882 for 2016 and 2015, respectively, and are expected to approximate $2,810 in 2017.

The U.S. defined benefit pension plans are covered by the Employee Retirement Income Security Act of 1974 (ERISA   ); accordingly, the Corporation   s policy is to fund at least the minimum actuarially computed annual contribution required under ERISA. No minimum contributions were required for any of the three years for the legacy plan or, since the date of acquisition, for the Åkers plans. Additionally, no minimum contributions are required for any of the plans in 2017. Estimated benefit payments for subsequent years are $13,206 for 2017, $13,535 for 2018, $13,944 for 2019, $14,195 for 2020, $14,485 for 2021 and $73,814 for 2022   2026. The fair value of the plan assets as of December 31, 2016 and 2015 approximated $188,722 and $139,376, respectively, in comparison to accumulated benefit obligations of $235,299 and $173,243 for the same periods.

The Corporation also maintains nonqualified defined benefit pension plans for selected executives in addition to the benefits provided under the Corporation   s qualified defined benefit pension plan. The objectives of the nonqualified plans are to provide supplemental retirement benefits or restore benefits lost due to limitations set by the Internal Revenue Service. The assets of the nonqualified plans are held in a grantor tax trust known as a   Rabbi   trust and are subject to claims of the Corporation   s creditors, but otherwise must be used only for purposes of providing benefits under the plans. No contributions were made to the trust in 2014   2016 and none are expected in 2017. The fair market value of the trust at December 31, 2016 and 2015, which is included in other noncurrent assets, was $3,863 and $3,663, respectively. Changes in the fair market value of the trust are recorded as a component of other comprehensive income (loss). The plan is treated as a non-funded pension plan for financial reporting purposes. Accumulated benefit obligations approximated $6,639 and $5,676 at December 31, 2016 and 2015, respectively. Estimated benefit payments for subsequent years, which would represent employer contributions, are approximately $417 for 2017, $438 for 2018, $452 for 2019, $463 for 2020, $482 for 2020 and $2,548 for 2022-2026.

Employees at one location participate in a multi-employer plan, *I.A.M. National Pension Fund,* in lieu of the Corporation   s defined benefit pension plan. A multi-employer plan generally receives contributions from two or more unrelated employers pursuant to one

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or more collective bargaining agreements. The assets contributed by one employer may be used to fund the benefits provided to employees of other employers in the plan because the plan assets, once contributed, are not restricted to individual employers. The latest report of summary plan information (for the 2015 plan year) provided by *I.A.M. National Pension Fund* indicates:

More than 1,650 employer locations contribute to the plan
Approximately 100,000 active employees participate in the plan
Assets of approximately $11.6 billion and a funded status of approximately 101%.

Less than 100 of the Corporation s employees participate in the plan and contributions are based on a rate per hour. The Corporation s contributions to the plan equaled $237, $236 and $233 in 2016, 2015 and 2014, respectively, and represent less than five percent of total contributions to the plan by all contributing employers. Contributions are expected to approximate $259 in 2017.

Foreign Pension Benefits

Employees of UES-UK participate in a defined benefit pension plan that was curtailed effective December 31, 2004 and replaced with a defined contribution pension plan. The UES-UK plans are non-U.S. plans and therefore are not covered by ERISA. Instead, the Trustees and UES-UK have agreed to a recovery plan that estimates the amount of employer contributions at £1,123 annually through October 2021, based on U.K. regulations, necessary to eliminate the funding deficit of the plan with such estimates subject to change based on the future investment performance of the plan s assets. The U.S. dollar equivalent of employer contributions to the defined benefit pension plan approximated $1,522, $1,715 and $1,849 in 2016, 2015 and 2014, respectively. The fair value of the plan s assets as of December 31, 2016 and 2015 approximated $48,055 (£38,955) and $49,628 (£33,528), respectively, in comparison to accumulated benefit obligations of $61,277 (£49,673) and $63,750 (£43,069) for the same periods. Estimated benefit payments for subsequent years for the UES-UK plan are $1,249 for 2017, $1,752 for 2018, $2,042 for 2019, $1,906 for 2020, $1,883 for 2021 and $11,679 for 2022-2026. Contributions to the defined contribution pension plan approximated $252, $382 and $407 in 2016, 2015 and 2014, respectively, and are expected to approximate $276 in 2017.

As part of the Åkers acquisition, the Corporation assumed the obligations of two foreign defined benefit pension plans. The plans are unfunded and not significant (projected benefit obligations approximate $5,633 at December 31, 2016). Estimated benefit payments for subsequent years, for both plans combined, are $189 for 2017, $224 for 2018, $274 for 2019, $274 for 2020, $306 for 2021 and $1,333 for 2022-2026.

Other Postretirement Benefits

The Corporation has historically provided postretirement health care benefits principally to the bargaining groups of one subsidiary (legacy OPEB plan). The legacy OPEB plan covers participants and their spouses and/or dependents who retire under the existing pension plan on other than a deferred vested basis and at the time of retirement have also rendered 15 or more years of continuous service irrespective of age. During 2015, the plan was amended to provide monthly reimbursement for a 5-year period, which reduced the plan liability by approximately $4,437. Retiree life insurance continues to be provided to substantially all retirees.

The Corporation also provides health care and life insurance benefits to former employees of certain discontinued operations. This obligation had been estimated and provided for at the time of disposal.

As part of the Åkers acquisition, the Corporation assumed the obligations for two additional postretirement benefit plans (Åkers OPEB plans). The Åkers OPEB plans cover retiree medical and life insurance benefits. In August 2016, the Corporation modified the Åkers OPEB plans effective January 1, 2017 whereby retiree health benefits for certain groups of pre-Medicare eligible employees will be replaced with a monthly stipend. The plan changes resulted in a reduction in prior service costs decreasing plan liabilities by approximately $4,762, which will be amortized against other postretirement benefit costs over the expected remaining service periods of approximately 7.5 and 12 years, versus recognized immediately.

The Corporation s postretirement health care and life insurance plans are not funded or subject to any minimum regulatory funding requirements. Estimated benefit payments for subsequent years, which would represent employer contributions, for the legacy and Åkers OPEB plans are approximately $1,289 for 2017, $1,331 for 2018, $1,358 for 2019, $1,455 for 2020, $1,279 for 2021 and $5,825 for 2022-2026.

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Reconciliations

The following provides a reconciliation of projected benefit obligations (PBO), plan assets, the funded status of the plans and the amounts recognized in the consolidated balance sheets for the Corporation s defined benefit plans calculated using a measurement date as of the end of the respective years.

	U.S. Pension Benefits[(a)]		Foreign Pension Benefits		Other Postretirement Benefits	
	2016	2015	**2016**	2015	**2016**	2015
Change in projected benefit obligations:						
PBO at January 1	**$ 181,803**	$ 205,399	**$ 63,750**	$ 70,523	**$ 8,117**	$ 13,739
Åkers acquisition PBO at March 3	**68,081**	0	**5,393**	0	**17,467**	0
Service cost	**1,714**	2,743	**314**	0	**504**	384
Interest cost	**9,977**	7,990	**2,250**	2,394	**722**	474
Plan amendments	**0**	447	**0**	0	**(4,762)**	(4,437)
Plan settlements[(b)]	**(2,739)**	(5,494)	**0**	0	**0**	0
Plan curtailments	**(1,181)**	(10,306)	**0**	0	**0**	0
Foreign currency exchange rate changes	**0**	0	**(11,477)**	(3,413)	**0**	0
Actuarial (gain) loss	**(160)**	(9,880)	**8,869**	(4,005)	**(1,598)**	(1,433)
Participant contributions	**0**	0	**0**	0	**80**	79
Benefits paid from plan assets	**(12,679)**	(8,772)	**(2,189)**	(1,749)	**0**	0
Benefits paid by the Corporation	**(376)**	(324)	**0**	0	**(1,471)**	(689)
PBO at December 31	**$ 244,440**	$ 181,803	**$ 66,910**	$ 63,750	**$ 19,059**	$ 8,117
Change in plan assets:						
Fair value of plan assets at January 1	**$ 139,376**	$ 157,048	**$ 49,628**	$ 50,533	**$ 0**	$ 0
Åkers acquisition fair value of plan assets at March 3	**50,108**	0	**0**	0	**0**	0
Actual return on plan assets	**14,656**	(3,406)	**7,859**	1,701	**0**	0
Foreign currency exchange rate changes	**0**	0	**(8,930)**	(2,572)	**0**	0
Corporate contributions	**376**	324	**1,687**	1,715	**1,391**	610
Participant contributions	**0**	0	**0**	0	**80**	79
Plan settlements[(b)]	**(2,739)**	(5,494)	**0**	0	**0**	0
Gross benefits paid	**(13,055)**	(9,096)	**(2,189)**	(1,749)	**(1,471)**	(689)
Fair value of plan assets at December 31	**$ 188,722**	$ 139,376	**$ 48,055**	$ 49,628	**$ 0**	$ 0
Funded status of the plans:						
Fair value of plan assets	**$ 188,722**	$ 139,376	**$ 48,055**	$ 49,628	**$ 0**	$ 0
Less benefit obligations	**244,440**	181,803	**66,910**	63,750	**19,059**	8,117
Funded status at December 31	**$ (55,718)**	$ (42,427)	**$ (18,855)**	$ (14,122)	**$ (19,059)**	$ (8,117)

(a) Includes the nonqualified defined benefit pension plan.
(b) Represents lump sum payments.

	U.S. Pension Benefits		Foreign Pension Benefits		Other Postretirement Benefits	
	2016	2015	**2016**	2015	**2016**	2015
Recognized in the balance sheets:						
Employee benefit obligations:						
Accrued payrolls and employee benefits[(a)]	**$ (409)**	$ (352)	**$ 0**	$ 0	**$ (1,276)**	$ (612)
Employee benefit obligations[(b)]	**(55,309)**	(42,075)	**(18,855)**	(14,122)	**(17,783)**	(7,505)
	$ (55,718)	$ (42,427)	**$ (18,855)**	$ (14,122)	**$ (19,059)**	$ (8,117)
Accumulated other comprehensive loss:[(c)]						
Net actuarial loss	**$ 48,153**	$ 53,163	**$ 25,547**	$ 27,594	**$ 936**	$ 2,570

Prior service cost	**209**	237	**0**	0	**(15,581)**	(12,097)
	$ 48,362	$ 53,400	**$ 25,547**	$ 27,594	**$ (14,645)**	$ (9,527)

(a) Recorded as a current liability in the consolidated balance sheet.
(b) Recorded as a noncurrent liability in the consolidated balance sheet.
(c) Amounts are pre-tax.

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Amounts included in accumulated other comprehensive loss as of December 31, 2016 expected to be recognized in net periodic pension and other postretirement costs in 2017 include:

	U.S. Pension Benefits	Foreign Pension Benefits	Other Postretirement Benefits
Net actuarial loss	$ 1,212	$ 790	$ 67
Prior service cost (credit)	52	0	(1,620)
	$ 1,264	**$ 790**	**$ (1,553)**

Investment Policies and Strategies

The investment policies and strategies are determined and monitored by the Board of Directors for the U.S. pension plans and by the Trustees (as appointed by UES-UK and the employees of UES-UK) for the UES-UK pension plan, each of whom employ their own investment managers to manage the plan s assets in accordance with the policy guidelines. The foreign pension plans of Åkers are unfunded. Pension assets are invested with the objective of maximizing long-term returns while minimizing material losses to meet future benefit obligations as they become due. Investments in equity securities are primarily in common stocks of publicly-traded U.S. and international companies across a broad spectrum of industry sectors. Investments in fixed-income securities are principally A-rated or better bonds with maturities of less than ten years, preferred stocks and convertible bonds. The Corporation believes there are no significant concentrations of risk associated with the Plans assets.

Attempts to minimize risk include allowing temporary changes to the allocation mix in response to market conditions, diversifying investments among asset categories (e.g., equity securities, fixed-income securities, alternative investments, cash and cash equivalents) and within these asset categories (e.g., economic sector, industry, geographic distribution, size) and consulting with independent financial and legal counsels to assure that the investments and their expected returns and risks are consistent with the goals of the Board of Directors or Trustees.

With respect to the U.S. pension plans, the following investments are prohibited unless otherwise approved by the Board of Directors: stock of the Corporation, futures and options except for hedging purposes, unregistered or restricted stock, warrants, margin trading, short-selling, real estate excluding public or real estate partnerships, and commodities including art, jewelry and gold. The foreign pension plan invests in specific funds. Any investments other than those specifically identified would be considered prohibited.

The following summarizes target asset allocations (within +/-5% considered acceptable) and major asset categories. Certain investments are classified differently for target asset allocation purposes and external reporting purposes. In addition, for the legacy plan, the Corporation changed investment managers in December 2016; accordingly, there is temporarily a higher amount in cash and cash equivalents.

	U.S. Pension Benefits			Foreign Pension Benefits		
	Target Allocation	Percentage of Plan Assets		Target Allocation	Percentage of Plan Assets	
	Dec. 31, 2016	2016	2015	Dec. 31, 2016	2016	2015
Equity Securities	**65%**	**47%**	58%	**44%**	**48%**	46%
Fixed-Income Securities	**15%**	**21%**	19%	**35%**	**34%**	33%
Alternative Investments	**15%**	**8%**	13%	**21%**	**18%**	21%
Other (primarily cash and cash equivalents)	**5%**	**24%**	10%	**0%**	**0%**	0%

Fair Value Measurement of Plan Assets

Equity securities and mutual funds are actively traded on exchanges and price quotes for these investments are readily available. Similarly, corporate debt and preferred securities consist of fixed-income securities of U.S. and U.K. corporations and price quotes for these investments are readily available. Common collective trust and commingled funds are not traded publicly, but the underlying assets (such as stocks and bonds) held in these funds are traded on active markets and the prices for the underlying assets are readily observable. For securities not actively traded, the fair value may be based on third-party appraisals, discounted cash flow analysis, benchmark yields and inputs that are currently observable in markets for similar securities.

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Investment Strategies

The significant investment strategies of the various funds are summarized below.

Fund	Investment Strategy	Primary Investment Objective
Temporary Investment Funds	Invests primarily in a diversified portfolio of investment grade money market instruments.	Achieve a market level of current income while maintaining stability of principal and liquidity.
Various Equity Funds	Each fund maintains a diversified holding in common stock of applicable companies (e.g., common stock of small capitalization companies if a small-cap fund, common stock of medium capitalization companies if a mid-cap fund, common stock of foreign corporations if an international fund, etc.).	Outperform the fund s related index.
Various Fixed Income Funds	Invests primarily in a diversified portfolio of fixed-income securities of varying maturities or in commingled funds which invest in a diversified portfolio of fixed-income securities of varying maturities.	For the U.S. Plans to outperform either the Barclays Capital U.S. Aggregate Index or US Corporate High Yield Index, as applicable, over a prescribed period. For the Foreign Plans to outperform the applicable FTSE index over a prescribed period.
Alternative Investments Managed Funds	Invests in equities and equity-like asset classes and strategies (such as public equities, venture capital, private equity, real estate, natural resources and hedged strategies) and fixed-income securities.	Generate a minimum annual inflation adjusted return of 5% and outperform a traditional 70/30 equities/bond portfolio.
Alternative Investments Hedge and Absolute Return Funds	Invests in a diversified portfolio of alternative investment styles and strategies.	Generate long-term capital appreciation while maintaining a low correlation with the traditional global financial markets.

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Categories of Plan Assets

Asset categories based on the nature and risks of the U.S. Pension Benefit Plans assets as of December 31, 2016 are summarized below.

	Quoted Prices in Active Markets for Identical Inputs (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Equity Securities:				
U.S.				
Bank & financial services	$ 631	$ 0	$ 0	**$ 631**
Capital goods	75	0	0	**75**
Chemicals	20	0	0	**20**
Commercial services	16	0	0	**16**
Electronics	67	0	0	**67**
Health care	201	0	0	**201**
Mutual funds	72,571	0	0	**72,571**
Oil & gas	87	0	0	**87**
Retail	101	0	0	**101**
Technology	188	0	0	**188**
Transportation	18	0	0	**18**
Wholesale distribution	16	0	0	**16**
Other (represents 8 business sectors)	211	0	0	**211**
International				
Chemicals	7	0	0	**7**
Technology	6	0	0	**6**
Total Equity Securities	74,215	0	0	**74,215**
Fixed Income Securities:				
Mutual funds	36,601	0	0	**36,601**
Total Fixed Income Securities	36,601	0	0	**36,601**
Alternative Investments:				
Managed funds[(a)]	0	0	33,830	**33,830**
Total Alternative Investments	0	0	33,830	**33,830**
Other:				
Money market mutual funds	27,902	0	0	**27,902**
Commingled funds	0	154	0	**154**
Other[(b)]	16,020	0	0	**16,020**
Total Other	43,922	154	0	**44,076**
	$ 154,738	**$ 154**	**$ 33,830**	**$ 188,722**

(a) *Includes approximately 45.9% in equity and equity-like asset securities, 44.5% in alternative investments (real assets, commodities and resources, absolute return funds) and 7.4% in fixed income securities and 2.2% in other, primarily cash and cash equivalents.*

(b) *Includes accrued receivables and pending broker settlements.*

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Asset categories based on the nature and risks of the U.S. Pension Benefit Plan s assets as of December 31, 2015 are summarized below.

	Quoted Prices in Active Markets for Identical Inputs (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Equity Securities:				
U.S.				
Capital goods	$ 1,531	$ 0	$ 0	$ 1,531
Chemicals	1,811	0	0	1,811
Commercial property	906	0	0	906
Commercial services	925	0	0	925
Common collective trust funds	0	31,291	0	31,291
Electronics	785	0	0	785
Food processing	2,856	0	0	2,856
Health care	1,815	0	0	1,815
Limited partnerships public equity	4,173	0	0	4,173
Manufacturing	1,536	0	0	1,536
Oil & gas	1,499	0	0	1,499
Retail	706	0	0	706
Technology	1,674	0	0	1,674
Transportation	484	0	0	484
Wholesale distribution	789	0	0	789
Other (represents 13 business sectors)	5,695	0	0	5,695
International				
Bank & financial services	1,525	0	0	1,525
Common collective trust funds	0	3,078	0	3,078
Engineering & construction	729	0	0	729
Oil & gas	807	0	0	807
Real estate	937	0	0	937
Technology	265	0	0	265
Other (represents 9 business sectors)	2,391	0	0	2,391
Total Equity Securities	33,839	34,369	0	68,208
Fixed-Income Securities:				
Commingled funds	0	14,697	0	14,697
Preferred (represents 5 business sectors)	6,689	0	0	6,689
Other (represents 4 business sectors)	0	1,280	0	1,280
Total Fixed-Income Securities	6,689	15,977	0	22,666
Alternative Investments:				
Managed funds[(a)]	0	0	32,210	32,210
Hedge and absolute return funds	0	0	4,967	4,967
Total Alternative Investments	0	0	37,177	37,177
Other:				
Mutual funds	1,836	0	0	1,836
Commingled funds	0	1,005	0	1,005
Other[(b)]	8,484	0	0	8,484
Total Other	10,320	1,005	0	11,325
	$ 50,848	$ 51,351	$ 37,177	$ 139,376

(a) *Includes approximately 38% in equity and equity-like asset securities, 43% in alternative investments (real assets, commodities and resources, absolute return funds) and 19% in fixed income securities and cash and cash equivalents.*

(b) *Includes accrued receivables and pending broker settlements.*

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Asset categories based on the nature and risks of the Foreign Pension Benefit Plan s assets as of December 31, 2016 are summarized below.

	Quoted Prices in Active Markets for Identical Inputs (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Equity Securities:				
Commingled Funds (U.K.)	$ 0	$ 3,716	$ 0	**$ 3,716**
Commingled Funds (International)	0	19,146	0	**19,146**
Total Equity Securities	0	22,862	0	**22,862**
Fixed-Income Securities:				
Commingled Funds (U.K.)	0	16,426	0	**16,426**
Alternative Investments:				
Hedge and Absolute Return Funds	0	0	8,593	**8,593**
Cash and cash equivalents	174	0	0	**174**
	$ 174	**$ 39,288**	**$ 8,593**	**$ 48,055**

Asset categories based on the nature and risks of the Foreign Pension Benefit Plan s assets as of December 31, 2015 are summarized below.

	Quoted Prices in Active Markets for Identical Inputs (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Equity Securities:				
Commingled Funds (U.K.)	$ 0	$ 3,697	$ 0	$ 3,697
Commingled Funds (International)	0	18,930	0	18,930
Total Equity Securities	0	22,627	0	22,627
Fixed-Income Securities:				
Commingled Funds (U.K.)	0	16,298	0	16,298
Alternative Investments:				
Hedge and Absolute Return Funds	0	0	10,571	10,571
Cash and cash equivalents	132	0	0	132
	$ 132	$ 38,925	$ 10,571	$ 49,628

The table below sets forth a summary of changes in the fair value of the Level 3 plan assets for U.S. and foreign pension plans for the year ended December 31, 2016.

	Alternative Investments		
	U.S. Pension Benefits		Foreign Pension Benefits
Fair value as of January 1, 2016	$ 4,967	$ 32,210	$ 10,571
Contributions	0	0	0
Withdrawals	(4,967)	0	0
Realized gains (losses)	0	1,857	0
Change in net unrealized (losses) gains	0	(237)	(280)
Other, primarily impact from changes in foreign currency exchange rates	0	0	(1,698)
Fair value as of December 31, 2016	**$ 0**	**$ 33,830**	**$ 8,593**

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The table below sets forth a summary of changes in the fair value of the Level 3 plan assets for U.S. and foreign pension plans for the year ended December 31, 2015.

	Alternative Investments		
	U.S. Pension Benefits		Foreign Pension Benefits
Fair value as of January 1, 2015	$ 8,592	$ 33,602	$ 10,799
Contributions	5,900	0	0
Withdrawals	(9,843)	(2,424)	0
Realized gains (losses)	2,334	(19)	0
Change in net unrealized (losses) gains	(2,016)	1,051	320
Other, primarily impact from changes in foreign currency exchange rates	0	0	(548)
Fair value as of December 31, 2015	$ 4,967	$ 32,210	$ 10,571

Net Periodic Pension and Other Postretirement Benefit Costs

The actual return on the fair value of plan assets is included in determining the funded status of the plans. In determining net periodic pension costs, the expected long-term rate of return on the market-related value of plan assets is used. Differences between the actual return on plan assets and the expected long-term rate of return on plan assets are classified as part of unrecognized actuarial gains or losses and are recorded as a component of accumulated other comprehensive loss on the consolidated balance sheet. When these gains or losses exceed 10% of the greater of the projected benefit obligation or the market-related value of plan assets, they are amortized to net periodic pension and other postretirement costs over the average remaining service period of employees expected to receive benefits under the plans. When the gains or losses are less than 10% of the greater of the projected benefit obligation or the market-related value of plan assets, they are included in net periodic pension and other postretirement costs indirectly as a result of lower/higher interest costs arising from a decrease/increase in the projected benefit obligation.

Net periodic pension and other postretirement benefit costs include the following components for the year ended December 31:

	U.S. Pension Benefits			Foreign Pension Benefits			Other Postretirement Benefits		
	2016	2015	2014	**2016**	2015	2014	**2016**	2015	2014
Service cost	**$ 1,714**	$ 2,743	$ 3,683	**$ 314**	$ 0	$ 0	**$ 504**	$ 384	$ 505
Interest cost	**9,977**	7,990	8,762	**2,250**	2,394	2,695	**722**	474	688
Expected return on plan assets	**(13,424)**	(10,996)	(10,747)	**(2,461)**	(2,681)	(3,157)	**0**	0	0
Amortization of:									
Prior service cost (credit)	**44**	371	854	**0**	0	0	**(1,277)**	(672)	(441)
Actuarial loss	**3,324**	5,440	4,183	**670**	845	599	**36**	26	104
Curtailment (gain) loss	**(887)**	1,303	0	**0**	0	0	**0**	0	0
	$ 748	$ 6,851	$ 6,735	**$ 773**	$ 558	$ 137	**$ (15)**	$ 212	$ 856

Assumptions

Assumptions are reviewed on an annual basis. The expected long-term rate of return on plan assets is an estimate of average rates of earnings expected to be earned on funds invested or to be invested to provide for the benefits included in the projected benefit obligation. Since these benefits will be paid over many years, the expected long-term rate of return is reflective of current investment returns and investment returns over a longer period. Consideration is also given to target and actual asset allocations, inflation and real risk-free return. The discount rates used in determining future pension obligations and other postretirement benefits for each of the plans are based on rates of return on high-quality fixed-income investments currently available and expected to be available during the period to maturity of the pension and other postretirement benefits. High-quality fixed-income investments are defined as those investments which have received one of the two highest ratings given by a recognized rating agency with maturities of 10+ years.

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The discount rates and weighted-average wage increases used to determine the benefit obligations as of December 31, 2016 and 2015 are summarized below.

	U.S. Pension Benefits		Foreign Pension Benefits		Other Postretirement Benefits	
	2016	2015	**2016**	2015	**2016**	2015
Discount rate	4.02-4.25%	4.40%	2.50-2.65%	3.65%	3.90-4.13%	4.20%
Wage increases	3.00%	3.00%	n/a	n/a	n/a	n/a

In addition, the assumed health care cost trend rate at December 31, 2016 for other postretirement benefits is 6% for 2017 gradually decreasing to 4.75% in 2020. In selecting rates for current and long-term health care assumptions, the Corporation considers known health care cost increases, the design of the benefit programs, the demographics of its active and retiree populations and expectations of inflation rates in the future. A one percentage point increase or decrease in the assumed health care cost trend rate would result in an inconsequential change to the postretirement benefit obligation at December 31, 2016 and the annual benefit expense for 2016.

The following assumptions were used to determine net periodic pension and other postretirement benefit costs for the year ended December 31:

	U.S. Pension Benefits			Foreign Pension Benefits			Other Postretirement Benefits		
	2016	2015	2014	**2016**	2015	2014	**2016**	2015	2014
Discount rate	**4.20-4.40%**	4.00-4.10%	5.00%	**3.00-3.65%**	3.50%	4.50%	**3.80-4.20%**	4.00%	5.00%
Expected long-term rate of return	**6.90-7.75%**	8.00%	8.00%	**5.40%**	5.40%	6.50%	**n/a**	n/a	n/a
Wages increases	**3.00%**	4.00%	4.00%	**n/a**	n/a	n/a	**n/a**	n/a	n/a

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NOTE 10 COMMITMENTS AND CONTINGENT LIABILITIES:

Outstanding standby and commercial letters of credit as of December 31, 2016 approximated $22,305, of which approximately half serves as collateral for the IRB debt. In addition, in connection with the acquisition of Åkers, the Corporation issued two surety bonds to PRI Pensionsgaranti, guaranteeing certain obligations of Åkers Sweden AB and Åkers AB under a credit insurance policy relating to pension commitments. The total amount covered by the surety bonds is approximately $4,000 (SEK 33,900).

Approximately 38% of the Corporation s employees are covered by collective bargaining agreements that have expiration dates ranging from September 2017 to February 2020. Collective bargaining agreements expiring in 2017 (representing approximately 28% of covered employees) will be negotiated with the intent to secure mutually beneficial, long-term arrangements.

See Note 13 regarding derivative instruments, Note 19 regarding litigation and Note 20 for environmental matters.

NOTE 11 STOCK-BASED COMPENSATION:

In May 2011, the shareholders of the Corporation approved the adoption of the Ampco-Pittsburgh Corporation 2011 Omnibus Incentive Plan (the Predecessor Plan), which authorized the issuance of up to 1,000,000 shares of the Corporation s common stock for grants of equity-based compensation. In May 2016, the shareholders of the Corporation approved the adoption of the Ampco-Pittsburgh Corporation 2016 Omnibus Incentive Plan (the Incentive Plan), which authorizes the issuance of up to 1,100,000 shares of the Corporation s common stock for awards under the Incentive Plan. The Incentive Plan replaces the Predecessor Plan and no new awards will be granted under the Predecessor Plan. Any awards outstanding under the Predecessor Plan will remain subject to and be paid under the Predecessor Plan, and any shares subject to outstanding awards under the Predecessor Plan that subsequently expire, terminate, or are surrendered or forfeited for any reason without issuance of shares (equal to 2,500 shares at December 31, 2016) will automatically become available for issuance under the Incentive Plan.

Awards under the Incentive Plan may include incentive non-qualified stock options, stock appreciation rights, restricted shares and restricted stock units, performance awards, other stock-based awards or short-term cash incentive awards. If any award is canceled, terminates, expires or lapses for any reason prior to the issuance of shares, or if shares are issued under the Incentive Plan and thereafter are forfeited to the Corporation, the shares subject to such awards and the forfeited shares will not count against the aggregate number of shares available under the Incentive Plan. Shares tendered or withheld to pay the option exercise price or tax withholding will continue to count against the aggregate number of shares of common stock available for grant under the Incentive Plan. Any shares repurchased by the Corporation with cash proceeds from the exercise of options will not be added back to the pool of shares available for grant under the Incentive Plan.

The Incentive Plan may be administered by the Board of Directors or the Compensation Committee of the Board of Directors. The Compensation Committee has the authority to determine, within the limits of the express provisions of the Incentive Plan, the individuals to whom the awards will be granted and the nature, amount and terms of such awards. The Incentive Plan also provides for equity-based awards during any one year to non-employee members of the Board of Directors, based on the grant date fair value, not to exceed $200. The limit does not apply to shares received by a non-employee director at his or her election in lieu of all or a portion of the director s retainer for board service. The number of shares of common stock issued to non-employee directors was 32,090 in 2016 under the Incentive Plan and 14,310 shares in 2015 and 12,500 shares in 2014 under the Predecessor Plan.

In 2016 and 2015, the Compensation Committee granted time-vesting restricted stock units (RSUs) and performance-vesting restricted stock units (PSUs) to select individuals. Each RSU represents the right to receive one share of common stock of the Corporation at a future date after the RSU has become earned and vested, subject to the terms and conditions of the RSU award agreement. The RSUs vest over a three-year period. The PSUs can be earned depending upon the achievement of a performance or market condition and a time-vesting condition as follows: (1) achievement of a targeted basic earnings per share during the performance period beginning in the year of grant and continuing for two subsequent years, (2) achievement of a three-year cumulative relative total shareholder return as ranked against other companies included in the Corporation s peer group and (3) remaining continuously employed with the Corporation through the end of the year following three years from the date of grant. Earlier vesting of the stock units is permitted under certain conditions, such as upon a change of control of the Corporation.

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The grant date fair value for the RSUs equals the closing price of the Corporation s common stock on the NYSE on the date of grant. The grant date fair value for PSUs subject to a market condition is determined using a Monte Carlo simulation model and the grant date fair value for PSUs that vest subject to a performance condition is equal to the closing price of the Corporation s stock on the NYSE on the date of grant. The determination of the fair value of these awards takes into consideration the likelihood of achievement of the market or performance condition and is adjusted for subsequent changes in the estimated or actual outcome of the condition. Unrecognized compensation expense associated with the RSUs and PSUs equaled $2,897 at December 31, 2016 and is expected to be recognized over a weighted average period of approximately 2 years.

A summary of outstanding and exercisable incentive options (RSUs and PSUs) as of December 31, 2016, and activity for the year ended December 31, 2016 is as follows:

	Number of RSUs	Weighted Average Fair Value	Number of PSUs	Weighted Average Fair Value
Outstanding at January 1, 2016	90,836	$ 15.72	26,263	$ 15.89
Granted	94,644	18.70	21,164	26.54
Converted	(29,635)	15.72	0	N/A
Forfeited/cancelled	0	N/A	(8,079)	15.89
Outstanding at December 31, 2016	**155,845**	**$ 17.53**	**39,348**	**$ 21.62**

In 2014, the Compensation Committee granted 176,000 non-qualified stock options under the Predecessor Plan which have a ten-year life and vest over a three-year period. The exercise price is $20, equal to the closing price of the Corporation s common stock on the NYSE on the date of grant. The fair value of the option as of the date of grant was $7.40, calculated using the Black-Scholes option-pricing model using the following assumptions: expected life of 6 years; risk-free interest rate of 1.98%, expected annual dividend yield of 3.6%, expected forfeiture rate of 8% and expected volatility of 53.02%. Resulting stock compensation expense approximated $1,199. Unrecognized compensation expense equaled $120 at December 31, 2016 and is expected to be recognized in 2017.

A summary of outstanding and exercisable stock options as of December 31, 2016, and activity for the year ended December 31, 2016 is as follows:

	Number of Shares Under Options	Weighted Average Exercise Price	Remaining Contractual Life In Years	Intrinsic Value
Outstanding at January 1, 2016	1,013,336	$ 24.03	5.2	$ 0
Granted	0	N/A		
Exercised	0	N/A		
Forfeited	(7,500)	19.37		
Outstanding at December 31, 2016	**1,005,836**	**$ 24.07**	**4.2**	**$ 0**
Exercisable at December 31, 2016	**957,113**	**$ 24.28**	**4.0**	**$ 0**
Vested or expected to vest at December 31, 2016	**1,005,836**	**$ 24.07**	**4.2**	**$ 0**

Stock-based compensation expense for all awards, including expense for shares to be issued to non-employee directors, approximated $2,332, $1,328 and $1,102 for 2016, 2015 and 2014, respectively. The related income tax benefit recognized in the consolidated statements of operations was $465 and $386 for 2015 and 2014, respectively. There was no income tax benefit for 2016 due to the Corporation having a valuation allowance recorded against its deferred income tax assets for the jurisdiction where the expense is recognized. See Note 15.

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NOTE 12 ACCUMULATED OTHER COMPREHENSIVE LOSS:

Net change and ending balances for the various components of other comprehensive income (loss) and for accumulated other comprehensive loss as of and for the year ended December 31, 2014, 2015 and 2016 are summarized below.

	Foreign Currency Translation Adjustments	Unrecognized Components of Employee Benefit Plans	Unrealized Holding Gains on Securities	Derivatives	Accumulated Other Comprehensive Loss
Balance at January 1, 2014	$ 277	$ (47,462)	$ 1,007	$ 313	$ (45,865)
Net Change	(4,703)	(17,934)	(23)	(228)	(22,888)
Balance at December 31, 2014	(4,426)	(65,396)	984	85	(68,753)
Net Change	(3,967)	15,453	(292)	(40)	11,154
Balance at December 31, 2015	(8,393)	(49,943)	692	45	(57,599)
Net Change	(14,580)	11,307	(633)	506	(3,400)
Balance at December 31, 2016	**$ (22,973)**	**$ (38,636)**	**$ 59**	**$ 551**	**$ (60,999)**

The following summarizes the line items affected on the consolidated statements of operations for components reclassified from accumulated other comprehensive loss for each of the years ended December 31. Amounts in parentheses represent credits to net income (loss).

	2016	2015	2014
Amortization of unrecognized employee benefit costs:			
Costs of products sold (excluding depreciation and amortization)	**$ 2,463**	$ 3,604	$ 3,601
Selling and administrative	**(719)**	3,354	1,524
Other expense	**166**	355	174
Total before income tax	**1,910**	7,313	5,299
Income tax provision	**0**	(2,573)	(1,841)
Net of income tax	**$ 1,910**	$ 4,740	$ 3,458
Realized gains on sale of marketable securities:			
Selling and administrative	**$ (1,404)**	$ (82)	$ (171)
Income tax provision	**366**	29	60
Net of income tax	**$ (1,038)**	$ (53)	$ (111)
Realized gains/losses from settlement of cash flow hedges:			
Net sales (foreign currency sales contracts)	**$ (6)**	$ (17)	$ 33
Depreciation and amortization (foreign currency purchase contracts)	**(27)**	(27)	(27)
Costs of products sold (excluding depreciation and amortization) (futures contracts copper and aluminum)	**220**	751	146
Total before income tax	**187**	707	152
Income tax provision	**(79)**	(272)	(57)
Net of income tax	**$ 108**	$ 435	$ 95

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The income tax expense (benefit) associated with the various components of other comprehensive income (loss) for each of the years ended December 31 is summarized below. For 2016, there was no income tax benefit for certain items due to the Corporation having a valuation allowance recorded against its deferred income tax assets for the jurisdiction where the expense is recognized. See Note 15. Foreign currency translation adjustments exclude the effect of income taxes since earnings of non-U.S. subsidiaries are deemed to be reinvested for an indefinite period of time.

	2016	2015	2014
Income tax expense (benefit) associated with changes in:			
Unrecognized employee benefit costs	**$ 0**	$ (4,731)	$ 10,265
Unrealized holding losses/gains on marketable securities	**0**	134	(47)
Fair value of cash flow hedges	**0**	294	206
Income tax expense (benefit) associated with reclassification adjustments:			
Amortization of unrecognized employee benefit costs	**0**	(2,573)	(1,841)
Realized gains from sale of marketable securities	**366**	29	60
Realized losses from settlement of cash flow hedges	**(79)**	(272)	(57)

NOTE 13 DERIVATIVE INSTRUMENTS:

Certain operations of the Corporation are subject to risk from exchange rate fluctuations in connection with sales in foreign currencies. To minimize this risk, foreign currency sales contracts are entered into which are designated as cash flow or fair value hedges. As of December 31, 2016, approximately $18,727 of anticipated foreign-denominated sales has been hedged which are covered by fair value contracts settling at various dates through April 2018. The fair value of assets held as collateral for the fair value contracts as of December 31, 2016 approximated $600.

Additionally, certain divisions of the Air and Liquid Processing segment are subject to risk from increases in the price of commodities (copper and aluminum) used in the production of inventory. To minimize this risk, futures contracts are entered into which are designated as cash flow hedges. At December 31, 2016, approximately 48% or $2,200 of anticipated copper purchases over the next year and 56% or $400 of anticipated aluminum purchases over the next six months are hedged.

The Corporation previously entered into foreign currency purchase contracts to manage the volatility associated with euro-denominated progress payments to be made for certain machinery and equipment. As of December 31, 2010, all contracts had been settled and the underlying fixed assets were placed in service.

No portion of the existing cash flow or fair value hedges is considered to be ineffective, including any ineffectiveness arising from the unlikelihood of an anticipated transaction to occur. Additionally, no amounts have been excluded from assessing the effectiveness of a hedge.

At December 31, 2016, the Corporation has purchase commitments covering 24% or $1,298 of anticipated natural gas usage for 2017 for one of its subsidiaries. The commitments qualify as normal purchases and, accordingly, are not reflected on the consolidated balance sheet. Purchases of natural gas under previously existing commitments approximated $1,936, $2,452 and $2,190 for 2016, 2015 and 2014, respectively.

The Corporation does not enter into derivative transactions for speculative purposes and, therefore, holds no derivative instruments for trading purposes.

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The following summarizes location and fair value of the foreign currency sales contracts recorded on the consolidated balance sheets as of December 31:

	Location	2016	2015
Cash flow hedge contracts	Other current assets	**$ 0**	$ 10
Fair value hedge contracts	Other current assets	**214**	113
	Other noncurrent assets	**2**	0
	Other current liabilities	**940**	258
	Other noncurrent liabilities	**35**	49
Fair value hedged item	Receivables	**121**	27
	Other current assets	**808**	255
	Other noncurrent assets	**45**	39
	Other current liabilities	**233**	116
	Other noncurrent liabilities	**5**	0

The change in the fair value of the cash flow contracts is recorded as a component of accumulated other comprehensive loss. Amounts recognized as and reclassified from accumulated other comprehensive loss are recorded as a component of other comprehensive income (loss) and are summarized below. Amounts are after-tax, where applicable. Certain amounts recognized as comprehensive income (loss) for 2016 have no tax effect due to the Corporation recording a valuation allowance against its deferred income tax assets in the related jurisdictions. See Note 15.

For the Year Ended December 31, 2016	Comprehensive Income (Loss) Beginning of the Year	Plus Recognized as Comprehensive Income (Loss)	Less Gain (Loss) Reclassified from Accumulated Other Comprehensive Loss	Comprehensive Income (Loss) End of the Year
Foreign currency sales contracts cash flow hedges	$ 4	$ 0	$ 4	**$ 0**
Foreign currency purchase contracts	241	0	25	**216**
Future contracts copper and aluminum	(200)	398	(137)	**335**
	$ 45	**$ 398**	**$ (108)**	**$ 551**
For the Year Ended December 31, 2015				
Foreign currency sales contracts cash flow hedges	$ 0	$ 14	$ 10	$ 4
Foreign currency purchase contracts	258	0	17	241
Future contracts copper and aluminum	(173)	(489)	(462)	(200)
	$ 85	$ (475)	$ (435)	$ 45
For the Year Ended December 31, 2014				
Foreign currency sales contracts cash flow hedges	$ 0	$ (21)	$ (21)	$ 0
Foreign currency purchase contracts	275	0	17	258
Future contracts copper and aluminum	38	(302)	(91)	(173)
	$ 313	$ (323)	$ (95)	$ 85

The change in fair value reclassified or expected to be reclassified from accumulated other comprehensive loss to earnings is summarized below. All amounts are pre-tax.

	Location of Gain (Loss) in Statements of Operations	Estimated to be Reclassified in the Next 12 Months	Year Ended December 31, 2016	2015	2014
Foreign currency sales contracts cash flow hedges	Net sales	**$ 0**	**$ 6**	$ 17	$ (33)
Foreign currency purchase contracts	Depreciation and amortization	**27**	**27**	27	27
Futures contracts copper and aluminum	Costs of products sold (excluding depreciation and amortization)	**398**	**(220)**	(751)	(146)

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Losses on foreign exchange transactions included in other expense approximated $(1,161), $(324) and $(488) for 2016, 2015 and 2014, respectively.

NOTE 14 FAIR VALUE:

The following summarizes financial assets and liabilities reported at fair value on a recurring basis in the accompanying consolidated balance sheets at December 31:

2016	**Quoted Prices in Active Markets for Identical Inputs (Level 1)**	**Significant Other Observable Inputs (Level 2)**	**Significant Unobservable Inputs (Level 3)**	**Total**
Investments				
Other noncurrent assets	$ 3,863	$ 0	$ 0	**$ 3,863**
Foreign currency exchange contracts				
Other current assets	0	1,022	0	**1,022**
Other noncurrent assets	0	47	0	**47**
Other current liabilities	0	1,173	0	**1,173**
Other noncurrent liabilities	0	40	0	**40**
2015				
Investments				
Other noncurrent assets	$ 3,663	$ 0	$ 0	$ 3,663
Foreign currency exchange contracts				
Other current assets	0	378	0	378
Other noncurrent assets	0	39	0	39
Other current liabilities	0	374	0	374
Other noncurrent liabilities	0	49	0	49

The investments held as other noncurrent assets represent assets held in the Rabbi trust for the purpose of providing benefits under the non-qualified defined benefit pension plan. The fair value of the investments is based on quoted prices of the investments in active markets. The fair value of foreign currency exchange contracts is determined based on the fair value of similar contracts with similar terms and remaining maturities. The fair value of futures contracts is based on market quotations. The fair value of the variable-rate debt approximates its carrying value. Additionally, the fair value of trade receivables and trade payables approximates their carrying value.

NOTE 15 INCOME TAXES:

(Loss) income before income taxes and equity gains (losses) in Chinese joint venture is comprised of the following:

	2016	2015	2014
Domestic	**$ (26,326)**	$ 6,000	$ (1,182)
Foreign	**(31,194)**	(1,480)	290
	$ (57,520)	$ 4,520	$ (892)

At December 31, 2016, the Corporation has federal net operating loss carryforwards of $1,865, which begin to expire in 2036, state net operating loss carryforwards of $26,757 which begin to expire in 2018, foreign net operating loss carryforwards of $78,548 which begin to expire in 2026 and capital loss carryforwards of $745 which do not expire.

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The income tax provision (benefit) consisted of the following:

	2016	2015	2014
Current:			
Federal	**$ (1,574)**	$ 4,577	$ 3,458
State	**465**	378	210
Foreign	**414**	(20)	122
	(695)	4,935	3,790
Deferred:			
Federal	**(2,688)**	(2,203)	(4,678)
State	**(1,838)**	197	54
Foreign	**(2,472)**	(296)	101
Increase (reversal) of valuation allowance	**30,405**	0	(33)
	23,407	(2,302)	(4,556)
	$ 22,712	$ 2,633	$ (766)

In 2016, the income tax provision was affected by recognition of a valuation allowance against all U.S. and certain foreign entities as it was considered more-likely-than-not that the net deferred income tax assets would not be realized. The Corporation assessed available positive and negative evidence to estimate whether sufficient future taxable income would be generated to permit use of the existing deferred income tax assets. During 2016, the Corporation has incurred three years of cumulative losses, inclusive of the acquired Åkers businesses as if the businesses were held during the entire three-year period. Such objective evidence limits the ability to consider other subjective evidence, such as projections for future growth and profitability. On the basis of this evaluation, the Corporation established an increase in the valuation allowance to recognize the estimated portion of deferred income tax assets that is more likely than not to not be realized.

The difference between statutory U.S. federal income tax and the Corporation s effective income tax was as follows:

	2016	2015[(1)]	2014[(1)]
Computed at statutory rate	**$ (19,984)**	$ 1,402	$ (683)
Tax differential on non-U.S. earnings	**1,790**	106	128
State income taxes	**(1,535)**	226	(227)
Manufacturers deduction (I.R.C. Section 199)	**204**	(433)	(359)
Meals and entertainment	**143**	136	224
Tax credits	**0**	(243)	(12)
Goodwill impairment	**9,191**	0	0
Increase (reversal) of valuation allowance	**30,405**	0	(33)
Change in tax rates	**1,913**	224	301
Change in uncertain tax positions	**114**	91	(80)
Acquisition-related costs	**571**	981	0
Other net	**(100)**	143	(25)
	$ 22,712	$ 2,633	$ (766)

(1) Certain reclassifications have been made to the prior year columns to conform to the current year presentation.

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Deferred income tax assets and liabilities as of December 31, 2016 and 2015 are summarized below. Unremitted earnings of the Corporation s non-U.S. subsidiaries and affiliates are deemed to be permanently reinvested and, accordingly, no deferred income tax liability has been recorded. It is not practical to estimate the income tax effect that might be incurred if cumulative prior year earnings not previously taxed in the United States were remitted to the United States.

	2016	2015
Assets:		
Employment related liabilities	**$ 18,659**	$ 9,644
Pension liability foreign	**2,241**	2,822
Pension liability domestic	**16,133**	12,934
Liabilities related to discontinued operations	**241**	704
Capital loss carryforwards	**282**	223
Asbestos-related liability	**21,024**	16,356
Net operating loss domestic	**653**	0
Net operating loss state	**2,123**	1,445
Net operating loss foreign	**19,106**	0
Inventory related	**2,157**	4,292
Impairment charge associated with investment in UES-MG	**2,184**	2,298
Investment tax credits foreign	**791**	0
Other	**6,660**	3,311
Gross deferred income tax assets	**92,254**	54,029
Valuation allowance[1]	**(45,449)**	(2,481)
	46,805	51,548
Liabilities:		
Depreciation	**(37,584)**	(29,223)
Mark-to-market adjustment derivatives	**(187)**	(40)
Intangible assets definite life	**(2,067)**	0
Intangible assets indefinite life	**(731)**	0
Other	**(2,003)**	(1,716)
Gross deferred income tax liabilities	**(42,572)**	(30,979)
Net deferred income tax assets	**$ 4,233**	$ 20,569

(1) *Certain deferred income tax assets acquired in the ASW acquisition had valuation allowances recorded in the opening balance sheet. Accordingly, the valuation allowance indicated in the deferred income tax table differs from the valuation allowance recognized in the income tax provision for 2016.*

The following summarizes changes in unrecognized tax benefits for the year ended December 31:

	2016	2015	2014
Balance at the beginning of the year	**$ 315**	$ 52	$ 270
Gross increases for tax positions taken in the current year	**0**	0	0
Gross increases for tax positions taken in prior years	**0**	283	2
Gross decreases in tax positions due to lapse in statute of limitations	**(79)**	(20)	(61)
Gross decreases for tax positions taken in prior years	**0**	0	(17)
Gross decreases for tax settlements with taxing authorities	**0**	0	(142)
Balance at the end of the year	**$ 236**	$ 315	$ 52

If the unrecognized tax benefits were recognized, $49 would reduce the Corporation s effective income tax rate. The amount of penalties and interest recognized in the consolidated balance sheets as of December 31, 2016 and 2015 and in the consolidated statements of operations for 2016, 2015 and 2014 is insignificant. Unrecognized tax benefits of $134 are to expire due to the lapse in the statute of limitations within the next 12 months.

The Corporation is subject to taxation in the United States, various states and foreign jurisdictions, and remains subject to examination by tax authorities for tax years 2013-2016. The combined Indiana income tax returns for 2010-2013 are under examination by the Indiana

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Department of Revenue which started during the first quarter of 2015. The examination is still ongoing as of December 31, 2016. In March 2017, the Corporation was notified by the Internal Revenue Service that the 2014 federal return of one of the Åkers entities was selected for examination. The examination has not yet begun.

NOTE 16 OPERATING LEASES:

The Corporation leases certain factory and office space and certain equipment. Operating lease expense was $1,148 in 2016, $1,043 in 2015 and $995 in 2014. Operating lease payments for subsequent years are $719 for 2017, $578 for 2018, $522 for 2019, $414 for 2020, $395 for 2021 and $804 thereafter.

NOTE 17 RESEARCH AND DEVELOPMENT COSTS:

Expenditures relating to the development of new products, identification of products or process alternatives and modifications and improvements to existing products and processes are expensed as incurred. These expenses approximated $2,716 for 2016, $1,137 for 2015 and $1,328 for 2014.

NOTE 18 RELATED PARTIES:

In the ordinary course of business, the Corporation purchased industrial supplies from a subsidiary of The Louis Berkman Company (LB Co). Certain directors of the Corporation are either officers, directors and/or shareholders of LB Co. Purchases from LB Co approximated $955 in 2016, $1,270 in 2015 and $1,358 in 2014. In addition, LB Co paid the Corporation approximately $72 in 2015 and $100 in 2014 for certain administrative services. The net amount payable to LB Co approximated $93 at December 31, 2015. No amounts were due or payable for 2016. The Corporation does not intend to purchase industrial supplies from LB Co in 2017.

ATR has a $4,990 (RMB 34,655) loan outstanding with its minority shareholder. The loan originally matured in 2008 but has been renewed continually for one year periods. Interest does not compound and has accrued on the outstanding balance, since inception, at the three-to-five-year loan interest rate set by the People s Bank of China in effect at the time of renewal. The interest rate for 2016 approximated 4.90% and accrued interest as of December 31, 2016 approximated $2,265 (RMB 15,730), which is recorded in other current liabilities on the consolidated balance sheet. Purchases from ATR s minority shareholder approximated $140 (RMB 931) in 2016. Excluding the loan and interest outstanding, the amount payable to ATR s minority shareholder at December 31, 2016 for purchases made in the ordinary course of business approximated $206 (RMB 1,429).

NOTE 19 LITIGATION:

The Corporation and its subsidiaries are involved in various claims and lawsuits incidental to their businesses and are also subject to asbestos litigation as described below. In addition, in February 2017, the Corporation, its indirect subsidiary Åkers National Roll Corporation, as well as the Åkers National Roll Company Health & Welfare Benefits Plan were named as defendants in a class action complaint filed in the United States District Court for the Western District of Pennsylvania, where the plaintiffs (currently retired former employees of Åkers National Roll Company, as well as United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial, and Service Workers International Union, AFL-CIO) alleged that the defendants breached collective bargaining agreements and violated the benefit plan by modifying medical benefits of the plaintiffs and similarly situated retirees. The complaint seeks class certification. The Corporation believes the lawsuit is without merit and intend to vigorously defend it. While no assurance can be given as to the ultimate outcome of this matter, the Corporation believes that the final resolution of this action will not have a material adverse effect on our results of operations, financial position, liquidity or capital resources.

Asbestos Litigation

Claims have been asserted alleging personal injury from exposure to asbestos-containing components historically used in some products of predecessors of Air & Liquid Systems Corporation (Asbestos Liability). Those subsidiaries, and in some cases the Corporation, are defendants (among a number of defendants, often in excess of 50) in cases filed in various state and federal courts.

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Asbestos Claims

The following table reflects approximate information about the claims for Asbestos Liability against the subsidiaries and the Corporation for the two years ended December 31, 2016 and 2015:

	2016	2015
Total claims pending at the beginning of the period	**6,212**	8,457
New claims served	**1,452**	1,424
Claims dismissed	**(782)**	(3,339)
Claims settled	**(264)**	(330)
Total claims pending at the end of the period [(1)]	**6,618**	6,212
Gross settlement and defense costs (in 000 s)	**$ 17,960**	$ 19,199
Average gross settlement and defense costs per claim resolved (in 000 s)	**$ 17.17**	$ 5.23

(1) Included as open claims are approximately 444 and 430 claims in 2016 and 2015, respectively, classified in various jurisdictions as inactive or transferred to a state or federal judicial panel on multi-district litigation, commonly referred to as the MDL.

A substantial majority of the settlement and defense costs reflected in the above table was reported and paid by insurers. Because claims are often filed and can be settled or dismissed in large groups, the amount and timing of settlements, as well as the number of open claims, can fluctuate significantly from period to period.

Asbestos Insurance

The Corporation and its Air & Liquid Systems Corporation (Air & Liquid) subsidiary are parties to a series of settlement agreements (Settlement Agreements) with insurers that have coverage obligations for Asbestos Liability (the Settling Insurers). Under the Settlement Agreements, the Settling Insurers accept financial responsibility, subject to the terms and conditions of the respective agreements, including overall coverage limits, for pending and future claims for Asbestos Liability. The Settlement Agreements encompass the substantial majority of insurance policies that provide coverage for claims for Asbestos Liability.

The Settlement Agreements include acknowledgements that Howden North America, Inc. (Howden) is entitled to coverage under policies covering Asbestos Liability for claims arising out of the historical products manufactured or distributed by Buffalo Forge, a former subsidiary of the Corporation (the Products). The Settlement Agreements do not provide for any prioritization on access to the applicable policies or any sublimits of liability as to Howden or the Corporation and Air & Liquid, and, accordingly, Howden may access the coverage afforded by the Settling Insurers for any covered claim arising out of a Product. In general, access by Howden to the coverage afforded by the Settling Insurers for the Products will erode coverage under the Settlement Agreements available to the Corporation and Air & Liquid for Asbestos Liability.

On February 24, 2011, the Corporation and Air & Liquid filed a lawsuit in the United States District Court for the Western District of Pennsylvania against thirteen domestic insurance companies, certain underwriters at Lloyd s, London and certain London market insurance companies, and Howden. The lawsuit sought a declaratory judgment regarding the respective rights and obligations of the parties under excess insurance policies that were issued to the Corporation from 1981 through 1984 as respects claims against the Corporation and Air & Liquid for Asbestos Liability and as respects asbestos bodily-injury claims against Howden arising from the Products. By September 2013, the Corporation and Air & Liquid had reached Settlement Agreements with all but two of the defendant insurers in the coverage action. Those Settlement Agreements specify the terms and conditions upon which the insurer parties are to contribute to defense and indemnity costs for claims for Asbestos Liability. One of the Settlement Agreements entered into by the Corporation and Air & Liquid also provided for the dismissal of claims, without prejudice, regarding two upper-level excess policies issued by one of the insurers. The Court entered Orders dismissing all claims in the action filed against each other by the Corporation and Air & Liquid, on the one hand, and by the settling insurers, on the other. Howden also reached an agreement with eight domestic insurers addressing asbestos-related bodily injury claims arising from the Products, and claims as to those insurers and Howden were also dismissed. Various counterclaims, cross claims and third party claims had been filed in the litigation and remained pending as of September 27, 2013 although only two domestic insurers and Howden remained in the litigation as to the Corporation and Air & Liquid at that time. On September 27, 2013, the Court issued a memorandum opinion and order granting in part and

denying in part cross motions for summary judgment filed by the Corporation and Air & Liquid, Howden, and the insurer parties still in the litigation. On February 26, 2015, the Court issued final judgment. One insurer filed a notice of appeal from the judgment to the U.S. Court of Appeals to the Third Circuit; as a result, several other insurers, Howden, the Corporation, and Air & Liquid filed notices of appeal. On November 2, 2016, the Corporation and Air & Liquid reached a settlement with one of the two insurer defendants that remained in the litigation as to them. Thereafter, the U.S. Court of Appeals issued an order of dismissal of the case on November 23, 2016 by agreement of all parties.

Asbestos Valuations

In 2006, the Corporation retained Hamilton, Rabinovitz & Associates, Inc. (HR&A), a nationally recognized expert in the valuation of asbestos liabilities, to assist the Corporation in estimating the potential liability for pending and unasserted future claims for Asbestos Liability. Based on this analysis, the Corporation recorded a reserve for Asbestos Liability claims pending or projected to be asserted through 2013 as of December 31, 2006. HR&A s analysis has been periodically updated since that time. Most recently, the HR&A analysis was updated in 2016, and additional reserves were established by the Corporation as of December 31, 2016 for Asbestos Liability claims pending or projected to be asserted through 2026. The methodology used by HR&A in its projection in 2016 of the operating subsidiaries liability for pending and unasserted potential future claims for Asbestos Liability, which is substantially the same as the methodology employed by HR&A in prior estimates, relied upon and included the following factors:

- HR&A s interpretation of a widely accepted forecast of the population likely to have been exposed to asbestos;
- epidemiological studies estimating the number of people likely to develop asbestos-related diseases;
- HR&A s analysis of the number of people likely to file an asbestos-related injury claim against the subsidiaries and the Corporation based on such epidemiological data and relevant claims history from January 1, 2014 to September 9, 2016;
- an analysis of pending cases, by type of injury claimed and jurisdiction where the claim is filed;
- an analysis of claims resolution history from January 1, 2014 to September 9, 2016 to determine the average settlement value of claims, by type of injury claimed and jurisdiction of filing; and
- an adjustment for inflation in the future average settlement value of claims, at an annual inflation rate based on the Congressional Budget Office s ten year forecast of inflation.

Using this information, HR&A estimated in 2016 the number of future claims for Asbestos Liability that would be filed through the year 2026, as well as the settlement or indemnity costs that would be incurred to resolve both pending and future unasserted claims through 2026. This methodology has been accepted by numerous courts.

In conjunction with developing the aggregate liability estimate referenced above, the Corporation also developed an estimate of probable insurance recoveries for its Asbestos Liabilities. In developing the estimate, the Corporation considered HR&A s projection for settlement or indemnity costs for Asbestos Liability and management s projection of associated defense costs (based on the current defense to indemnity cost ratio), as well as a number of additional factors. These additional factors included the Settlement Agreements then in effect, policy exclusions, policy limits, policy provisions regarding coverage for defense costs, attachment points, prior impairment of policies and gaps in the coverage, policy exhaustions, insolvencies among certain of the insurance carriers, and the nature of the underlying claims for Asbestos Liability asserted against the subsidiaries and the Corporation as reflected in the Corporation s asbestos claims database, as well as estimated erosion of insurance limits on account of claims against Howden arising out of the Products. In addition to consulting with the Corporation s outside legal counsel on these insurance matters, the Corporation consulted with a nationally-recognized insurance consulting firm it retained to assist the Corporation with certain policy allocation matters that also are among the several factors considered by the Corporation when analyzing potential recoveries from relevant historical insurance for Asbestos Liabilities. Based upon all of the factors considered by the Corporation, and taking into account the Corporation s analysis of publicly available information regarding the credit-worthiness of various insurers, the Corporation estimated the probable insurance recoveries for Asbestos Liability and defense costs through 2026. Although the Corporation believes that the assumptions

employed in the insurance valuation were reasonable and previously consulted with its outside legal counsel and insurance consultant regarding those assumptions, there are other assumptions that could have been employed that would have resulted in materially lower insurance recovery projections.

Based on the analyses described above, the Corporation s reserve at December 31, 2016 for the total costs, including defense costs, for Asbestos Liability claims pending or projected to be asserted through 2026 was $171,181 of which approximately 70% was attributable to settlement costs for unasserted claims projected to be filed through 2026 and future defense costs. While it is

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reasonably possible that the Corporation will incur additional charges for Asbestos Liability and defense costs in excess of the amounts currently reserved, the Corporation believes that there is too much uncertainty to provide for reasonable estimation of the number of future claims, the nature of such claims and the cost to resolve them beyond 2026. Accordingly, no reserve has been recorded for any costs that may be incurred after 2026.

The Corporation s receivable at December 31, 2016 for insurance recoveries attributable to the claims for which the Corporation s Asbestos Liability reserve has been established, including the portion of incurred defense costs covered by the Settlement Agreements in effect through December 31, 2016, and the probable payments and reimbursements relating to the estimated indemnity and defense costs for pending and unasserted future Asbestos Liability claims, was $115,945.

The following table summarizes activity relating to insurance recoveries for each of the years ended December 31, 2016 and 2015.

	2016	2015
Insurance receivable asbestos, beginning of the year	**$ 125,423**	$ 140,651
Settlement and defense costs paid by insurance carriers [1]	**(23,138)**	(15,228)
Changes in estimated coverage	**13,660**	0
Insurance receivable asbestos, end of the year	**$ 115,945**	$ 125,423

(1) Settlement and defense costs paid by insurance carriers for 2016, includes a lump sum cash settlement with an insurance carrier of $9,808.

The insurance receivable recorded by the Corporation does not assume any recovery from insolvent carriers and a substantial majority of the insurance recoveries deemed probable was from insurance companies rated A (excellent) or better by A.M. Best Corporation. There can be no assurance, however, that there will not be further insolvencies among the relevant insurance carriers, or that the assumed percentage recoveries for certain carriers will prove correct. The difference between insurance recoveries and projected costs is not due to exhaustion of all insurance coverage for Asbestos Liability. The Corporation and the subsidiaries have substantial additional insurance coverage which the Corporation expects to be available for Asbestos Liability claims and defense costs that the subsidiaries and it may incur after 2026. However, this insurance coverage also can be expected to have gaps creating significant shortfalls of insurance recoveries against claims expense, which could be material in future years.

The amounts recorded by the Corporation for Asbestos Liabilities and insurance receivables rely on assumptions that are based on currently known facts and strategy. The Corporation s actual expenses or insurance recoveries could be significantly higher or lower than those recorded if assumptions used in the Corporation s or HR&A s calculations vary significantly from actual results. Key variables in these assumptions are identified above and include the number and type of new claims to be filed each year, the average cost of disposing of each such new claim, average annual defense costs, compliance by relevant parties with the terms of the Settlement Agreements, the resolution of remaining coverage issues with insurance carriers, and the solvency risk with respect to the relevant insurance carriers. Other factors that may affect the Corporation s Asbestos Liability and ability to recover under its insurance policies include uncertainties surrounding the litigation process from jurisdiction to jurisdiction and from case to case, reforms that may be made by state and federal courts, and the passage of state or federal tort reform legislation.

The Corporation intends to evaluate its estimated Asbestos Liability and related insurance receivables as well as the underlying assumptions on a regular basis to determine whether any adjustments to the estimates are required. Due to the uncertainties surrounding asbestos litigation and insurance, these regular reviews may result in the Corporation incurring future charges; however, the Corporation is currently unable to estimate such future charges. Adjustments, if any, to the Corporation s estimate of its recorded Asbestos Liability and/or insurance receivables could be material to operating results for the periods in which the adjustments to the liability or receivable are recorded, and to the Corporation s liquidity and consolidated financial position.

NOTE 20 ENVIRONMENTAL MATTERS:

The Corporation is currently performing certain remedial actions in connection with the sale of real estate previously owned and periodically incurs costs to maintain compliance with environmental laws and regulations. Environmental exposures are difficult to assess and estimate for numerous reasons, including lack of reliable data, the multiplicity of possible solutions, the years of remedial and monitoring activity required, and identification of new sites. In the opinion of management, the potential liability for all environmental compliance measures of approximately $2,457 at December 31, 2016 is considered adequate based on information known to date.

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NOTE 21 BUSINESS SEGMENTS:

The Corporation organizes its business into two operating segments Forged and Cast Engineered Products and Air and Liquid Processing. Summarized financial information concerning the Corporation s reportable segments is shown in the following tables. Corporate assets included under Identifiable Assets represent primarily cash and cash equivalents and other items not allocated to reportable segments. Long-lived assets exclude deferred income tax assets. Corporate costs are comprised of operating costs of the corporate office and other costs not allocated to the segments. The segment information for the Forged and Cast Engineered Products for 2016 includes information for Åkers and ASW as of December 31, 2016 and from the date of acquisition. Effective May 1, 2015, the Corporation completed an internal reorganization of its back office functions which resulted in certain employees of the segments becoming employees of the Corporation and associated costs (approximately $2,400 and $1,600 for the years ended December 31, 2016 and 2015, respectively) being recorded as other expense, including corporate costs in the following table. The accounting policies are the same as those described in Note 1.

	Net Sales			(Loss) Income Before Income Taxes and Equity Losses in Chinese Joint Venture		
	2016	2015	2014	**2016**	2015	2014
Forged and Cast Engineered Products[1]	**$ 247,652**	$ 152,267	$ 179,388	**$ (42,878)**	$ (3,444)	$ 4,380
Air and Liquid Processing[1]	**84,214**	86,213	93,470	**5,123**	23,166	4,222
Total Reportable Segments	**331,866**	238,480	272,858	**(37,755)**	19,722	8,602
Corporate costs, including other income (expense)				**(19,765)**	(15,202)	(9,494)
	$ 331,866	$ 238,480	$ 272,858	**$ (57,520)**	$ 4,520	$ (892)

	Capital Expenditures			Depreciation and Amortization Expense			Identifiable Assets[2]		
	2016	2015	2014	**2016**	2015	2014	**2016**	2015	2014
Forged and Cast Engineered Products	**$ 9,440**	$ 8,608	$ 12,884	**$ 19,166**	$ 10,468	$ 10,303	**$ 348,331**	$ 228,718	$ 260,384
Air and Liquid Processing	**385**	494	356	**1,183**	1,262	1,444	**173,017**	183,024	197,518
Corporate	**741**	305	69	**114**	57	71	**44,541**	94,414	78,507
	$ 10,566	$ 9,407	$ 13,309	**$ 20,463**	$ 11,787	$ 11,818	**$ 565,889**	$ 506,156	$ 536,409

	Net Sales[3]			Long-Lived Assets[4]			(Loss) Income Before Income Taxes and Equity Losses in Chinese Joint Venture		
Geographic Areas:	**2016**	2015	2014	**2016**	2015	2014	**2016**	2015	2014
United States	**$ 159,531**	$ 126,417	$ 143,493	**$ 206,460**	$ 236,707	$ 252,739	**$ (25,906)**	$ 5,855	$ (1,471)
Foreign	**172,335**	112,063	129,365	**133,141**	29,198	31,359	**$ (31,614)**	(1,335)	579
	$ 331,866	$ 238,480	$ 272,858	**$ 339,601**	$ 265,905	$ 284,098	**$ (57,520)**	$ 4,520	$ (892)

	Net Sales by Product Line[5]		
	2016	2015	2014
Forged and cast engineered products	**$ 247,652**	$ 152,267	$ 179,388
Heat exchange coils	**28,139**	32,745	39,109
Centrifugal pumps	**36,359**	33,120	32,983
Air handling systems	**19,716**	20,348	21,378
	$ 331,866	$ 238,480	$ 272,858

(1) *Income (loss) before income taxes and equity losses in Chinese Joint Venture for the Forged and Cast Engineered Products segment includes a pre-tax charge of $26,676 principally for the write off of goodwill associated with the Forged and Cast Engineered Products reporting unit deemed to be impaired.*

Income (loss) before income taxes and equity losses in Chinese Joint Venture for the Air and Liquid Processing segment for 2016 includes pre-tax charge of $4,565 for estimated costs of asbestos-related litigation through 2026 net of estimated insurance recoveries and a settlement with an insurance carrier for an amount greater than originally estimated, 2015 includes pre-tax asbestos-related proceeds of $14,333 received from two insurance carriers in rehabilitation, and 2014 includes a pre-tax charge of $4,487 for estimated costs of asbestos-related litigation through 2024 net of estimated insurance recoveries.

(2) *Identifiable assets for the Forged and Cast Engineered Products segment include investments in joint ventures of $2,019, $3,097 and $3,914 at December 31, 2016, 2015 and 2014, respectively. The change in the identifiable assets of the Air and Liquid Processing segment relates primarily to the movement in asbestos-related insurance receivables, the balances of which equaled $115,945, $125,423 and $140,651 at December 31, 2016, 2015 and 2014, respectively.*

(3) *Net sales are attributed to countries based on location of the customer. Sales to individual countries were less than 10% of consolidated net sales each of the years.*

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(4) *Foreign long-lived assets represent primarily investments in joint ventures of $2,019, $3,097 and $3,914 at December 31, 2016, 2015 and 2014, respectively, and assets of the U.K. and Åkers operations. Long-lived assets of the U.S. include noncurrent asbestos-related insurance receivables of $102,945, $108,423 and $123,651 for 2016, 2015 and 2014, respectively.*

(5) *For the Forged and Cast Engineered Products segment, two customers accounted for 24%, 33% and 29% of its net sales for 2016, 2015 and 2014, respectively. For the Air and Liquid Processing segment, one customer accounted for 10% of its net sales for 2016 and no customers exceeded 10% of net sales for 2015 or 2014. One customer accounted for 11% of the Corporation s consolidated sales in 2016.*

NOTE 22 SUBSEQUENT EVENTS:

On March 2, 2017, the Corporation amended its Revolving Credit and Security Agreement to add ASW and Åkers AB as borrowers, to reduce the European sublimit from $25,000 to $15,000 and add a Canadian sublimit of $15,000. In addition, the Corporation paid $7,596 to retire the outstanding balances of the ASW credit facility and term loan, including interest, fees and early termination costs.

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QUARTERLY INFORMATION UNAUDITED

The quarterly information includes the results of operations of Åkers from March 3, 2016 and ASW from November 1, 2016, their respective dates of acquisition. Accordingly, the quarterly information for the second, third and fourth quarters of 2016 is not fully comparable to earlier quarters.

(in thousands, except per share amounts)	**First Quarter**	**Second Quarter**	**Third Quarter**	**Fourth Quarter**
2016				
Net sales	**$ 63,578**	**$ 93,301**	**$ 82,861**	**$ 92,126**
Gross profit[(a)]	**12,473**	**15,849**	**15,594**	**11,454**
Net (loss) income attributable to Ampco-Pittsburgh[(b)]	**(2,890)**	**(6,486)**	**(27,382)**	**(43,062)**
Net (loss) income per common share attributable to Ampco-Pittsburgh:				
Basic[(b)]	**(0.26)**	**(0.53)**	**(2.23)**	**(3.51)**
Diluted[(b)]	**(0.26)**	**(0.53)**	**(2.23)**	**(3.51)**
Comprehensive (loss) income attributable to Ampco-Pittsburgh[(c)]	**(1,501)**	**(10,739)**	**(22,894)**	**(47,972)**
2015				
Net sales	$ 65,087	$ 59,973	$ 58,094	$ 55,326
Gross profit[(a)]	13,043	11,776	9,439	8,131
Net income (loss) attributable to Ampco-Pittsburgh[(d)]	72	(520)	(1,511)	3,332
Net income (loss) per common share attributable to Ampco-Pittsburgh:				
Basic[(d)]	0.01	(0.05)	(0.14)	0.32
Diluted[(d)]	0.01	(0.05)	(0.14)	0.32
Comprehensive income (loss) attributable to Ampco-Pittsburgh[(e)]	3,692	2,789	(2,250)	8,296

(a) Gross profit excludes depreciation and amortization.

(b) The second, third and fourth quarters of 2016 include valuation allowances of $1,419, $26,903 and $2,083, respectively, to recognize existing net deferred income tax assets to their estimated net realizable value. Fourth quarter of 2016 also includes an after-tax charge of $4,565 or $0.38 per common share for estimated costs of asbestos-related litigation through 2026 net of estimated insurance recoveries and a settlement with an insurance carrier for an amount greater than originally estimated, and an after-tax charge of $26,676 or $2.23 per common share primarily for the write off of goodwill in the Forged and Cast Engineered Products reporting unit deemed to be impaired.

(c) Third quarter of 2016 includes an adjustment to recognize the effect of a plan amendment to one of its other postretirement benefit plans of $4,762. No income tax benefit was recognized due to the Corporation having a valuation allowance recorded against the deferred income tax assets for the jurisdiction affected by the plan amendment.

(d) Fourth quarter of 2015 includes an after-tax credit of $9,316 or $0.89 per common share for the net benefit of proceeds received from two insurance carriers in rehabilitation.

(e) First quarter of 2015 includes a net-of-tax adjustment to recognize the effect of a plan amendment to the other postretirement benefit plan of $4,163. Fourth quarter of 2015 includes a net-of-tax adjustment to reflect the funded status of the various pension and other postretirement benefit plans of $5,231.

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of Ampco-Pittsburgh Corporation

We have audited the accompanying consolidated balance sheets of Ampco-Pittsburgh Corporation and subsidiaries (the Corporation) as of December 31, 2016 and 2015, and the related consolidated statements of operations, comprehensive income (loss), shareholders equity, and cash flows for each of the three years in the period ended December 31, 2016. These financial statements are the responsibility of the Corporation s management. Our responsibility is to express an opinion on these financial statements 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 Ampco-Pittsburgh 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.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the Corporation 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 March 16, 2017 expressed an unqualified opinion on the Corporation s internal control over financial reporting.

Pittsburgh, Pennsylvania

March 16, 2017

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ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

The Corporation did not experience any changes in, or disagreements with its accountants on, accounting and financial disclosure during the period covered.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures. An evaluation of the effectiveness of the Corporation s disclosure controls and procedures as of the end of the period covered by this report was carried out under the supervision, and with the participation, of management, including the principal executive officer and principal financial officer. Disclosure controls and procedures are defined under Securities and Exchange Commission (SEC) rules as controls and other procedures that are designed to ensure that information required to be disclosed by a company in the reports that it files under the Exchange Act is recorded, processed, summarized and reported within required time periods. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by an issuer in the reports that it files or submits under the Exchange Act is accumulated and communicated to the issuer s management, including its principal executive and principal financial officers, or persons performing similar functions, as appropriate, to allow timely decisions regarding required disclosure. Based on that evaluation, the Corporation s management, including the principal executive officer and principal financial officer, has concluded that the Corporation s disclosure controls and procedures were effective at the reasonable assurance level as of December 31, 2016.

Management s Annual Report on Internal Control Over Financial Reporting. The Corporation s management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a 15(f) under the Securities Exchange Act of 1934, as amended). Internal control over financial reporting cannot provide absolute assurance of achieving financial reporting objectives because of its inherent limitations. Effective internal control over financial reporting can only provide reasonable assurance that the objectives of the control process are met. Internal control over financial reporting is a process that involves human diligence and compliance and is subject to lapses in judgment and breakdowns resulting from human failures. Internal control over financial reporting also can be circumvented by collusion or improper management override. Because of such limitations, there is a risk that material misstatements may not be prevented or detected on a timely basis by internal control over financial reporting. However, these inherent limitations are known features of the financial reporting process. Therefore it is possible to design into the process safeguards to reduce, though not eliminate, this risk. Further, the design of internal control over financial reporting includes the consideration of the benefits of each control relative to the cost of the control.

Management assessed the effectiveness of internal control over financial reporting as of December 31, 2016. In making this assessment, management used the criteria set forth in *Internal Control Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on those criteria and management s assessment, management, including the principal executive officer and principal financial officer, concluded that the Corporation s internal control over financial reporting was effective as of December 31, 2016.

Management excluded from its assessment the internal control over financial reporting at Åkers and ASW, which were acquired on March 3, 2016 and November 1, 2016, respectively. The financial statements of Åkers constitute approximately 25% and 36% of total assets and net sales, respectively, of the consolidated financial statement amounts as of and for the year ended December 31, 2016. The financial statements of ASW constitute approximately 4% and 2% of total assets and net sales, respectively, of the consolidated financial statement amounts as of and for the year ended December 31, 2016.

The Corporation s independent registered public accounting firm, Deloitte & Touche LLP, has issued an attestation report on the Corporation s internal control over financial reporting which is included herein.

Changes in Internal Control Over Financial Reporting. Except as described below, there were no changes in the Corporation s internal control over financial reporting during the quarter ended December 31, 2016 that have materially affected, or are reasonably likely to materially affect, its internal control over financial reporting. On March 3, 2016 and November 1, 2016, the Corporation acquired Åkers and ASW, respectively, and is in the process of integrating both businesses into its overall internal control over financial reporting process.

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of Ampco-Pittsburgh Corporation

We have audited the internal control over financial reporting of Ampco-Pittsburgh Corporation and subsidiaries (the Corporation) 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. As described in Management s Annual Report on Internal Control Over Financial Reporting, management excluded from its assessment the internal control over financial reporting at Åkers and ASW, which were acquired on March 3, 2016 and November 1, 2016, respectively. The financial statements of Åkers constitute approximately 25% and 36% of total assets and net sales, respectively, of the consolidated financial statement amounts as of and for the year ended December 31, 2016. The financial statements of ASW constitute approximately 4% and 2% of total assets and net sales, respectively, of the consolidated financial statement amounts as of and for the year ended December 31, 2016. Accordingly, our audit did not include the internal control over financial reporting at Åkers or ASW. The Corporation 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 Corporation 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 Corporation 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 as of and for the year ended December 31, 2016 of the Corporation and our report dated March 16, 2017 expressed an unqualified opinion on those financial statements.

Pittsburgh, Pennsylvania
March 16, 2017

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ITEM 9B. OTHER INFORMATION

None

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information about the Corporation s directors required by Item 401 of Regulation S-K and not otherwise set forth below is contained under the caption Proposal 1: Election of Directors in the Corporation s definitive Proxy Statement for the 2017 Annual Meeting of Shareholders (the Proxy Statement) which the Company anticipates filing with the Securities and Exchange Commission, pursuant to Regulation 14A, not later than 120 days after the end of the Corporation s fiscal year, and is incorporated herein by reference. The information required by Item 401 of Regulation S-K regarding executive officers is set forth in Part I, Item 1 of this report under Executive Officers.

The information required by Item 405 of Regulation S-K is contained under the caption Security Ownership of Certain Beneficial Owners and Management of the Proxy Statement and is incorporated by reference.

The Corporation and its subsidiaries have adopted a Code of Business Conduct and Ethics that applies to all of their officers, directors and employees, as well as an additional Code of Ethics that applies to the Corporation s Chief Executive Officer and Chief Financial Officer, are available on the Corporation s website at www.ampcopittsburgh.com.

The information required by Items 407(c)(3), (d)(4) and (d)(5) of Regulation S-K is included under the captions Corporate Governance Director Nominating Procedures and Board Committees and Related Matters Audit Committee of the Proxy Statement and is incorporated by reference.

IT EM 11. EXECUTIVE COMPENSATION

The information required for this Item 11 is contained in the Proxy Statement under the captions Director Compensation, Compensation Discussion and Analysis, Potential Payments upon Change in Control, Compensation Committee Interlocks and Insider Participation and Compensation Committee Report.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDERS MATTERS

The information required by Item 201(d) of Regulation S-K relating to securities authorized for issuance under equity compensation plans is contained under the caption Outstanding Equity Awards at Fiscal Year End of the Proxy Statement and is incorporated by reference.

The information required by Item 403 of Regulation S-K is contained under the captions Security Ownership of Certain Beneficial Owners and Management of the Proxy Statement and is incorporated by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by Item 404(a) of Regulation S-K is contained under the caption Certain Relationships and Related Transactions in the Proxy Statement and is incorporated by reference.

The information required by Item 407(a) of Regulation S-K is contained under the caption Corporate Governance Board Independence of the Proxy Statement and is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by Item 14 is contained in the Proxy Statement under the caption Ratification of the Appointment of Deloitte & Touche as the Independent Registered Public Accounting Firm for 2017 is incorporated herein.

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PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

THE FOLLOWING DOCUMENTS ARE FILED AS PART OF THIS REPORT:

1. Financial Statements

Consolidated Balance Sheets

Consolidated Statements of Operations

Consolidated Statements of Comprehensive Income (Loss)

Consolidated Statements of Shareholders Equity

Consolidated Statements of Cash Flows

Notes to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm

2. Financial Statement Schedules

The following additional financial data should be read in conjunction with the consolidated financial statements in this Annual Report on Form 10-K. Schedules not included with this additional financial data have been omitted because they are not applicable or the required information is shown in the financial statements or notes thereto:

	Schedule Number	Page Number
Index to Ampco-Pittsburgh Corporation Financial Data		79
Report of Independent Registered Public Accounting Firm		80
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3. Exhibits

Exhibit No.

2.1 Share Sale and Purchase Agreement, dated as of December 2, 2015, by and between, inter alia, Åkers Holdings AB and Ampco-Pittsburgh Corporation, incorporated by reference to Current Report on Form 8-K filed on December 8, 2015.

2.2 Addendum to Share Sale and Purchase Agreement, dated March 1, 2016, among Ampco-Pittsburgh Corporation, Ampco UES Sub, Inc., Altor Fund II GP Limited, and Åkers Holding AB, incorporated by reference to Current Report on Form 8-K filed on March 7, 2016.

2.3 Second Addendum to Share Sale and Purchase Agreement, dated March 3, 2016, among Ampco-Pittsburgh Corporation, Ampco UES Sub, Inc., Altor Fund II GP Limited, and Åkers Holding AB, incorporated by reference to Current Report on Form 8-K filed on March 7, 2016.

2.4	Purchase Agreement by and among Ampco UES Sub, Inc., ASW Steel Inc., CK Pearl Fund, Ltd., CK Pearl Fund LP, and white Oak Strategic Master Fund, L.P., incorporated by reference to Current Report on Form 8-K filed on November 4, 2016.
3.1	Articles of Incorporation incorporated by reference to the Quarterly Report on Form 10-Q for the quarter ended March 31, 1983; the Quarterly Report on Form 10-Q for the quarter ended March 31, 1984; the Quarterly Report on Form 10-Q for the quarter ended March 31, 1985; the Quarterly Report on Form 10-Q for the quarter ended March 31, 1987; the Registration Statement on Form 8-A dated September 30, 1998.
3.2	Amended and Restated By-laws, incorporated by reference to Form 8-K filed on December 23, 2015.
4.1	Converting Note, issued by Ampco-Pittsburgh Corporation to Svenska Handelsbanken AB (publ) on March 3, 2016, incorporated by reference to Current Report on Form 8-K filed on March 7, 2016.
4.2	Promissory Note, issued by Ampco-Pittsburgh Corporation to Altor Fund II GP Limited on March 3, 2016, incorporated by reference to Current Report on Form 8-K filed on March 7, 2016.
4.3	Promissory Note, issued by Ampco-Pittsburgh Corporation to Svenska Handelsbanken AB (publ) on March 3, 2016, incorporated by reference to Current Report on Form 8-K filed on March 7, 2016.

10.1	Note Sale and Purchase Agreement, dated March 3, 2016, by and among Ampco-Pittsburgh Corporation, Altor Fund II GP Limited and Svenska Handelsbanken AB (publ), incorporated by reference to Current Report on Form 8-K filed on March 7, 2016.
10.2	Shareholder Support Agreement, dated March 3, 2016, by and between Ampco-Pittsburgh Corporation and Altor Fund II GP Limited, incorporated by reference to Current Report on Form 8-K filed on March 7, 2016.
10.3	1988 Supplemental Executive Retirement Plan, as amended and restated December 17, 2008, and further amended on July 1, 2015, incorporated by reference to the 2008 Annual Report on Form 10-K and Quarterly Report on Form 10-Q filed on August 10, 2015.
10.4	Ampco-Pittsburgh Corporation 2008 Omnibus Incentive Plan, incorporated by reference to the Definitive Proxy Statement for the 2008 Annual Meeting of Shareholders filed on March 6, 2008.
10.5	Ampco-Pittsburgh Corporation 2011 Omnibus Incentive Plan, incorporated by reference to the Definitive Proxy Statement for the 2011 Annual Meeting of Shareholders filed on March 22, 2011.
10.6	Ampco-Pittsburgh Corporation 2016 Omnibus Incentive Plan, incorporated by to the supplement to Definitive Proxy Statement for the 2016 Annual Meeting of Shareholders filed on March 25, 2016.
10.7	Retirement and Consulting Agreement between Ampco-Pittsburgh Corporation and Robert A. Paul effective January 1, 2015, incorporated by reference to the 2014 Annual Report on Form 10-K filed on March 16, 2015.
10.8	Amendment to Retirement and Consulting Agreement between Ampco-Pittsburgh Corporation and Robert A. Paul, dated March 2, 2016, incorporated by reference to the 2016 Annual Report on Form 10-K filed on March 15, 2016.
10.9	Offer Letter between the Corporation and John S. Stanik dated November 25, 2014, incorporated by reference to the 2014 Annual Report on Form 10-K filed on March 16, 2015.
10.10	Change in Control Agreement between Ampco-Pittsburgh Corporation and John S. Stanik dated January 31, 2015, incorporated by reference to the 2014 Annual Report on Form 10-K filed on March 16, 2015.
10.11	Change in Control Agreement between Ampco-Pittsburgh Corporation and Maria Trainor, dated June 1, 2015, incorporated by reference to the Quarterly Report on Form 10-Q filed on August 10, 2015.
10.12	Amended and Restated Change in Control Agreements between Ampco-Pittsburgh Corporation and certain officers of Ampco-Pittsburgh Corporation and certain of its subsidiaries, each dated as of November 4 , 2015, incorporated by reference to the Quarterly Report on Form 10-Q filed on November 6, 2015.
10.13	Change in Control Agreement between Ampco-Pittsburgh Corporation and Michael G. McAuley, dated April 25, 2016, incorporated by reference to the Current Report on Form 8-K filed on April 25, 2016.
10.14	Change in Control Agreement between Ampco-Pittsburgh Corporation and Rodney L. Scagline, dated May 5, 2016, incorporated by reference to the Quarterly Report on Form 10-Q filed on May 10, 2016.
10.15	Amendment No. 1 to Amended and Restated Union Electric Steel Corporation Retirement Restoration Plan for Robert G. Carothers, effective as of July 1, 2015, incorporated by reference to the Quarterly Report on Form 10-Q filed on August 10, 2015.
10.16	Retirement and Consulting Agreement, effective as of May 1, 2016, by and between Union Electric Steel Corporation and Robert G. Carothers, incorporated by reference to Current Report on Form 8-K filed on May 3, 2016.
10.17	Revolving Credit and Security Agreement, effective as of May 20, 2016, among Ampco-Pittsburgh Corporation and PNC Bank, National Association, as administrative agent, and certain lenders, the guarantors, and the other agents party thereto, incorporated by reference to Current Report on Form 8-K filed on May 24, 2016.
10.18	First Amendment to Revolving Credit and Security Agreement, dated October 31, 2016, by and among Ampco-Pittsburgh Corporation and PNC Bank, National Association, as administrative agent, and certain lenders, the guarantors, and the other agents party thereto, incorporated by reference to Current Report on Form 8-K filed on November 4, 2016.

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10.19	Second Amendment to Revolving Credit and Security Agreement, dated March 2, 2017, by and among Ampco-Pittsburgh Corporation and PNC Bank, National Association, as administrative agent, and certain lenders, the guarantors, and the other agents party thereto, incorporated by reference to Current Report on Form 8-K filed on March 7, 2017.
10.20	Form of Notice of Grant of Restricted Stock Unit Award (Time-Vesting), filed herewith.
10.21	Form of Notice of Grant of Restricted Stock Unit Award (Performance-Vesting), filed herewith.
21	Significant Subsidiaries
23.1	Consent of Deloitte & Touche LLP
23.2	Consent of Hamilton, Rabinovitz & Associates, Inc.
31.1	Certification of Principal Executive Officer pursuant to Section 302 of The Sarbanes-Oxley Act of 2002.
31.2	Certification of Principal Financial Officer pursuant to Section 302 of The Sarbanes-Oxley Act of 2002.
32.1	Certification of Principal Executive Officer pursuant to Section 906 of The Sarbanes-Oxley Act of 2002.
32.2	Certification of Principal Financial Officer pursuant to Section 906 of The Sarbanes-Oxley Act of 2002.
101	Interactive Data File (XBRL)

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ITEM 16. FORM 10-K SUMMARY

Not applicable.

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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.

March 16, 2017

AMPCO-PITTSBURGH CORPORATION
By:
Name: **John S. Stanik**
Title: 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 their capacities and on the dates indicated.

SIGNATURE	TITLE	DATE
John S. Stanik	Director and Chief Executive Officer (Principal Executive Officer)	March 16, 2017
Michael G. McAuley	Vice President, Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)	March 16, 2017
James J. Abel	Director	March 16, 2017
Leonard M. Carroll	Director	March 16, 2017
Michael I. German	Director	March 16, 2017
Paul A. Gould	Director	March 16, 2017
William K. Lieberman	Director	March 16, 2017

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SIGNATURE	TITLE	DATE
Laurence E. Paul	Director	March 16, 2017
Stephen E. Paul	Director	March 16, 2017
Carl H. Pforzheimer, III	Director	March 16, 2017
Ernest G. Siddons	Director	March 16, 2017
J. Fredrik Strömholm	Director	March 16, 2017

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of Ampco-Pittsburgh Corporation

We have audited the consolidated financial statements of Ampco-Pittsburgh Corporation and subsidiaries (the Corporation) as of December 31, 2016 and 2015, and for each of the three years in the period ended December 31, 2016, and the Corporation s internal control over financial reporting as of December 31, 2016, and have issued our reports thereon dated March 16, 2017; such reports are included elsewhere in this Form 10-K. Our audits also included the consolidated financial statement schedule of the Corporation listed in Item 15. The consolidated financial statement schedule is the responsibility of the Corporation s management. Our responsibility is to express an opinion based on our audits. In our opinion, such consolidated 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.

Pittsburgh, Pennsylvania

March 16, 2017

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SCHEDULE II

Valuation and Qualifying Accounts

For the Years Ended December 31, 2016, 2015 and 2014

(in thousands)

Description	Balance at Beginning of Period	Additions: Charged to Costs and Expenses	Additions: Charged to Other Accounts	Deductions	Other[4]	Balance at End of Period
Year ended December 31, 2016						
Allowance for doubtful accounts	$ 983	$ 1,598	$ 0	$ (353)	$ 0	$ 2,228
Valuation allowance against gross deferred income tax assets	$ 2,481	$ 0	$ 30,405[2]	$ 0	$ 12,563	$ 45,449
Year ended December 31, 2015						
Allowance for doubtful accounts	$ 1,374	$ 408	$ (762)[1]	$ (25)	$ (12)	$ 983
Valuation allowance against gross deferred income tax assets	$ 3,254	$ 0	$ (715)[2]	$ 0	$ (58)	$ 2,481
Year ended December 31, 2014						
Allowance for doubtful accounts	$ 551	$ 1,381	$ 0	$ (531)	$ (27)	$ 1,374
Valuation allowance against gross deferred income tax assets	$ 2,639	$ 0	$ 721[2]	$ (33)[3]	$ (73)	$ 3,254

(1) Represents collection of receivables previously provided for in the allowance for doubtful accounts.

(2) Represents valuation allowances established for deferred income tax assets since it is more likely than not that the assets will not be realized.

(3) Reduction in valuation allowances reflects primarily changes in the amount of deferred income tax assets expected to be realized, resulting in credit to the income tax provision in the consolidated statements of operations.

(4) Represents primarily valuation allowances recorded at the date of the opening balance sheet for ASW for the year ended 2016 and impact from changes in foreign currency exchange rates and income tax rates for the years ended 2015 and 2014.