ASTRONICS CORPORATION

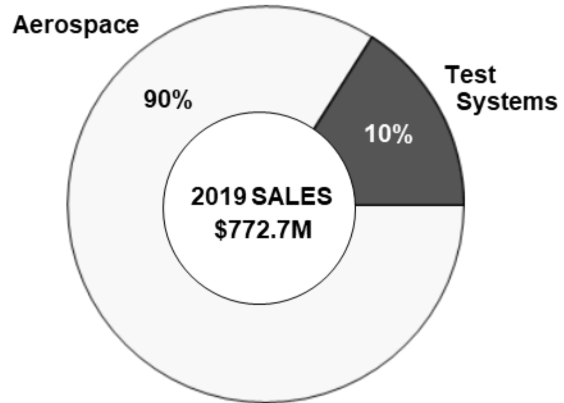
2019 Annual Report

ASTRONICS
CORPORATION

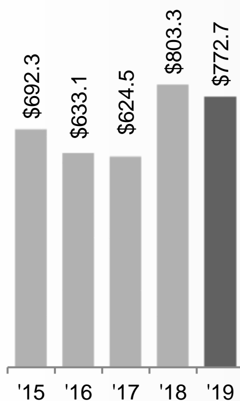
Nasdaq: ATRO

We serve the world's aerospace, defense, and other mission-critical industries with proven, innovative technology solutions. We work side-by-side with customers, integrating our array of power, connectivity, lighting, structures, interiors and test technologies to solve complex challenges.

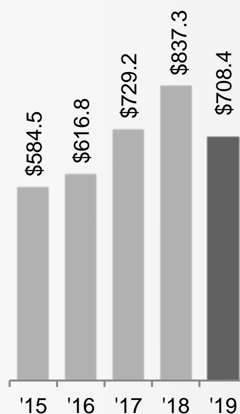
For over 50 years, we have delivered creative, customer-focused solutions with exceptional responsiveness. Today, global airframe manufacturers, airlines, military branches, completion centers and Fortune 500 companies rely on our collaborative spirit and innovation to deliver leading technology and solutions.



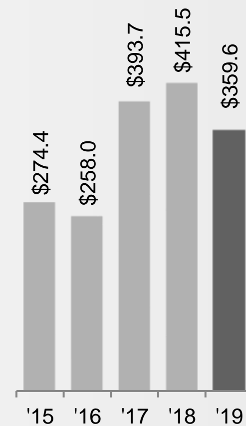
SALES
(in millions)



BOOKINGS
(in millions)



BACKLOG
(in millions)



Dear Shareholders,

2019 was a year of significant transition and progress for our Company. We accomplished a lot and felt at the end of the year that we were well positioned for 2020. But 2020 is turning out to be something unexpected, which is discussed at the end of this letter.

2019 Review

2019 had measurable forward progress in both our segments. Our Test business was significantly rearranged, while our Aerospace segment saw a concentrated focus on resolving issues with our "three challenged businesses."

As for the rearrangement of our Test segment, in February 2019, we sold our semiconductor test product line for $104 million resulting in a pre-tax gain of $80 million. By divesting the business, we put the technology in the hands of another company that can further its adoption for the benefit of its customers and employees. It was a transaction which we believe turned out well for all involved.

The transaction significantly downsized our Test footprint, but also allowed us to focus on our core market and explore other opportunities for growth. One promising pursuit is the mass transit market involving trains and subways, which are becoming more integrated and digitized. Operators are looking to implement test regimes that are similar to those that are practiced in the aerospace and defense industry, so we believe our skillset is increasingly applicable in this market. Our first significant mass transit win was with New York City for a $30 million program. And late in 2019 we acquired Diagnosys, a Boston-based test company, focused on the transit space, to broaden our resources and capabilities. We have a number of pursuits in process and are hopeful that mass transit test will be a noteworthy contributor to our results in the immediate future.

We also made progress furthering our pursuit of the radio test market, geared at the sophisticated communication devices used by military forces and civilian first responder organizations such as police forces and fire departments. We have long been focused on the military market, but supplemented our efforts with the acquisition mid-year of Freedom Communications Technologies, which focuses on the civilian market. Combined we are a stronger operation.

In our Aerospace segment, we resolved our challenges with our "three struggling business," such that the cumulative operating loss of $32.7 million that they realized in 2019, excluding restructuring and impairment charges, will trend towards break-even in 2020.

This was partially accomplished by a physical relocation in Chicago of three separate facilities into two. We also finally completed the development phase of our new cabin management system for large business jets called Avenir, which turned out to be a much more expensive development program than we originally expected. Finally, late in the year, we restructured our antenna business significantly, downsizing the operation and narrowing its focus. The antenna restructuring came with write-offs and reserves of $34 million, but these actions collectively are expected to largely eliminate the operating losses at the struggling businesses, reducing the margin headwinds we have seen in the Aerospace segment in the recent past.

For the year, consolidated revenue declined from $803 million to $773 million, driven largely by the decline in semiconductor test sales of $75 million due to the sale of that business. Adjusted for the semiconductor sale*, revenue grew 6.1% in 2019.

Net income was $52 million, or $1.60 per diluted share, and benefited from the gain on the sale of the semiconductor business. Adjusted Net Income* was 3.9% of sales after backing out the effects of the semiconductor sale, a legal reserve for ongoing litigation, and write-offs associated with the antenna restructuring.

It was an eventful year in which much was accomplished, and we ended it feeling we were well prepared for the future.

The Astronics Board of Directors

Our Board also saw significant changes during the year.

Sadly, we lost two members, John Drenning and Kevin Keane, both of whom joined our board in 1970. John was our corporate counsel and drafted many of the Company's foundational documents. Kevin led the Company as CEO from 1974 to 2003 and Chairman from 1974 to 2019. The two were great friends and they have left an indelible mark on our Company. We will always remember their enthusiasm and support.

We also welcomed two new members during the year, Tonit Calaway and Robert Keane. They both bring strong skills and broad experience to our board and have hit the ground running. Our Board now consists of nine people, six of whom have served fewer than five years, and represents a healthy combination of fresh perspectives, tenured industry expertise, and long-term Company familiarity.

2020 Coronavirus

Unfortunately, 2020 has seen the onset of COVID-19, with significant ramifications for our Company, our industry, and the world. As I write this, much of the world is in lockdown, many countries have closed their borders, and the airline industry is suffering significant losses.

We are encouraged that national governments around the world recognize the importance of the aerospace industry and are taking steps to preserve and support it. We hope for a quick recovery, but the reality is that nobody knows how badly the industry will be damaged, nor what a recovery will look like.

We have taken aggressive steps in response to the situation including shoring up cash reserves, cutting capital spending, suspending acquisition initiatives and share buybacks, and adjusting our capacity to align with where we expect demand to settle out.

But, we are aiming at moving targets today and there are many unknowns. Astronics will stay flexible and focused as the situation develops, responding appropriately to events as they unfold.

We have built a great Company with an impressive array of capabilities that our customers rely on every day. We have products on just about every aircraft that flies. We know that the virus will pass and the world will keep turning, and our goal is to emerge from this episode a stronger organization with even better opportunities -- tested and hardened by the experience. Our 2,500 team members are committed to this goal, and I am confident of success.

Sincerely,

Peter J. Gundermann
President and CEO
April 6, 2020

*RECONCILIATION OF GAAP TO NON-GAAP PERFORMANCE MEASURES

The Company’s letter to shareholders contains financial information regarding consolidated sales and net income adjusted to remove the direct effects of the semiconductor business, the legal reserve increase, the antenna business restructuring and impairment charges and the impairment of an equity investment from all periods presented. These adjusted balances are non-GAAP performance measures. Management believes these non-GAAP measures are useful to investors in understanding the performance of the ongoing business.

(Unaudited, $ in thousands)

Consolidated

	Year Ended	
	12/31/2019	**12/31/2018**
Sales		
Consolidated sales	$ 772,702	$ 803,256
Non-GAAP Adjustment - Semiconductor business**	(9,692)	(84,254)
Adjusted Consolidated Sales	$ 763,010	$ 719,002
Income from Operations		
Consolidated income from operations	$ 1,701	$ 63,663
Non-GAAP Adjustments:		
Semiconductor business**	(6,753)	(24,109)
Legal reserve increase	19,619	1,000
Antenna business impairment and restructuring	28,836	—
Adjusted Income from Operations	$ 43,403	$ 40,554
	5.7 %	*5.6 %*
Net Income		
Consolidated net income	$ 52,017	$ 46,803
Non-GAAP Adjustments:		
Semiconductor business**	(65,666)	(18,014)
Legal reserve increase	15,485	789
Antenna business impairment and restructuring	22,780	—
Equity investment impairment	5,000	—
Adjusted Net Income	$ 29,616	$ 29,578
GAAP depreciation and amortization	$ 33,049	$ 35,032

** The non-GAAP adjustment eliminates all semiconductor test sales and associated direct costs from all periods presented. There are significant indirect costs, overheads, and other general and administrative costs that are not included in the non-GAAP adjustment, as such functions benefited all operations and products within the Test Systems segment and have not been eliminated as a result of the divestiture. The non-GAAP adjustment to net income for the year ended December 31, 2019 also eliminates the impact of the gain on the sale of the semiconductor business, net of tax.

FIVE-YEAR PERFORMANCE HIGHLIGHTS

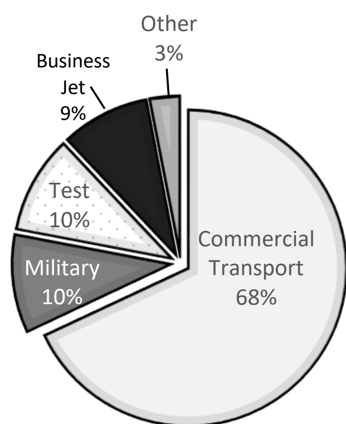
(in thousands, except employee and per share data)

PERFORMANCE	2019	2018	2017	2016	2015
Sales:					
Aerospace Segment	$ 692,614	$ 675,744	$ 534,724	$ 534,408	$ 549,738
Less Aerospace Intersegment Sales	*$ (5)*	*$ (119)*	*$ (121)*	*$ (367)*	*$ ---*
Test Systems Segment	$ 80,495	$ 127,679	$ 89,861	$ 99,082	$ 142,596
Less Test Intersegment Sales	*$ (402)*	*$ (48)*	*$ ---*	*$ ---*	*$ (55)*
Total Sales	$ 772,702	$ 803,256	$ 624,464	$ 633,123	$ 692,279
Gross Profit	$ 156,142	$ 180,696	$ 137,113	$ 159,467	$ 187,942
Gross Margin	*20.2 %*	*22.5 %*	*22.0 %*	*25.2 %*	*27.1 %*
Impairment Loss	$ 11,083	$ ---	$ 16,237	$ ---	$ ---
Selling, General and Administrative Expense	$ 143,358	$ 117,033	$ 90,516	$ 86,328	$ 89,141
Operating Profit	$ 1,701	$ 63,663	$ 30,360	$ 73,139	$ 98,801
Operating Margin	*0.2 %*	*7.9 %*	*4.9 %*	*11.6 %*	*14.3 %*
Net Gain on Sale of Businesses	$ 78,801	$ ---	$ ---	$ ---	$ ---
Other Expense	$ 6,058	$ 1,671	$ 1,741	$ 1,743	$ ---
Net Income	$ 52,017	$ 46,803	$ 19,679	$ 48,424	$ 66,974
Diluted Earnings Per Share	$ 1.60	$ 1.41	$ 0.58	$ 1.40	$ 1.93
Weighted Average Shares Outstanding - Diluted	32,459	33,136	33,718	34,537	34,706
Return on Average Shareholders' Equity	13.4%	13.1 %	5.9 %	15.2 %	25.3 %

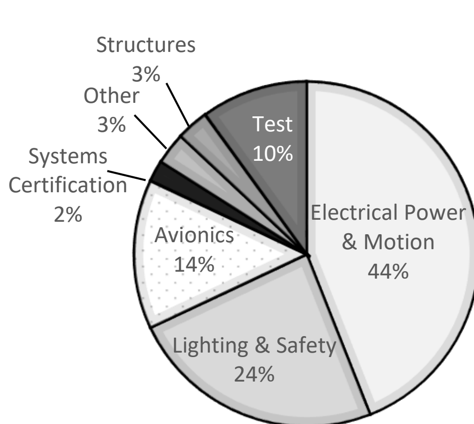
YEAR END FINANCIAL POSITION	2019	2018	2017	2016	2015
Total Assets	$ 782,716	$ 774,640	$ 735,956	$ 604,344	$ 609,243
Indebtedness	$ 188,224	$ 233,982	$ 271,767	$ 148,120	$ 169,789
Shareholders' Equity	$ 388,857	$ 386,625	$ 329,927	$ 337,449	$ 300,225
Book Value Per Share	$ 12.54	$ 11.86	$ 10.22	$ 10.13	$ 8.93

OTHER YEAR END DATA	2019	2018	2017	2016	2015
Depreciation and Amortization	$ 33,049	$ 35,032	$ 27,063	$ 25,790	$ 25,309
Capital Expenditures	$ 12,083	$ 16,317	$ 13,478	$ 13,037	$ 18,641
Shares Outstanding	30,999	32,593	32,269	33,328	33,635
Number of Employees	2,828	2,690	2,516	2,304	2,304

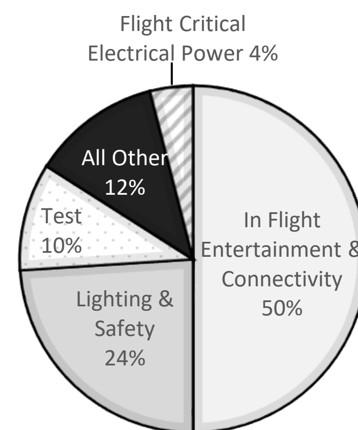
2019 SALES BY MARKETS, PRODUCTS AND MAJOR FOCUS



SALES BY MARKETS



SALES BY PRODUCTS



SALES BY MAJOR FOCUS

FIVE-YEAR PERFORMANCE HIGHLIGHT

($ in thousands)

MARKETS

Aerospace Segment	2019	2018	2017	2016	2015
Commercial Transport	$523,921	$536,269	$414,523	$435,552	$455,569
Military	76,542	68,138	61,270	54,556	43,295
Business Jet	67,541	43,090	41,298	25,407	32,796
Other	24,605	28,128	17,512	18,526	18,078
Aerospace Total	692,609	675,625	534,603	534,041	549,738
Test Systems Segment					
Semiconductor	9,692	84,254	31,999	37,939	92,136
Aerospace & Defense	70,401	43,377	57,862	61,143	50,405
Test Systems Total	80,093	127,631	89,861	99,082	142,541
TOTAL	$772,702	$803,256	$624,464	$633,123	$692,279

PRODUCTS

Aerospace Segment	2019	2018	2017	2016	2015
Electrical Power & Motion	$338,237	$303,180	$264,286	$288,465	$279,752
Lighting & Safety	185,462	174,383	158,663	156,871	157,143
Avionics	106,787	131,849	53,960	32,761	56,150
Systems Certification	14,401	13,951	14,333	16,531	21,317
Structures	23,117	24,134	25,849	20,887	16,372
Other	24,605	28,128	17,512	18,526	19,004
Aerospace Total	692,609	675,625	534,603	534,041	549,738
Test Systems Segment					
Semiconductor	9,692	84,254	31,999	37,939	92,136
Aerospace & Defense	70,401	43,377	57,862	61,143	50,405
Test Systems Total	80,093	127,631	89,861	99,082	142,541
TOTAL	$772,702	$803,256	$624,464	$633,123	$692,279

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ASTRONICS
CORPORATION

2019 Form 10-K

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

Form 10-K

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

or

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

For the transition period from__________ to __________

For the Fiscal Year Ended December 31, 2019

Commission File Number 0-7087

Astronics Corporation

(Exact Name of Registrant as Specified in its Charter)

New York	**16-0959303**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

130 Commerce Way, East Aurora, NY 14052
(Address of principal executive office)
Registrant's telephone number, including area code (716) 805-1599
Securities registered pursuant to Section 12(b) of the Act: None
Securities registered pursuant to Section 12(g) of the Act:

Title of each class	**Trading Symbol**	**Name of each exchange on which registered**
Common Stock, $.01 par value per share	ATRO	NASDAQ Stock Market

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

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

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

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

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

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

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller Reporting Company	☐

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

As of February 24, 2020, 30,720,701 shares were outstanding, consisting of 23,205,729 shares of Common Stock $.01 par value and 7,514,972 shares of Class B Stock $.01 par value. The aggregate market value, as of the last business day of the Company's most recently completed second fiscal quarter, of the shares of Common Stock and Class B Stock of Astronics Corporation held by non-affiliates was approximately $1,107,000,000 (assuming conversion of all of the outstanding Class B Stock into Common Stock and assuming the affiliates of the Registrant to be its directors, executive officers and persons known to the Registrant to beneficially own more than 10% of the outstanding capital stock of the Corporation).

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Company's Proxy Statement for the 2020 Annual Meeting of Shareholders to be held May 21, 2020 are incorporated by reference into Part III of this Report.

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on Form 10-K

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FORWARD LOOKING STATEMENTS

Information included or incorporated by reference in this report that does not consist of historical facts, including statements accompanied by or containing words such as "may," "will," "should," "believes," "expects," "expected," "intends," "plans," "projects," "approximate," "estimates," "predicts," "potential," "outlook," "forecast," "anticipates," "presume" and "assume," are forward-looking statements. Such forward-looking statements are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. These statements are not guarantees of future performance and are subject to several factors, risks and uncertainties, the impact or occurrence of which could cause actual results to differ materially from the expected results described in the forward-looking statements. Certain of these factors, risks and uncertainties are discussed in the sections of this report entitled "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations." New factors, risks and uncertainties may emerge from time to time that may affect the forward-looking statements made herein. Given these factors, risks and uncertainties, investors should not place undue reliance on forward-looking statements as predictive of future results. We disclaim any obligation to update the forward-looking statements made in this report.

PART I

ITEM 1. *BUSINESS*

Astronics Corporation ("Astronics" or the "Company") is a leading supplier of advanced technologies and products to the global aerospace and defense industries. Our products and services include advanced, high-performance electrical power generation and distribution systems, seat motion solutions, lighting and safety systems, avionics products, aircraft structures, systems certification and automated test systems.

We have principal operations in the United States ("U.S."), Canada, France and the United Kingdom ("UK"), as well as engineering offices in the Ukraine and India. We design and build our products through our wholly owned subsidiaries Astronics Advanced Electronic Systems Corp. ("AES"); Astronics AeroSat Corporation ("AeroSat"); Armstrong Aerospace, Inc. ("Armstrong"); Astronics Test Systems, Inc. ("ATS"); Ballard Technology, Inc. ("Ballard"); Astronics Custom Control Concepts Inc. ("CCC"); Astronics Connectivity Systems and Certification Corp. and subsidiaries ("CSC"); Diagnosys Inc. and its affiliates ("Diagnosys"); Astronics DME LLC ("DME"); Freedom Communication Technologies, Inc. ("Freedom"); Luminescent Systems, Inc. ("LSI"); Luminescent Systems Canada, Inc. ("LSI Canada"); Max-Viz, Inc. ("Max-Viz"); Peco, Inc. ("Peco"); and PGA Electronic s.a. ("PGA").

Acquisitions

On July 1, 2019, the Company acquired all of the issued and outstanding capital stock of Freedom Communication Technologies, Inc. Freedom, located in Kilgore, Texas, is a leader in wireless communication testing, primarily for the civil land mobile radio market. Freedom is included in our Test Systems segment. The total consideration for the transaction was $21.8 million, net of $0.6 million in cash acquired.

On October 4, 2019, the Company acquired the stock of the primary operating subsidiaries as well as certain other assets from mass transit and defense market test solution provider, Diagnosys Test Systems Limited, for $7.0 million in cash, plus contingent purchase consideration ("earn-out") estimated at a fair value of $2.5 million. Diagnosys is included in our Test Systems segment. Diagnosys is a developer and manufacturer of comprehensive automated test equipment providing test, support, and repair of high value electronics, electro-mechanical, pneumatic and printed circuit boards focused on the global mass transit and defense markets. The terms of the acquisition allow for a potential earn-out of up to an additional $13.0 million over the next three years based on achievement of new order levels of over $72.0 million during that period. The acquired business has operations in Westford, Massachusetts as well as Ferndown, England, and an engineering center of excellence in Bangalore, India.

Divestitures

On February 13, 2019, the Company completed a divestiture of its semiconductor test business within the Test Systems segment. The business was not core to the future of the Test Systems segment. The total proceeds received for the sale amounted to $103.8 million. The Company recorded a pre-tax gain on the sale of $80.1 million in the first quarter of 2019. The Company recorded income tax expense relating to the gain of $19.7 million.

The transaction also includes two elements of contingent earnouts. The "First Earnout" is calculated based on a multiple of all future sales of existing and certain future derivative products to existing and future customers in each annual period from 2019 through 2022. The First Earnout may not exceed $35.0 million in total. The "Second Earnout" is calculated based on a multiple of future sales related to an existing product and program with an existing customer exceeding an annual threshold for each annual period from 2019 through 2022. The Second Earnout is not capped. For the Second Earnout, if the applicable sales in an annual period do not exceed the annual threshold, no amounts will be paid relative to such annual period; the sales in such annual period do not carry over to the next annual period. Due to the degree of uncertainty associated with estimating the future sales levels of the divested business and its underlying programs, and the lack of reliable predictive market information, the Company will recognize such earnout proceeds, if received, as additional gain on sale when such proceeds are realized or realizable. No amounts were due under the First Earnout.

On July 12, 2019, the Company sold intellectual property and certain assets associated with its Airfield Lighting product line for $1.0 million in cash. The Airfield Lighting product line, part of the Aerospace segment, was not core to the business and represented less than 1% of revenue. The Company recorded a pre-tax loss on the sale of approximately $1.3 million.

Products and Customers

Our Aerospace segment designs and manufactures products for the global aerospace and defense industry. Product lines include lighting and safety systems, electrical power generation, distribution and motions systems, aircraft structures, avionics products, systems certification, and other products. Our Aerospace customers are the airframe manufacturers ("OEM") that build aircraft

for the commercial, military and general aviation markets, suppliers to those OEM's, aircraft operators such as airlines, suppliers to the aircraft operators, and branches of the U.S. Department of Defense. During 2019, this segment's sales were divided 76% to the commercial transport market, 11% to the military aircraft market, 10% to the business jet market and 3% to other markets. Most of this segment's sales are a result of contracts or purchase orders received from customers, placed on a day-to-day basis or for single year procurements rather than long-term multi-year contract commitments. On occasion, the Company does receive contractual commitments or blanket purchase orders from our customers covering multiple-year deliveries of hardware to our customers.

Our Test Systems segment designs, develops, manufactures and maintains automated test systems that support the aerospace, communications and weapons test systems as well as training and simulation devices for both commercial and military applications. In the Test Systems segment, Astronics' products are sold to a global customer base including OEMs and prime government contractors for both electronics and military products.

Sales by segment, geographic region, major customer and foreign operations are provided in Note 20 of Item 8, Financial Statements and Supplementary Data in this report.

We have a significant concentration of business with two major customers; The Boeing Company ("Boeing") and Panasonic Avionics Corporation ("Panasonic"). Sales to Boeing accounted for 13.6% of sales in 2019, 14.3% of sales in 2018, and 16.8% of sales in 2017. Sales to Panasonic accounted for 13.0% of sales in 2019, 14.4% of sales in 2018, and 19.1% of sales in 2017.

Strategy

Our strategy is to increase our value by developing technologies and capabilities either internally or through acquisition, and use those capabilities to provide innovative solutions to the aerospace and defense and other markets where our technology can be beneficial.

Practices as to Maintaining Working Capital

Liquidity is discussed in Part II, Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations, in the Liquidity and Capital Resources section of this report.

Competitive Conditions

We experience considerable competition in the market sectors we serve, principally with respect to product performance and price, from various competitors, many of which are substantially larger and have greater resources. Success in the markets we serve depends upon product innovation, customer support, responsiveness and cost management. We continue to invest in developing the technologies and engineering support critical to competing in our markets.

Government Contracts

All U.S. government contracts, including subcontracts where the U.S. government is the ultimate customer, may be subject to termination at the election of the government. Our revenue stream relies on military spending. Approximately 13% of our consolidated sales were made to the military aircraft and military test systems markets combined.

Raw Materials

Materials, supplies and components are purchased from numerous sources. We believe that the loss of any one source, although potentially disruptive in the short-term, would not materially affect our operations in the long-term.

Seasonality

Our business is typically not seasonal.

Backlog

At December 31, 2019, our consolidated backlog was $359.6 million. At December 31, 2018, our backlog was $415.5 million. Excluding backlog related to the divested semiconductor business, our backlog was $403.3 million at December 31, 2018. Backlog in the Aerospace segment was $275.8 million at December 31, 2019, of which $249.6 million is expected to be recognized as revenue in 2020. Backlog in the Test Systems segment was $83.8 million at December 31, 2019. The Test Systems segment expects to recognize as revenue $51.4 million of backlog in 2020.

Patents

We have a number of patents. While the aggregate protection of these patents is of value, our only material business that is dependent upon the protection afforded by these patents is our cabin power distribution products. Our patents and patent applications relate to electroluminescence, instrument panels, cord reels and handsets, and a broad patent covering the cabin power distribution technology. We regard our expertise and techniques as proprietary and rely upon trade secret laws and contractual arrangements to protect our rights. We have trademark protection in our major markets.

Research, Development and Engineering Activities

We are engaged in a variety of engineering and design activities as well as basic research and development activities directed to the substantial improvement or new application of our existing technologies. These costs are expensed when incurred and included in cost of sales. Research, development and engineering costs amounted to approximately $108.9 million in 2019, $114.3 million in 2018 and $95.0 million in 2017.

Employees

We employed approximately 2,800 employees at December 31, 2019. We consider our relations with our employees to be good. We have approximately 165 hourly production employees at Peco who are subject to collective bargaining agreements.

Available information

We file our financial information and other materials as electronically required with the Securities and Exchange Commission ("SEC"). These materials can be accessed electronically via the Internet at www.sec.gov. Such materials and other information about the Company are also available through our website at www.astronics.com.

ITEM 1A. *RISK FACTORS*

The loss of Boeing or Panasonic as major customers or a significant reduction in business with either of those customers would reduce our sales and earnings. In 2019, we had a concentration of sales to Boeing and Panasonic representing approximately 13.6% and 13.0% of our sales, respectively. The loss of either of these customers or a significant reduction in business with them would significantly reduce our sales and earnings.

In October 2018 and March of 2019, two commercial aircraft accidents led to the grounding by the Federal Aviation Administration and other regulators of the Boeing 737 MAX aircraft, on which we have significant content. The grounding of the Boeing 737 MAX, which started in March of 2019, has caused the production rate of that aircraft to be lower than expected in fiscal year 2019. The ongoing 737 MAX grounding affects our business both because of the production pause, impacting our line-fit content, and because it leaves many of our airline customers short of capacity, which makes them reluctant to take other aircraft out of service to install the types of retrofit products they buy from us. Although we expect, based on information that Boeing has made publicly available, that deliveries of the 737 MAX program will resume and that the demand for the aircraft in the long-term has not changed, a prolonged or permanent grounding of the Boeing 737 MAX could substantially decrease our Aerospace segment sales in the near or long-term, which could have a material adverse effect on our business, financial condition, results of operations, and cash flows. Even if deliveries of the 737 MAX program resume, demand for the aircraft could be lower than was expected prior to the initial grounding of the aircraft.

A write-off of all or part of our goodwill or other intangible assets could adversely affect our operating results and net worth. At December 31, 2019, goodwill and net intangible assets were approximately 18.5% and 16.3% of our total assets, respectively. In 2019, we recorded goodwill and intangible asset impairment charges of $1.6 million and $6.2 million related to our AeroSat antenna business, respectively. Our goodwill and other intangible assets may increase in the future since our strategy includes growing through acquisitions. We may have to write-off all or part of our goodwill or purchased intangible assets if their value becomes impaired. Although this write-off would not result in an outlay of cash, it could reduce our earnings and net worth significantly.

The markets we serve are cyclical and sensitive to domestic and foreign economic conditions and events, which may cause our operating results to fluctuate. Demand for our products is, to a large extent, dependent on the demand and success of our customers' products where we are a supplier to an OEM. In our Aerospace segment, demand by the business jet markets for our products is dependent upon several factors, including capital investment, product innovations, economic growth and wealth creation and technology upgrades. In addition, the commercial airline industry is highly cyclical and sensitive to such things as fuel price increases, labor disputes, global economic conditions, availability of capital to fund new aircraft purchases and upgrades of existing aircraft and passenger demand. A change in any of these factors could result in a reduction in the amount of air travel and the ability of airlines to invest in new aircraft or to upgrade existing aircraft. These factors would reduce orders for new aircraft and would likely reduce airlines' spending for cabin upgrades for which we supply products, thus

reducing our sales and profits. A reduction in air travel may also result in our commercial airline customers being unable to pay our invoices on a timely basis or not at all.

We are a supplier on various new aircraft programs just entering or expected to begin production in the future. As with any new program, there is risk as to whether the aircraft or program will be successful and accepted by the market. As is customary for our business, we purchase inventory and invest in specific capital equipment to support our production requirements generally based on delivery schedules provided by our customer. If a program or aircraft is not successful, we may have to write-off all or a part of the inventory, accounts receivable and capital equipment related to the program. A write-off of these assets could result in a significant reduction of earnings and cause covenant violations relating to our debt agreements. This could result in our being unable to borrow additional funds under our bank credit facility or being obliged to refinance or renegotiate the terms of our bank indebtedness.

In our Test Systems segment, the market for our products is concentrated with a limited number of significant customers accounting for a substantial portion of the purchases of test equipment. In any one reporting period, a single customer or several customers may contribute an even larger percentage of our consolidated sales. In addition, our ability to increase sales will depend, in part, on our ability to obtain orders from current or new significant customers. The opportunities to obtain orders from these customers may be limited, which may impair our ability to grow sales. We expect that sales of our Test Systems products will continue to be concentrated with a limited number of significant customers for the foreseeable future. Additionally, demand for some of our test products is dependent upon government funding levels for our products, our ability to compete successfully for those contracts and our ability to develop products to satisfy the demands of our customers.

Our products are sold in highly competitive markets. Some of our competitors are larger, more diversified corporations and have greater financial, marketing, production and research and development resources. As a result, they may be better able to withstand the effects of periodic economic downturns. Our operations and financial performance will be negatively impacted if our competitors:

- develop products that are superior to our products;
- develop products that are more competitively priced than our products;
- develop methods of more efficiently and effectively providing products and services; or
- adapt more quickly than we do to new technologies or evolving customer requirements.

We believe that the principal points of competition in our markets are product quality, price, design and engineering capabilities, product development, conformity to customer specifications, quality of support after the sale, timeliness of delivery and effectiveness of the distribution organization. Maintaining and improving our competitive position will require continued investment in manufacturing, engineering, quality standards, marketing, customer service and support and our distribution networks. If we do not maintain sufficient resources to make these investments, or are not successful in maintaining our competitive position, our operations and financial performance will suffer.

Our future success depends to a significant degree upon the continued contributions of our management team and technical personnel. The loss of members of our management team could have a material and adverse effect on our business. In addition, competition for qualified technical personnel in our industry is intense, and we believe that our future growth and success will depend on our ability to attract, train and retain such personnel.

We may incur losses and liabilities as a result of our acquisition strategy. Growth by acquisition involves risks that could adversely affect our financial condition and operating results, including:

- diversion of management time and attention from our core business;
- the potential exposure to unanticipated liabilities;
- the potential that expected benefits or synergies are not realized and that operating costs increase;
- the risks associated with incurring additional acquisition indebtedness, including that additional indebtedness could limit our cash flow availability for operations and our flexibility;
- difficulties in integrating the operations and personnel of acquired companies; and
- the potential loss of key employees, suppliers or customers of acquired businesses.

In addition, any acquisition, once successfully integrated, could negatively impact our financial performance if it does not perform as planned, does not increase earnings, or does not prove otherwise to be beneficial to us.

We currently are involved or may become involved in the future, in legal proceedings that, if adversely adjudicated or settled, could materially impact our financial condition. As an aerospace company, we may become a party to litigation in the ordinary course of our business, including, among others, matters alleging product liability, warranty claims, breach of commercial or government contract or other legal actions. In general, litigation claims can be expensive and time consuming to bring or defend against and could result in settlements or damages that could significantly impact results of operations and financial condition.

Currently, our subsidiary, AES is a defendant in actions filed in various jurisdictions by Lufthansa Technik AG relating to an allegation of patent infringement and based on rulings to date we have concluded that losses related to these proceedings are probable. Refer to Note 19 of our Consolidated Financial Statements in Item 8 for discussion on the legal proceedings. If these actions are decided adversely against the Company, the associated damages could result in a material adverse effect on our results of operations or financial condition.

Other than these proceedings, we are not party to any significant pending legal proceedings that management believes will result in a material adverse effect on our results of operations or financial condition.

The amount of debt we have outstanding, as well as any debt we may incur in the future, could have an adverse effect on our operational and financial flexibility. As of December 31, 2019, we had approximately $188.2 million of debt outstanding of which $188.0 million is long-term debt. Changes to our level of debt subsequent to December 31, 2019 could have significant consequences to our business, including the following:

- Depending on interest rates and debt maturities, a substantial portion of our cash flow from operations could be dedicated to paying principal and interest on our debt, thereby reducing funds available for our acquisition strategy, capital expenditures or other purposes;
- A significant amount of additional debt could make us more vulnerable to changes in economic conditions or increases in prevailing interest rates;
- Our ability to obtain additional financing for acquisitions, capital expenditures or for other purposes could be impaired;
- The increase in the amount of debt we have outstanding increases the risk of non-compliance with some of the covenants in our debt agreements which require us to maintain specified financial ratios; and
- We may be more leveraged than some of our competitors, which may result in a competitive disadvantage.

We are subject to debt covenant restrictions. Our credit facility contains certain financial and other restrictive covenants. A significant decline in our operating income could cause us to violate our covenants. A covenant violation would require a waiver by the lenders or an alternative financing arrangement be achieved. This could result in our being unable to borrow under our bank credit facility or being obliged to refinance and renegotiate the terms of our bank indebtedness. Historically both choices have been available to us, however, it is difficult to predict the availability of these options in the future.

We are subject to financing and interest rate exposure risks that could adversely affect our business, liquidity and operating results. Changes in the availability, terms and cost of capital, and increases in interest rates could cause our cost of doing business to increase and place us at a competitive disadvantage. At December 31, 2019, substantially all of our debt was subject to variable interest rates.

The potential phase out of LIBOR may negatively impact our debt agreements and financial position, results of operations and liquidity. On July 27, 2017, the UK's Financial Conduct Authority announced that it intends to phase out LIBOR by the end of 2021. It is unclear whether new methods of calculating LIBOR will be established or whether different benchmark rates used to price indebtedness will develop. If LIBOR ceases to exist, we may need to renegotiate our debt agreements that extend beyond 2021 that utilize LIBOR as a factor in determining the interest rate, which may negatively impact the terms of such indebtedness. In addition, the overall financial markets may be disrupted as a result of the phase out or replacement of LIBOR. Disruption in the financial markets could have an adverse effect on our financial position, results of operations, and liquidity.

Our future operating results could be impacted by estimates used to calculate impairment losses on long-lived assets. The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make significant and subjective estimates and assumptions that may affect the reported amounts of long-lived assets in the

financial statements. These estimates are integral in the determination of whether a potential non-cash impairment loss exists as well as the calculation of that loss. Actual future results could differ from those estimates. As discussed in Note 23 to the Consolidated Financial Statements, we recorded long-lived asset impairment losses of $9.5 million (excluding goodwill impairment, which has been previously discussed) in connection with the AeroSat restructuring.

Future terror attacks, war, or other civil disturbances could negatively impact our business. Continued terror attacks, war or other disturbances could lead to economic instability and decreases in demand for our products, which could negatively impact our business, financial condition and results of operations. Terrorist attacks world-wide have caused instability from time to time in global financial markets and the aviation industry. The long-term effects of terrorist attacks on us are unknown. These attacks and the U.S. government's continued efforts against terrorist organizations may lead to additional armed hostilities or to further acts of terrorism and civil disturbance in the U.S. or elsewhere, which may further contribute to economic instability.

General business conditions are vulnerable to the effects of epidemics, such as the COVID-19 coronavirus, which could materially disrupt our business. We are vulnerable to the global economic effects of epidemics and other public health crises, such as the novel strain of COVID-19 virus reported to have surfaced in Wuhan, China in 2019. Due to the recent outbreak of the COVID-19 virus, there has been a substantial curtailment of global travel and business activities which could have an impact on airline spending and demand, and could negatively impact our sales if conditions worsen or extend for a prolonged period of time. China has also limited the shipment of products in and out of its borders, which could negatively impact our ability to receive products from our China-based suppliers and our ability to ship products to customers in that region. Supply chain disruptions could negatively impact our sales. If not resolved quickly, the impact of the epidemic could have a material adverse effect on our business.

Our business and operations could be adversely impacted in the event of a failure of our information technology infrastructure or adversely impacted by a successful cyber-attack. We are dependent on various information technologies throughout our company to administer, store and support multiple business activities. We routinely experience various cybersecurity threats, threats to our information technology infrastructure, unauthorized attempts to gain access to our company sensitive information, and denial-of-service attacks as do our customers, suppliers and subcontractors. We conduct regular periodic training of our employees as to the protection of sensitive information which includes security awareness training intended to prevent the success of "phishing" attacks.

The threats we face vary from attacks common to most industries to more advanced and persistent, highly organized adversaries, including nation states, which target us and other defense contractors because we protect sensitive information. If we are unable to protect sensitive information, our customers or governmental authorities could question the adequacy of our threat mitigation and detection processes and procedures, and depending on the severity of the incident, our customers' data, our employees' data, our intellectual property, and other third-party data (such as subcontractors, suppliers and vendors) could be compromised. As a consequence of their persistence, sophistication and volume, we may not be successful in defending against all such attacks. Due to the evolving nature of these security threats, the impact of any future incident cannot be predicted.

Although we work cooperatively with our customers, suppliers, and subcontractors to seek to minimize the impact of cyber threats, other security threats or business disruptions, we must rely on the safeguards put in place by these entities, which may affect the security of our information. These entities have varying levels of cybersecurity expertise and safeguards and their relationships with U.S. government contractors, such as Astronics, may increase the likelihood that they are targeted by the same cyber threats we face.

Our inability to adequately enforce and protect our intellectual property or defend against assertions of infringement could prevent or restrict our ability to compete. We rely on patents, trademarks and proprietary knowledge and technology, both internally developed and acquired, in order to maintain a competitive advantage. Our inability to defend against the unauthorized use of these rights and assets could have an adverse effect on our results of operations and financial condition. Litigation may be necessary to protect our intellectual property rights or defend against claims of infringement. This litigation could result in significant costs and divert our management's focus away from operations. Refer to the risk factor related to pending patent infringement litigation above and Note 19 to the Consolidated Financial Statements for further discussion.

If we are unable to adapt to technological change, demand for our products may be reduced. The technologies related to our products have undergone, and in the future may undergo, significant changes. To succeed in the future, we will need to continue to design, develop, manufacture, assemble, test, market and support new products and enhancements on a timely and cost effective basis. Our competitors may develop technologies and products that are more effective than those we develop or that render our technology and products obsolete or uncompetitive. Furthermore, our products could become unmarketable if

new industry standards emerge. We may have to modify our products significantly in the future to remain competitive, and new products we introduce may not be accepted by our customers.

Our new product development efforts may not be successful, which would result in a reduction in our sales and earnings. We may experience difficulties that could delay or prevent the successful development of new products or product enhancements, and new products or product enhancements may not be accepted by our customers. In addition, the development expenses we incur may exceed our cost estimates, and new products we develop may not generate sales sufficient to offset our costs. If any of these events occur, our sales and profits could be adversely affected.

We depend on government contracts and subcontracts with defense prime contractors and subcontractors that may not be fully funded, may be terminated, or may be awarded to our competitors. The failure to be awarded these contracts, the failure to receive funding or the termination of one or more of these contracts could reduce our sales. Sales to the U.S. government and its prime contractors and subcontractors represent a significant portion of our business. The funding of these programs is generally subject to annual congressional appropriations, and congressional priorities are subject to change. In addition, government expenditures for defense programs may decline or these defense programs may be terminated. A decline in governmental expenditures or the termination of existing contracts may result in a reduction in the volume of contracts awarded to us. We have resources applied to specific government contracts and if any of those contracts were terminated, we may incur substantial costs redeploying those resources.

If our subcontractors or suppliers fail to perform their contractual obligations, our prime contract performance and our ability to obtain future business could be materially and adversely impacted. Many of our contracts involve subcontracts with other companies upon which we rely to perform a portion of the services we must provide to our customers. There is a risk that we may have disputes with our subcontractors, including disputes regarding the quality and timeliness of work performed by the subcontractor or customer concerns about the subcontractor. Failure by our subcontractors to satisfactorily provide, on a timely basis, the agreed-upon supplies or perform the agreed-upon services may materially and adversely impact our ability to perform our obligations with our customer and could result in the assessment of late delivery penalties. Subcontractor performance deficiencies could result in a customer terminating our contract for default. A default termination could expose us to liability and substantially impair our ability to compete for future contracts and orders. In addition, a delay in our ability to obtain components and equipment parts from our suppliers may affect our ability to meet our customers' needs and may have an adverse effect upon our profitability.

Our results of operations are affected by our fixed-price contracts, which could subject us to losses in the event that we have cost overruns. For the year ended December 31, 2019, fixed-price contracts represented almost all of the Company's sales. On fixed-price contracts, we agree to perform the scope of work specified in the contract for a predetermined price. Depending on the fixed price negotiated, these contacts may provide us with an opportunity to achieve higher profits based on the relationship between our costs and the contract's fixed price. However, we bear the risk that increased or unexpected costs may reduce our profit.

Some of our contracts contain late delivery penalties. Failure to deliver in a timely manner due to supplier problems, development schedule slides, manufacturing difficulties, or similar schedule-related events could have a material adverse effect on our business.

The failure of our products may damage our reputation, necessitate a product recall or result in claims against us that exceed our insurance coverage, thereby requiring us to pay significant damages. Defects in the design and manufacture of our products may necessitate a product recall. We include complex system design and components in our products that could contain errors or defects, particularly when we incorporate new technology into our products. If any of our products are defective, we could be required to redesign or recall those products or pay substantial damages or warranty claims. Such an event could result in significant expenses, disrupt sales and affect our reputation and that of our products. We are also exposed to product liability claims. We carry aircraft and non-aircraft product liability insurance consistent with industry norms. However, this insurance coverage may not be sufficient to fully cover the payment of any potential claim. A product recall or a product liability claim not covered by insurance could have a material adverse effect on our business, financial condition and results of operations.

Changes in discount rates and other estimates could affect our future earnings and equity. Our goodwill asset impairment evaluations are determined using valuations that involve several assumptions, including discount rates, cash flow estimates, growth rates and terminal values. Certain of these assumptions, particularly the discount rate, are based on market conditions and are outside of our control. Changes in these assumptions could affect our future earnings and equity.

Additionally, pension obligations and the related costs are determined using actual results and actuarial valuations that involve several assumptions. The most critical assumption is the discount rate. Other assumptions include mortality, salary increases

and retirement age. The discount rate assumptions are based on current market conditions and are outside of our control. Changes in these assumptions could affect our future earnings and equity.

Contracting in the defense industry is subject to significant regulation, including rules related to bidding, billing and accounting kickbacks and false claims, and any non-compliance could subject us to fines and penalties or possible debarment. Like all government contractors, we are subject to risks associated with this contracting. These risks include the potential for substantial civil and criminal fines and penalties. These fines and penalties could be imposed for failing to follow procurement integrity and bidding rules, employing improper billing practices or otherwise failing to follow cost accounting standards, receiving or paying kickbacks or filing false claims. We have been, and expect to continue to be, subjected to audits and investigations by government agencies. The failure to comply with the terms of our government contracts could harm our business reputation. It could also result in suspension or debarment from future government contracts.

If we fail to meet expectations of securities analysts or investors due to fluctuations in our sales or operating results, our stock price could decline significantly. Our sales and earnings may fluctuate from quarter to quarter due to a number of factors, including delays or cancellations of programs. It is likely that in some future quarters our operating results may fall below the expectations of securities analysts or investors. In this event, the trading price of our stock could decline significantly.

Our operations in foreign countries expose us to political and currency risks and adverse changes in local legal and regulatory environments. In 2019, approximately 11% of our sales were made by our subsidiaries in foreign countries, predominately in our subsidiaries in France and Canada. Net assets held by these two subsidiaries total $64.3 million at December 31, 2019. Approximately 25% of our consolidated sales in 2019 were made to customers outside of the United States. Our financial results may be adversely affected by fluctuations in foreign currencies and by the translation of the financial statements of our foreign subsidiaries from local currencies into U.S. dollars. We expect international operations and export sales to continue to contribute to our earnings for the foreseeable future. Both the sales from international operations and export sales are subject in varying degrees to risks inherent in doing business outside of the U.S. Such risks include the possibility of unfavorable circumstances arising from host country laws or regulations, changes in tariff and trade barriers and import or export licensing requirements, and political or economic reprioritization, insurrection, civil disturbance or war.

Government regulations could limit our ability to sell our products outside the U.S. and could otherwise adversely affect our business. Certain of our sales are subject to compliance with U.S. export regulations. Our failure to obtain, or fully adhere to the limitations contained in, the requisite licenses, meet registration standards or comply with other government export regulations would hinder our ability to generate sales of our products outside the U.S. Compliance with these government regulations may also subject us to additional fees and operating costs. The absence of comparable restrictions on competitors in other countries may adversely affect our competitive position. In order to sell our products in European Union countries, we must satisfy certain technical requirements. If we are unable to comply with those requirements with respect to a significant quantity of our products, our sales in Europe would be restricted. Doing business internationally also subjects us to numerous U.S. and foreign laws and regulations, including regulations relating to import-export control, technology transfer restrictions, foreign corrupt practices and anti-boycott provisions. Our failure, or failure by an authorized agent or representative that is attributable to us, to comply with these laws and regulations could result in administrative, civil or criminal liabilities and could, in the extreme case, result in monetary penalties, suspension or debarment from government contracts or suspension of our export privileges, which would have a material adverse effect on us.

Our stock price is volatile. For the year ended December 31, 2019, our stock price ranged from a low of $26.08 to a high of $44.20. The price of our common stock has been and likely will continue to be subject to wide fluctuations in response to a number of events and factors, such as:

- quarterly variations in operating results;
- variances of our quarterly results of operations from securities analyst estimates;
- changes in financial estimates;
- announcements of technological innovations and new products;
- news reports relating to trends in our markets; and
- the cancellation of major contracts or programs with our customers.

In addition, the stock market in general, and the market prices for companies in the aerospace and defense industry in particular, have experienced significant price and volume fluctuations that often have been unrelated to the operating performance of the companies affected by these fluctuations. These broad market fluctuations may adversely affect the market price of our common stock, regardless of our operating performance.

ITEM 1B. *UNRESOLVED STAFF COMMENTS*

None

ITEM 2. *PROPERTIES*

On December 31, 2019, we own or lease 1.4 million square feet of space, distributed by segment as follows:

	Owned	Leased	Total
Aerospace	749,000	445,000	1,194,000
Test Systems	—	158,000	158,000
Total Square Feet	749,000	603,000	1,352,000

We have principal operations in the U.S., Canada, France and the UK, as well as engineering offices in the Ukraine and India.

Upon the expiration of our current leases, we believe that we will be able to either secure renewal terms or enter into leases for or purchases of alternative locations at market terms. We believe that our properties have been adequately maintained and are generally in good condition.

ITEM 3. *LEGAL PROCEEDINGS*

Currently, we are involved in legal proceedings relating to an allegation of patent infringement and based on rulings to date we have concluded that losses related to these proceedings are probable. For a discussion of contingencies related to legal proceedings, see Note 19 to our Consolidated Financial Statements.

ITEM 4. *MINE SAFETY DISCLOSURES*

Not Applicable

PART II

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

The table below sets forth the range of prices for the Company's Common Stock, traded on the NASDAQ National Market System, for each quarterly period during the last two years. The approximate number of shareholders of record as of February 24, 2020, was 726 for Common Stock and 2,003 for Class B Stock.

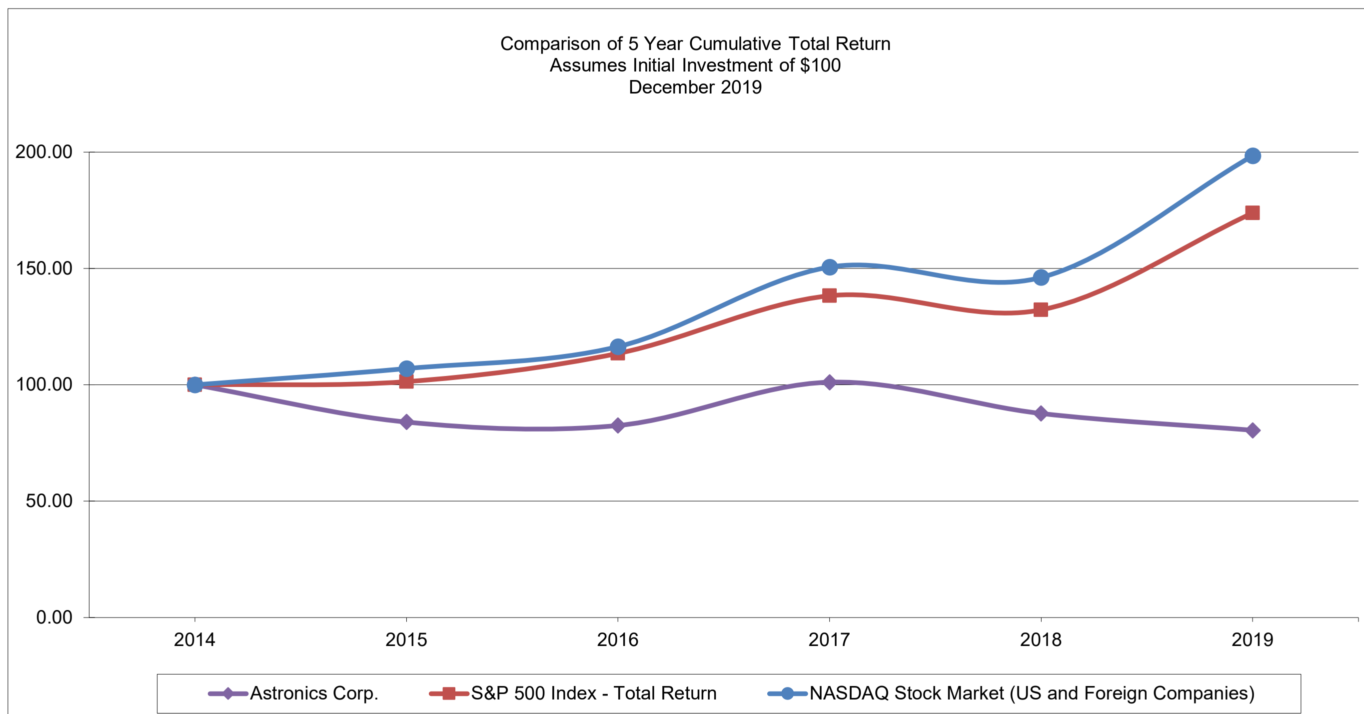
2019	High	Low
First	$ 36.01	$ 28.55
Second	$ 44.20	$ 31.69
Third	$ 41.86	$ 26.08
Fourth	$ 31.50	$ 27.95

2018	High	Low
First	$ 41.18	$ 30.94
Second	$ 34.23	$ 29.40
Third	$ 40.10	$ 31.60
Fourth	$ 37.80	$ 28.46

The Company has not paid any cash dividends in the three-year period ended December 31, 2019. The Company has no plans to pay cash dividends as it plans to retain all cash from operations as a source of capital to finance working capital and growth in the business.

On February 24, 2016, the Company's Board of Directors authorized the repurchase of up to $50 million of common stock, which allowed the Company to purchase shares of its common stock in accordance with applicable securities laws on the open market or through privately negotiated transactions. The Company repurchased approximately 1,675,000 shares and has completed that program in 2017. On December 12, 2017, the Company's Board of Directors authorized an additional repurchase of up to $50 million. No shares were repurchased in 2018. The Company repurchased approximately 1,823,000 shares and completed that program in the third quarter of 2019. On September 17, 2019, the Company's Board of Directors authorized an additional repurchase of up to $50 million. An additional 28,000 shares were repurchased under the new program as of December 31, 2019 at a cost of $0.8 million. Subsequent to December 31, 2019, approximately 282,000 additional shares were repurchased at a cost of $7.7 million.

The following graph and table shows the performance of the Company's common stock compared with the S&P 500 Index — Total Return and the NASDAQ US and Foreign Companies for a $100 investment made December 31, 2014:



		2014	2015	2016	2017	2018	2019
Astronics Corp.	Return %	—	(15.99)	(1.75)	22.55	(13.30)	(8.21)
	Cum $	100.00	84.01	82.53	101.14	87.69	80.49
S&P 500 Index - Total Returns	Return %	—	1.38	11.96	21.83	(4.38)	31.49
	Cum $	100.00	101.38	113.51	138.29	132.23	173.86
NASDAQ Stock Market (US and Foreign Companies)	Return %	—	6.99	8.80	29.37	(2.95)	35.78
	Cum $	100.00	106.99	116.42	150.60	146.15	198.45

ITEM 6. *SELECTED FINANCIAL DATA*

Five-Year Performance Highlights

(Amounts in thousands, except for employees and per share data)	2019 (6)	2018	2017 (3)	2016	2015
RESULTS OF OPERATIONS:					
Sales	$ 772,702	$ 803,256	$ 624,464	$ 633,123	$ 692,279
Impairment Loss included in Net Income (4)	$ 11,083	$ —	$ 16,237	$ —	$ —
Net Gain on Sales of Businesses (5)	$ 78,801	$ —	$ —	$ —	$ —
Net Income	$ 52,017	$ 46,803	$ 19,679	$ 48,424	$ 66,974
Net Margin	6.7 %	5.8 %	3.2 %	7.6 %	9.7 %
Diluted Earnings Per Share (1)	$ 1.60	$ 1.41	$ 0.58	$ 1.40	$ 1.93
Weighted Average Shares Outstanding – Diluted (1)	32,459	33,136	33,718	34,537	34,706
Return on Average Equity	13.4 %	13.1 %	5.9 %	15.2 %	25.3 %
YEAR-END FINANCIAL POSITION:					
Working Capital (2)	$ 222,441	$ 246,079	$ 212,438	$ 168,513	$ 145,735
Total Assets	$ 782,716	$ 774,640	$ 735,956	$ 604,344	$ 609,243
Indebtedness	$ 188,224	$ 233,982	$ 271,767	$ 148,120	$ 169,789
Shareholders' Equity	$ 388,857	$ 386,625	$ 329,927	$ 337,449	$ 300,225
Book Value Per Share (1)	$ 12.54	$ 11.86	$ 10.22	$ 10.13	$ 8.93
OTHER YEAR-END DATA:					
Depreciation and Amortization	$ 33,049	$ 35,032	$ 27,063	$ 25,790	$ 25,309
Capital Expenditures	$ 12,083	$ 16,317	$ 13,478	$ 13,037	$ 18,641
Shares Outstanding (1)	30,999	32,593	32,269	33,328	33,635
Number of Employees	2,828	2,690	2,516	2,304	2,304

1. Diluted Earnings Per Share, Weighted Average Shares Outstanding - Diluted, Book Value Per Share and Shares Outstanding have been adjusted for the impact of the October 12, 2018 fifteen percent Class B stock distribution, October 11, 2016 fifteen percent Class B stock distribution and the October 8, 2015 fifteen percent Class B stock distribution.

2. Working capital is calculated as the difference between Current Assets and Current Liabilities.

3. Information includes the results of CCC, acquired on April 3, 2017, and CSC, acquired on December 1, 2017, each from the acquisition date forward.

4. The Company recorded impairment charges in conjunction with restructuring, impairment and other activities during the fourth quarter of 2019, as described in Note 23 in our consolidated financial statements. The Company recorded a goodwill impairment charge during the fourth quarter of 2017.

5. The Company recorded a gain of $80.1 million upon the sale of the semiconductor business on February 13, 2019, offset by a $1.3 million loss on the sale of the airfield lighting product line on July 12, 2019.

6. Information includes the results of Freedom, acquired on July 1, 2019, and Diagnosys, acquired on October 4, 2019, each from the acquisition date forward. Information reflects the sale of the semiconductor business, divested on February 13, 2019. Information included in 2019 is impacted by restructuring, impairment and other charges; as described in Note 23 in our consolidated financial statements.

ITEM 7. *MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS*

OVERVIEW

Astronics, through its subsidiaries, is a leading supplier of advanced, high-performance electrical power generation, distribution and seat motion solutions, lighting and safety systems, avionics products, systems certification, aircraft structures and automated test systems.

Our strategy is to increase our value by developing technologies and capabilities either internally or through acquisition, and use those capabilities to provide innovative solutions to the aerospace & defense and other markets where our technology can be beneficial.

We have two reportable segments, Aerospace and Test Systems. Our Aerospace segment has principal operating facilities in the United States, Canada and France. Our Test Systems segment has principal operating facilities in the United States and the United Kingdom. We have engineering offices in the Ukraine and India.

Our Aerospace segment serves three primary markets. They are the military, commercial transport and business jet markets. Our Test Systems segment serves the aerospace & defense and mass transit markets.

Important factors affecting our growth and profitability are the rate at which new aircraft are produced, government funding of military programs, our ability to have our products designed into new aircraft and the rates at which aircraft owners, including commercial airlines, refurbish or install upgrades to their aircraft. New aircraft build rates and aircraft owners spending on upgrades and refurbishments is cyclical and dependent on the strength of the global economy. Once designed into a new aircraft, the spare parts business is frequently retained by the Company. Future growth and profitability of the test business is dependent on developing and procuring new and follow-on business in the mass-transit market as well as with the military. The nature of our Test Systems business is such that it pursues large multi-year projects. There can be significant periods of time between orders in this business which may result in large fluctuations of sales and profit levels and backlog from period to period.

Each of the markets that we serve presents opportunities that we expect will provide growth for the Company over the long-term. We continue to look for opportunities in all of our markets to capitalize on our core competencies to expand our existing business and to grow through strategic acquisitions.

Challenges which continue to face us include improving shareholder value through increasing profitability. Increasing profitability is dependent on many things, primarily sales growth, both acquired and organic, and the Company's ability to control operating expenses and to identify means of creating improved productivity. Sales are driven by increased build rates for existing aircraft, market acceptance and economic success of new aircraft and our products, continued government funding of defense programs, the Company's ability to obtain production contracts for parts we currently supply or have been selected to design and develop for new aircraft platforms and continually identifying and winning new business for our Test Systems segment.

Reduced aircraft build rates driven by a weak economy, tight credit markets, reduced air passenger travel and an increasing supply of used aircraft on the market would likely result in reduced demand for our products, which will result in lower profits. Reduction of defense spending may result in fewer opportunities for us to compete, which could result in lower profits in the future. Many of our newer development programs are based on new and unproven technology and at the same time we are challenged to develop the technology on a schedule that is consistent with specific programs. We will continue to address these challenges by working to improve operating efficiencies and focusing on executing on the growth opportunities currently in front of us.

ACQUISITIONS

On July 1, 2019, the Company acquired all of the issued and outstanding capital stock of Freedom Communication Technologies, Inc. Freedom, located in Kilgore, Texas, is a leader in wireless communication testing, primarily for the civil land mobile radio market. Freedom is included in our Test Systems segment. The total consideration for the transaction was $21.8 million, net of $0.6 million in cash acquired.

On October 4, 2019, the Company acquired the stock of the primary operating subsidiaries as well as certain other assets from mass transit and defense market test solution provider, Diagnosys Test Systems Limited, for $7.0 million in cash, plus an earn-out estimated at a fair value of $2.5 million. Diagnosys is included in our Test Systems segment. Diagnosys is a developer and manufacturer of comprehensive automated test equipment providing test, support, and repair of high value electronics, electro-mechanical, pneumatic and printed circuit boards focused on the global mass transit and defense markets. The terms of the

acquisition allow for a potential earn-out of up to an additional $13.0 million over the next three years based on achievement of new order levels of over $72.0 million during that period. The acquired business has operations in Westford, Massachusetts as well as Ferndown, England, and an engineering center of excellence in Bangalore, India. Refer to Note 21 for additional information.

DIVESTITURES

On February 13, 2019, the Company completed a divestiture of its semiconductor test business within the Test Systems segment. The business was not core to the future of the Test Systems segment. The total proceeds received for the sale amounted to $103.8 million. The Company recorded a pre-tax gain on the sale of $80.1 million in the first quarter of 2019. The Company recorded income tax expense relating to the gain of $19.7 million.

The transaction also includes two elements of contingent earnouts. The “First Earnout” is calculated based on a multiple of all future sales of existing and certain future derivative products to existing and future customers in each annual period from 2019 through 2022. The First Earnout may not exceed $35.0 million in total. The “Second Earnout” is calculated based on a multiple of future sales related to an existing product and program with an existing customer exceeding an annual threshold for each annual period from 2019 through 2022. The Second Earnout is not capped. For the Second Earnout, if the applicable sales in an annual period do not exceed the annual threshold, no amounts will be paid relative to such annual period; the sales in such annual period do not carry over to the next annual period. Due to the degree of uncertainty associated with estimating the future sales levels of the divested business and its underlying programs, and the lack of reliable predictive market information, the Company will recognize such earnout proceeds, if received, as additional gain on sale when such proceeds are realized or realizable. No amounts were due under the First Earnout.

On July 12, 2019, the Company sold intellectual property and certain assets associated with its Airfield Lighting product line for $1.0 million in cash. The Airfield Lighting product line, part of the Aerospace segment, was not core to the business and represented less than 1% of revenue. The Company recorded a pre-tax loss on the sale of approximately $1.3 million.

RESTRUCTURING

In the fourth quarter of 2019, in an effort to reduce the significant operating losses at our AeroSat business, we initiated a restructuring plan to reduce costs and minimize losses of our AeroSat antenna business. The plan narrows the initiatives for the AeroSat business to focus primarily on near-term opportunities pertaining to business jet connectivity. The plan has a downsized manufacturing operation remaining in New Hampshire, with significantly reduced personnel and operating expenses.

The Company's total impairments and restructuring charges recorded in the fourth quarter of 2019 amounted to $28.8 million all of which is included in the Aerospace segment. Refer to Note 23 for additional discussion.

MARKETS

Commercial Transport Market

Sales to the commercial transport market include sales of electrical power generation, distribution, seat motion, lighting & safety products, avionics products, systems certification and structures products. Sales to this market totaled approximately $523.9 million or 67.8% of our consolidated sales in 2019.

Maintaining and growing sales to the commercial transport market will depend on airlines’ capital spending budgets for cabin upgrades as well as the purchase of new aircraft by global airlines. This spending by the airlines is impacted by their profits, cash flow and available financing as well as competitive pressures between the airlines to improve the travel experience for their passengers. We expect that new aircraft will be equipped with more passenger and aircraft connectivity and in-seat power than previous generation aircraft which drives demand for our avionics and power products. This market has historically experienced strong growth from airlines installing in-seat passenger power systems on their existing and newly delivered aircraft. Although we expect, based on information that Boeing has made publicly available, that deliveries of the 737 MAX program will resume and the demand for the aircraft in the long-term has not changed, a prolonged grounding of the 737 MAX could substantially decrease sales to this market in the near or long term which could have a material adverse effect on our business, financial condition, results of operations and cash flows. The 737 MAX situation affects us not only because it has been our largest production program, but also because the grounding has reduced capacity in the world’s airline fleets, challenging our aftermarket business. Our ability to maintain and grow sales to this market depends on our ability to maintain our technological advantages over our competitors and maintain our relationships with major in-flight entertainment suppliers and global airlines.

Military Aerospace Market

Sales to the military aerospace market include sales of lighting & safety products, avionics products, electrical power & motion products and structures products. Sales to this market totaled approximately 9.9% of our consolidated sales and amounted to $76.5 million in 2019.

The military market is dependent on governmental funding which can change from year to year. Risks are that overall spending may be reduced in the future, specific programs may be eliminated or that we fail to win new business through the competitive bid process. Astronics does not have significant reliance on any one program such that cancellation of a particular program will cause material financial loss. We believe that we will continue to have opportunities similar to past years regarding this market.

Business Jet Market

Sales to the business jet market include sales of lighting & safety products, avionics products, and electrical power & motion products. Sales to this market totaled approximately 8.7% of our consolidated sales in 2019 and amounted to $67.5 million.

Sales to the business jet market are driven by our ship set content on new aircraft and build rates of new aircraft. Business jet OEM build rates are impacted by global wealth creation and corporate profitability. We continue to see opportunities on new aircraft currently in the design phase to employ our lighting & safety, electrical power and avionics technologies in this market. There is risk involved in the development of any new aircraft including the risk that the aircraft will not ultimately be produced or that it will be produced in lower quantities than originally expected and thus impacting our return on our engineering and development efforts.

Tests Systems Products

Our Test Systems segment accounted for approximately 10.4% of our consolidated sales in 2019 and amounted to $80.1 million. Sales to the aerospace & defense market were approximately $70.4 million in 2019. Sales to the semiconductor market were approximately $9.7 million. The Company completed a divestiture of its semiconductor test business on February 13, 2019.

CRITICAL ACCOUNTING POLICIES

Our financial statements and accompanying notes are prepared in accordance with U.S. generally accepted accounting principles. The preparation of the Company's financial statements requires management to make estimates, assumptions and judgments that affect the amounts reported. These estimates, assumptions and judgments are affected by management's application of accounting policies, which are discussed in the Notes to Consolidated Financial Statements, Note 1 of Item 8, Financial Statements and Supplementary Data of this report. The critical accounting policies have been reviewed with the Audit Committee of our Board of Directors.

Revenue Recognition

Revenue is recognized when, or as, the Company transfers control of promised products or services to a customer in an amount that reflects the consideration the Company expects to be entitled in exchange for transferring those products or services. Sales shown on the Company's Consolidated Statements of Operations are from contracts with customers.

Payment terms and conditions vary by contract, although terms generally include a requirement of payment within a range from 30 to 90 days after the performance obligation has been satisfied; or in certain cases, up-front deposits. In circumstances where the timing of revenue recognition differs from the timing of invoicing, the Company has determined that the Company's contracts generally do not include a significant financing component. Taxes collected from customers, which are subsequently remitted to governmental authorities, are excluded from sales.

The Company recognizes an asset for the incremental, material costs of obtaining a contract with a customer if the Company expects the benefit of those costs to be longer than one year and the costs are expected to be recovered. These incremental costs include, but are not limited to, sales commissions incurred to obtain a contract with a customer. As of December 31, 2019, the Company does not have material incremental costs on any open contracts with an original expected duration of greater than one year.

The Company recognizes an asset for certain, material costs to fulfill a contract if it is determined that the costs relate directly to a contract or an anticipated contract that can be specifically identified, generate or enhance resources that will be used in satisfying performance obligations in the future, and are expected to be recovered. Such costs are amortized on a systematic basis that is consistent with the transfer to the customer of the goods to which the asset relates. Start-up costs are expensed as incurred. Capitalized fulfillment costs are included in Inventories in the accompanying Consolidated Condensed Balance

Sheets. Should future orders not materialize or it is determined the costs are no longer probable of recovery, the capitalized costs are written off. As of December 31, 2019, the Company does not have material capitalized fulfillment costs. Capitalized fulfillment costs were $9.6 million as of December 31, 2018. These costs were associated with a contract that is included in the divestiture of the semiconductor business and as such, the balance is included in Assets Held for Sale in the accompanying consolidated balance sheet at December 31, 2018. Amortization of fulfillment costs recognized within Cost of Products Sold was approximately $1.0 million for the year ended December 31, 2018.

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer, and is the unit of account. The majority of our contracts have a single performance obligation as the promise to transfer the individual goods or services is not separately identifiable from other promises in the contracts which are, therefore, not distinct. Thus, the contract's transaction price is the revenue recognized when or as that performance obligation is satisfied. Promised goods or services that are immaterial in the context of the contract are not separately assessed as performance obligations.

Some of our contracts have multiple performance obligations, most commonly due to the contract covering multiple phases of the product lifecycle (development, production, maintenance and support). For contracts with multiple performance obligations, the contract’s transaction price is allocated to each performance obligation using our best estimate of the standalone selling price of each distinct good or service in the contract. The primary method used to estimate standalone selling price is the expected cost plus margin approach, under which expected costs are forecast to satisfy a performance obligation and then an appropriate margin is added for that distinct good or service. Shipping and handling activities that occur after the customer has obtained control of the good are considered fulfillment activities, not performance obligations.

Some of our contracts offer price discounts or free units after a specified volume has been purchased. The Company evaluates these options to determine whether they provide a material right to the customer, representing a separate performance obligation. If the option provides a material right to the customer, revenue is allocated to these rights and recognized when those future goods or services are transferred, or when the option expires.

Contract modifications are routine in the performance of our contracts. Contracts are often modified to account for changes in contract specifications or requirements. In most instances, contract modifications are for goods or services that are distinct, and, therefore, are accounted for as new contracts. The effect of modifications has been reflected when identifying the satisfied and unsatisfied performance obligations, determining the transaction price and allocating the transaction price.

The majority of the Company’s revenue from contracts with customers is recognized at a point in time, when the customer obtains control of the promised product, which is generally upon delivery and acceptance by the customer. These contracts may provide credits or incentives, which may be accounted for as variable consideration. Variable consideration is estimated at the most likely amount to predict the consideration to which the Company will be entitled, and only to the extent it is probable that a subsequent change in estimate will not result in a significant revenue reversal when estimating the amount of revenue to recognize. Variable consideration is treated as a change to the sales transaction price and based on an assessment of all information (i.e., historical, current and forecasted) that is reasonably available to the Company, and estimated at contract inception and updated at the end of each reporting period as additional information becomes available. Most of our contracts do not contain rights to return product; where this right does exist, it is evaluated as possible variable consideration.

For contracts that are subject to the requirement to accrue anticipated losses, the company recognizes the entire anticipated loss in the period that the loss becomes probable.

For contracts with customers in which the Company promises to provide a product to the customer that has no alternative use to the Company and the Company has enforceable rights to payment for progress completed to date inclusive of profit, the Company satisfies the performance obligation and recognizes revenue over time, using costs incurred to date relative to total estimated costs at completion to measure progress toward satisfying our performance obligations. Incurred cost represents work performed, which corresponds with, and thereby best depicts, the transfer of control to the customer. Contract costs include labor, material and overhead.

The Company also recognizes revenue from service contracts (including service-type warranties) over time. The Company recognizes revenue over time during the term of the agreement as the customer is simultaneously receiving and consuming the benefits provided throughout the Company’s performance. The Company typically recognizes revenue on a straight-line basis throughout the contract period.

Reviews for Impairment of Long-Lived Assets

Goodwill Impairment Testing

Our goodwill is the result of the excess of purchase price over net assets acquired from acquisitions. As of December 31, 2019, we had approximately $145.0 million of goodwill. As of December 31, 2018, we had approximately $125.0 million of goodwill.

We identify our reporting units by assessing whether the components of our operating segments constitute businesses for which discrete financial information is available and segment management regularly reviews the operating results of those components. The Test Systems operating segment is its own reporting unit while the other reporting units are one level below our Aerospace operating segment.

Companies may perform a qualitative assessment as the initial step in the annual goodwill impairment testing process for all or selected reporting units under certain circumstances. Companies are also allowed to bypass the qualitative analysis and perform a quantitative analysis if desired. Economic uncertainties and the length of time from the calculation of a baseline fair value are factors that we would consider in determining whether to perform a quantitative test.

Quantitative testing first requires a comparison of the fair value of each reporting unit to the carrying value. We use the discounted cash flow method to estimate the fair value of each of our reporting units. The discounted cash flow method incorporates various assumptions, the most significant being projected sales growth rates, operating profit margins and cash flows, the terminal growth rate and the discount rate. Management projects sales growth rates, operating margins and cash flows based on each reporting unit's current business, expected developments and operational strategies. If the carrying value of the reporting unit exceeds its fair value, goodwill is considered impaired and any loss must be measured. Goodwill impairment is measured as the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying value of goodwill.

In 2019, we performed quantitative assessments for the reporting units which had goodwill as of the first day of the fourth quarter. Based on our quantitative assessment, the Company recorded a full goodwill impairment charge of approximately $1.6 million in the December 31, 2019 consolidated statement of operations associated with the AeroSat reporting unit. The impairment loss was incurred in the Aerospace segment and is reported within the Impairment Loss line of the Consolidated Statements of Operations.

CONSOLIDATED RESULTS OF OPERATIONS AND OUTLOOK

(In thousands, except percentages)	2019 (2)	2018	2017 (1)
Sales	$ 772,702	$ 803,256	$ 624,464
Gross Margin	20.2 %	22.5 %	22.0 %
SG&A Expenses as a Percentage of Sales	18.6 %	14.6 %	14.2 %
Impairment Loss	$ 11,083	$ —	$ 16,237
Net Gain on Sale of Businesses	$ 78,801	$ —	$ —
Interest Expense	$ 6,141	$ 9,710	$ 5,369
Effective Tax Rate	23.8 %	10.5 %	21.3 %
Net Income	$ 52,017	$ 46,803	$ 19,679

(1) Our results of operations for 2017 include the operations of CCC, beginning April 3, 2017, and the operations of CSC, beginning December 1, 2017.

(2) Our results of operations for 2019 include the operations of Freedom, beginning July 1, 2019, and the operations of Diagnosys, beginning October 4, 2019. 2019 results also reflect the divestiture of the semiconductor business on February 13, 2019.

A discussion by segment can be found at "Segment Results of Operations and Outlook" in this MD&A.

CONSOLIDATED OVERVIEW OF OPERATIONS

2019 Compared With 2018

Consolidated sales for the full year of 2019 decreased $30.6 million to $772.7 million, primarily because of the divested semiconductor business which had sales of $9.7 million in 2019 and $84.3 million in 2018.

Consolidated cost of products sold decreased $6.0 million to $616.6 million in 2019 from $622.6 million in the prior year. The decline was due to lower sales, primarily due to the divestiture of the semiconductor business, partially offset with incremental tariff expense of $5.9 million and $15.4 million of charges associated with the restructuring and impairment charges of our AeroSat antenna business which required classification within cost of products sold.

Selling, general and administrative ("SG&A") expenses were $143.4 million, or 18.6% or sales, compared with $117.0 million, or 14.6% of sales, for the prior year period. The $26.3 million increase was due to increased legal reserves for the long-term patent dispute of $19.6 million and impairment and restructuring charges related to the antenna business classified within SG&A expense of $2.4 million.

The Company recorded a gain of $80.1 million upon the sale of the semiconductor business on February 13, 2019, offset by a $1.3 million loss on the sale of the airfield lighting product line on July 12, 2019.

Other expense, net in 2019 includes a $5.0 million impairment of an equity investment.

2018 Compared With 2017

Consolidated sales were $803.3 million, up 28.6%, or $178.8 million, from the same period last year. Organic sales increased $94.0 million, or 15.0%. Acquired sales for 2018 were $84.8 million related to CSC and CCC and all related to the Aerospace segment. Aerospace segment sales of $675.6 million were up 26.4%, or $141.0 million, and Test Systems segment sales were up 42.0% to $127.6 million.

Consolidated cost of products sold increased $135.2 million to $622.6 million in 2018 from $487.4 million in the prior year. The increase was due primarily to the cost associated with the higher organic sales volume, coupled with the cost of products sold related to CSC and CCC.

SG&A expenses were $117.0 million, or 14.6% or sales, compared with $88.8 million, or 14.2% of sales, for the prior year period. The $28.3 million increase was due primarily to the incremental SG&A costs of CSC and CCC, which added $20.9 million. This included $7.4 million of incremental intangible asset amortization expense in 2018. Corporate overhead expenses increased $2.6 million due primarily to increased staffing and infrastructure development.

Interest expense increased in 2018 compared to 2017 due primarily to increased average debt levels.

Income Taxes

Our effective tax rates for 2019, 2018 and 2017 were 23.8%, 10.5% and 21.3%, respectively. Our tax rate is affected by recurring items, such as tax rates in foreign jurisdictions and the relative amount of income we earn in those jurisdictions, which we expect to be fairly consistent in the near term. It is also affected by discrete items that may occur in any given year, but are not consistent from year to year. In addition to state income taxes, the following items had the most significant impact on the difference between our statutory U.S. federal income tax rate (21% in 2019 and 2018 and 35% in 2017) and our effective tax rate:

2019:

1. Recognition of approximately $3.1 million of 2019 U.S. R&D tax credits.

2018:

1. Recognition of approximately $3.2 million of 2018 U.S. R&D tax credits.
2. Benefit of approximately $3.5 million from revised state filing position.

2017:

1. Recognition of approximately $2.9 million of 2017 U.S. R&D tax credits.
2. Permanent differences, primarily the impact of the Domestic Production Activities Deduction.
3. Provisional amounts related to the Federal tax expense on deemed repatriation of foreign earnings ($1.3 million), partially offset by revaluation of the deferred tax balances ($0.9 million) as a result of a reduction in the Federal tax rate from tax law changes enacted in 2017.

2020 Outlook

The continued grounding of the 737 MAX and the associated production pause has caused us to withdraw revenue guidance temporarily. The MAX situation affects us not only because it is one of our largest production programs, but also because the grounding has reduced capacity for the world's airlines, challenging our aftermarket business. We look forward to the MAX's return to service, and issuing sales guidance as soon as practical.

We expect first quarter sales in 2020 to be in the range of $155 million to $165 million, with Aerospace generating about 90% of the total. We expect the first quarter will be the lightest quarter of 2020, with results strengthening throughout the year. In 2019, we saw strong results at the beginning of the year which weakened towards the end. We expect 2020 will be just the opposite, with a weaker start and a stronger finish.

We have not currently estimated the impact which could result if the COVID-19 coronavirus becomes more significant globally. It is unknown whether and how global airline demand and spending, as well as global supply chains, may be affected if such an epidemic persists for an extended period of time.

At December 31, 2019, our consolidated backlog was $359.6 million. At December 31, 2018, our backlog was $415.5 million. Excluding backlog related to the divested semiconductor business, our backlog was $403.3 million at December 31, 2018. Backlog in the Aerospace segment was $275.8 million at December 31, 2019, of which $249.6 million is expected to be recognized as revenue in 2020. Backlog in the Test Systems segment was $83.8 million at December 31, 2019. The Test Systems segment expects to recognize as revenue $51.4 million of backlog in 2020.

The effective tax rate for 2020 is expected to be approximately 18% to 22%.

Capital equipment spending in 2020 is expected to be in the range of $22 million to $25 million.

Depreciation and Amortization in 2020 is expected to in the range of $33 million and $35 million.

SEGMENT RESULTS OF OPERATIONS AND OUTLOOK

Operating profit, as presented below, is sales less cost of products sold and other operating expenses excluding interest expense, corporate expenses and other non-operating sales and expenses. Cost of products sold and operating expenses are directly attributable to the respective segment. Operating profit is reconciled to earnings before income taxes in Note 20 of Item 8, Financial Statements and Supplementary Data, of this report.

AEROSPACE SEGMENT

(In thousands, except percentages)	2019	2018	2017
Sales	$ 692,609	$ 675,625	$ 534,603
Operating Profit	$ 16,657	$ 69,761	$ 38,888
Operating Margin	2.4 %	10.3 %	7.3 %

	2019	2018
Total Assets	$ 629,371	$ 647,870
Backlog	$ 275,754	$ 326,047

Sales by Market	2019	2018	2017
Commercial Transport	$ 523,921	$ 536,269	$ 414,523
Military	76,542	68,138	61,270
Business Jet	67,541	43,090	41,298
Other	24,605	28,128	17,512
Total	$ 692,609	$ 675,625	$ 534,603

Sales by Product Line		2019		2018		2017
Electrical Power & Motion	$	338,237	$	303,180	$	264,286
Lighting & Safety		185,462		174,383		158,663
Avionics		106,787		131,849		53,960
Systems Certification		14,401		13,951		14,333
Structures		23,117		24,134		25,849
Other		24,605		28,128		17,512
Total	$	692,609	$	675,625	$	534,603

2019 Compared With 2018

Aerospace segment sales increased by $17.0 million, or 2.5%, to $692.6 million, when compared with the prior-year period.

Electrical Power & Motion sales increased $35.1 million, or 11.6%, due primarily to increased sales of in-seat power and motion products. Lighting & Safety sales increased $11.1 million due to higher sales of products to the military market. Avionics sales decreased by $25.1 million for similar reasons in the quarter. Sales of Other products were down $3.5 million.

Aerospace operating profit for 2019 was $16.7 million, or 2.4% of sales, compared with $69.8 million, or 10.3% of sales, in the same period of 2018. Aerospace operating profit was impacted by the legal reserve for the patent dispute of $19.6 million for the full year incremental tariff expense of $5.9 million and antenna business impairment and restructuring charges of $28.8 million.

2018 Compared With 2017

Aerospace segment sales increased by $141.0 million, or 26.4%, to $675.6 million, when compared with the prior-year period of $534.6 million. Organic sales increased $56.2 million, or 10.5%, to $590.8 million, while acquired sales from CSC and CCC were $84.8 million.

Avionics sales increased by $77.9 million, driven primarily by the acquisitions, which contributed incremental sales of $72.5 million. Electrical Power & Motion sales increased $38.9 million, or 14.7%, due to higher sales of in-seat power and seat motion products. Lighting & Safety sales increased $15.7 million due to a general increase in volume. Sales of Other products were up $10.6 million, due to the CSC business. The increases were slightly offset by a decrease in Structures sales of $1.7 million.

Aerospace operating profit for 2018 was $69.8 million, or 10.3% of sales, compared with $38.9 million, or 7.3% of sales, in the same period of 2017. Aerospace operating profit benefited from higher organic sales and profits of CSC, offset partially by increased operating losses of CCC, AeroSat and Armstrong which improved by $3.8 million to $34.7 million compared with the prior year, excluding Armstrong's 2017 goodwill impairment charge. For the year, intangible asset amortization expense was $9.2 million related to CSC and CCC. Operating profit in the prior year was negatively impacted by the $16.2 million impairment at Armstrong.

2020 Outlook for Aerospace – The Aerospace segment's backlog at December 31, 2019 was $275.8 million, compared to $326.0 million at December 31, 2018. Approximately $249.6 million of the backlog at December 31, 2019 is expected to be shipped over the next 12 months.

TEST SYSTEMS SEGMENT

(In thousands, except percentages)		2019		2018		2017
Sales	$	80,093	$	127,631	$	89,861
Operating Profit	$	4,494	$	10,718	$	7,359
Operating Margin		5.6 %		8.4 %		8.2 %

		2019		2018
Total Assets	$	110,994	$	97,056
Backlog (1)	$	83,837	$	89,470

(1) Test Systems backlog as of December 31, 2018, includes $12.2 million related to the divested semiconductor business.

Sales by Market	2019	2018	2017
Semiconductor	$ 9,692	$ 84,254	$ 31,999
Aerospace & Defense	70,401	43,377	57,862
Total	$ 80,093	$ 127,631	$ 89,861

2019 Compared With 2018

Test Segment sales decreased from $127.6 million to $80.1 million for 2019, primarily due to the divestiture of the semiconductor test business, which contributed sales of $84.3 million in 2018 and $9.7 million in 2019.

Operating profit was $4.5 million, or 5.6% of sales, compared with $10.7 million, or 8.4% of sales, in 2018.

2018 Compared With 2017

Sales in 2018 increased 42.0% to $127.6 million compared with sales of $89.9 million for 2017. The growth was driven by a $52.3 million increase in sales to the Semiconductor market, offset by a decrease in Aerospace & Defense sales of $14.5 million.

Operating profit was $10.7 million, or 8.4% of sales, compared with $7.4 million, or 8.2% of sales, in 2017. This was primarily due to increased sales volume partially offset by approximately $2.0 million in increased engineering costs and elevated initial costs associated with new products.

2020 Outlook for Test Systems – Backlog in the Test Systems segment was $83.8 million at December 31, 2019, compared to Test Systems backlog, exclusive of the divested semiconductor business, of $77.3 million at December 31, 2018. The Test Systems segment expects to recognize as revenue $51.4 million of backlog in 2020.

We do not have material off-balance sheet arrangements that have or are reasonably likely to have a material future effect on our results of operations or financial condition.

CONTRACTUAL OBLIGATIONS

The following table represents contractual obligations as of December 31, 2019:

	Payments Due by Period				
(In thousands)	Total	2020	2021-2022	2023-2024	After 2024
Long-term Debt	$ 188,224	$ 224	$ —	$ 188,000	$ —
Interest on Long-term Debt	17,078	5,481	10,964	633	—
Purchase Obligations	129,282	121,034	8,248	—	—
Supplemental Retirement Plan and Post Retirement Obligations	27,651	404	753	973	25,521
Lease Obligations	33,197	7,026	13,445	6,749	5,977
Other Long-term Liabilities	8,467	6,541	748	746	432
Total Contractual Obligations	$ 403,899	$ 140,710	$ 34,158	$ 197,101	$ 31,930

Notes to Contractual Obligations Table

Long-term Debt — See Item 8, Financial Statements and Supplementary Data, Note 8, Long-Term Debt and Note Payable in this report. The timing of the payments above consider the amendment to the revolving credit facility as discussed in Note 8.

Interest on Long-term Debt — Future interest payments have been calculated using the applicable interest rate of each debt facility based on actual borrowings as of December 31, 2019. Actual future borrowings and rates may differ from these estimates.

Purchase Obligations — Purchase obligations are comprised of the Company’s commitments for goods and services in the normal course of business.

Lease Obligations — Financing and Operating lease obligations are primarily related to the Company's facility leases and interest.

Other Long-term Liabilities — Balance in 2021-2022 includes $4.5 million litigation accrual related to damages awarded to Lufthansa in the patent dispute related to direct sales. See Note 19 of the Consolidated Financial Statements for additional information. Table excludes the $16.1 million accrual recorded as management's best estimate of damages related to indirect sales claim, as this will not become a contractual obligation until the appeals process is complete and amount of damages has been finalized.

LIQUIDITY AND CAPITAL RESOURCES

(In thousands)	2019	2018	2017
Net cash flows from:			
Operating Activities	$ 42,689	$ 54,881	$ 37,783
Investing Activities	$ 64,630	$ (19,667)	$ (129,561)
Financing Activities	$ (92,182)	$ (36,134)	$ 91,425

Our cash flow from operations and available borrowing capacity provide us with the financial resources needed to run our operations and reinvest in our business.

Operating Activities

Cash provided by operating activities was $42.7 million in 2019 compared with $54.9 million in 2018. The decrease of $12.2 million in 2019 was primarily due to the net non-cash effect on net income of the net gain from the sale of businesses, the legal reserve and the antenna business impairment and restructuring charges, partially offset by a change in net operating assets.

Cash provided by operating activities was $54.9 million in 2018 compared with $37.8 million in 2017. The increase of $17.1 million in 2018 was primarily a result of increased net income in 2018 when compared with 2017, offset with a change in net operating assets.

Cash provided by operating activities was $37.8 million in 2017 compared with $48.9 million in 2016. The decrease of $11.1 million in 2017 was primarily a result of decreased net income and net operating assets in 2017 when compared with 2016.

Our cash flows from operations are primarily dependent on our net income adjusted for non-cash expenses and the timing of collections of receivables, level of inventory and payments to suppliers and employees. Sales and operating results of our Aerospace segment are influenced by the build rates of new aircraft, which are subject to general economic conditions, airline passenger travel and spending for government and military programs. Our Test Systems segment sales depends in part on capital expenditures of the aerospace & defense industry which, in turn, depend on current and future demand for those products. A reduction in demand for our customers' products would adversely affect our operating results and cash flows. We maintain a revolving credit facility to fund our short and long-term capital requirements including acquisitions and share repurchase efforts.

Investing Activities

Cash provided by investing activities in 2019 was $64.6 million, primarily the result of the $103.8 million in proceeds from the divestiture of the semiconductor business offset by purchases of property, plant and equipment ("PP&E") of $12.1 million. Cash provided by investing activities in 2019 was also offset by net cash used for the purchases of Freedom and Diagnosys for $21.8 million and $7.0 million, respectively.

Cash used for investing activities in 2018 was $19.7 million, primarily related to purchases of PP&E of $16.3 million.

Cash used for investing activities in 2017 was $129.6 million, primarily related to the acquisitions of CCC and CSC of $114.0 million and purchases of PP&E of $13.5 million.

Our expectation for 2020 is that we will invest between $22 million and $25 million for PP&E. Future requirements for PP&E depend on numerous factors, including expansion of existing product lines and introduction of new products. Management believes that our cash flow from operations and current borrowing arrangements will provide for these capital expenditures. We expect to continue to evaluate acquisition opportunities in the future.

Financing Activities

Our ability to maintain sufficient liquidity is highly dependent upon achieving expected operating results. Failure to achieve expected operating results could have a material adverse effect on our liquidity, our ability to obtain financing, and our operations in the future.

The Company's Fifth Amended and Restated Credit Agreement (the "Agreement") provides for a $500 million revolving credit line with the option to increase the line by up to $150 million. The maturity date of the loans under the Agreement is February 16, 2023. At December 31, 2019, there was $188.0 million outstanding on the revolving credit facility and there remains $310.9 million available, net of outstanding letters of credit. The credit facility allocates up to $20 million of the $500 million revolving credit line for the issuance of letters of credit, including certain existing letters of credit. At December 31, 2019, outstanding letters of credit totaled $1.1 million.

The maximum permitted leverage ratio of funded debt to Adjusted EBITDA (as defined in the Agreement) was 3.75 to 1, increasing to 4.50 to 1 for up to four fiscal quarters following the closing of an acquisition permitted under the Agreement, subject to limitations. The Company is in compliance with its financial covenant at December 31, 2019. The Company will pay interest on the unpaid principal amount of the facility at a rate equal to one-, three- or six-month LIBOR plus between 1.00% and 1.50% based upon the Company's leverage ratio. The Company will also pay a commitment fee to the Lenders in an amount equal to between 0.10% and 0.20% on the undrawn portion of the credit facility, based upon the Company's leverage ratio.

The Company's obligations under the Credit Agreement as amended are jointly and severally guaranteed by each domestic subsidiary of the Company other than a non-material subsidiary. The obligations are secured by a first priority lien on substantially all of the Company's and the guarantors' assets.

In the event of voluntary or involuntary bankruptcy of the Company or any subsidiary, all unpaid principal and other amounts owing under the Credit Agreement automatically become due and payable. Other events of default, such as failure to make payments as they become due and breach of financial and other covenants, change of control, judgments over a certain amount, and cross default under other agreements give the Agent the option to declare all such amounts immediately due and payable.

The primary financing activities in 2019 related to the repurchase of approximately 1,851,000 shares at an aggregate cost of $50.8 million under our share purchase program, coupled with net payments on our senior credit facility of $39.0 million. The primary financing activities in 2018 related to net repayments on our senior facility of $35.0 million.

The Company's cash needs for working capital, debt service, capital equipment, and acquisition opportunities during 2020 is expected to be met by cash flows from operations and cash balances and, if necessary, utilization of the revolving credit facility.

DIVIDENDS

Management believes that it should retain the capital generated from operating activities for investment in advancing technologies, acquisitions and debt retirement. Accordingly, there are no plans to institute a cash dividend program.

BACKLOG

At December 31, 2019, our consolidated backlog was $359.6 million. At December 31, 2018, our backlog was $415.5 million. Excluding backlog related to the divested semiconductor business, our backlog was $403.3 million at December 31, 2018. Backlog in the Aerospace segment was $275.8 million at December 31, 2019, of which $249.6 million is expected to be recognized as revenue in 2020. Backlog in the Test Systems segment was $83.8 million at December 31, 2019, of which $51.4 million is expected to be recognized as revenue of in 2020.

RELATED-PARTY TRANSACTIONS

Information regarding certain relationships and related transactions is incorporated herein by reference to the information included in the Company's 2020 Proxy Statement which will be filed with the Commission within 120 days after the end of the Company's 2019 fiscal year.

RECENT ACCOUNTING PRONOUNCEMENTS

See Note 1 of the Consolidated Financial Statements at Item 8 of this report.

ITEM 7A. ***QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK***

The Company has limited exposure to fluctuation in foreign currency exchange rates to U.S. dollar, primarily in Canadian dollars and Euros currency. The impact of transactions denominated in any other foreign currency is insignificant. Approximately 89% of the Company's consolidated sales are transacted in U.S. dollars. Net assets held in or measured in Canadian dollars amounted to $23.6 million at December 31, 2019. Net assets held in or measured in Euros amounted to $40.8 million at December 31, 2019.

Risk due to fluctuation in foreign exchange rates to net income was insignificant in 2019; however it could be significant in the future. Risk due to fluctuation in interest rates is a function of the Company's floating rate debt obligations, which total approximately $188.0 million at December 31, 2019. A change of 1% in interest rates of all variable rate debt would impact annual net income by approximately $1.9 million, before income taxes.

ITEM 8. ***FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA***

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and Board of Directors of Astronics Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Astronics Corporation (the Company) as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income, shareholders' equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and financial statement schedule listed in the Index at Item 15(a)(2)(collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated March 2, 2020 expressed an unqualified opinion thereon.

Adoption of New Accounting Standards

As discussed in Note 2 to the consolidated financial statements, the Company changed its method for recognizing revenue as a result of the adoption of Accounting Standards Update (ASU) No. 2014-09, Revenue from Contracts with Customers (Topic 606), and the amendments in ASUs 2015-14, 2016-08, 2016-10 and 2016-12, effective January 1, 2018. As discussed in Note 1 to the consolidated financial statements, the Company changed its method of accounting for leases as a result of the adoption of ASU No. 2016-02, Leases (Topic 842), as amended, effective January 1, 2019.

Basis for Opinion

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

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

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Valuation of Goodwill

Description of the Matter

As of December 31, 2019, the Company's goodwill balance was $145 million. As discussed in Notes 1 and 7 of the consolidated financial statements, the Company tests goodwill for impairment at the reporting unit level on an annual basis or more frequently if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount. For each reporting unit, the Company performed a quantitative test using the discounted cash flow method to estimate fair value. The discounted cash flow method incorporates various assumptions, the most significant being projected revenue growth rates and the weighted-average cost of capital. If the carrying value of the reporting unit exceeds its fair value, goodwill impairment is measured as the amount by which the reporting unit's carrying value exceeds its fair value, not to exceed the carrying value of goodwill.

Auditing management's assumptions was especially subjective due to the estimation required in determining the fair value of the Company's reporting units. The fair value estimates for these reporting units were sensitive to the significant assumptions of the revenue growth rate and the weighted-average cost of capital, which are affected by expectations about future market or economic conditions, particularly those in the aerospace industry.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's goodwill impairment test process, including the determination of the underlying significant assumptions described above, and the completeness and accuracy of the impairment analysis.

To test the estimated fair value of the Company's reporting units, we performed audit procedures with the assistance of our valuation professionals that included, among others, assessing the methodology used, testing the significant assumptions discussed above and testing the underlying data used in the impairment analysis. We compared the significant assumptions used by management to current industry and economic trends, historical trends of the Company, and other relevant factors. We assessed the historical accuracy of management's estimates and performed sensitivity analyses of significant assumptions to evaluate the changes in the fair value of the reporting units that would result from changes in the assumptions. We also involved our valuation professionals to assist in our evaluation of the weighted average cost of capital used in the fair value estimates. In addition, we tested the reconciliation of the fair value of the Company's reporting units to the market capitalization of the Company as of the annual impairment testing date.

Revenue Recognition

Description of the Matter

For the year ended December 31, 2019, the Company's revenues totaled $772.7 million. As discussed in Note 2 to the consolidated financial statements, some of the Company's contracts with customers contain multiple performance obligations. The majority of the Company's revenue from contracts with customers is recognized at a point in time when the customer obtains control of the product, which is generally upon delivery and acceptance by the customer. For contracts with customers in which the Company satisfies its promise to the customer to provide a product that has no alternative use to the Company and the Company has enforceable rights to payment for progress completed to date inclusive of profit, the Company satisfies the performance obligation and recognizes revenue over time, using costs incurred to date relative to total estimated costs at completion to measure progress toward satisfying the Company's performance obligations.

Auditing management's evaluation of contracts with customers was especially challenging due to the effort required to analyze the terms and conditions of the Company's various customer contracts given that such terms and conditions are nonstandard. This included the identification and determination of the performance obligations and the timing of revenue recognition.

How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the Company’s revenue recognition process. For example, we tested controls over management’s review of the terms and conditions of contracts with customers which included an analysis of the distinct performance obligations and a review of the conclusion as to whether revenue from such performance obligations should be recognized over time or at a point in time. We also tested management’s centralized monitoring control over completeness of the contract reviews and appropriateness of the accounting conclusions. We performed procedures to test the identification and determination of the performance obligations and the timing of revenue recognition which included reading a sample of executed contracts and purchase orders to understand the contract, performing an independent assessment of the identification of distinct performance obligations and the appropriate timing of revenue recognition, and comparing our assessment to that of management. We tested the completeness and accuracy of the Company’s contract summary documentation, specifically related to the identification and determination of distinct performance obligations and the timing of revenue recognition.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1992.
Buffalo, New York
March 2, 2020

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) and 15d-15(f) of the Exchange Act. Under the supervision and with the participation of our management, including the Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2019 based upon the framework in Internal Control – Integrated Framework originally issued in 2013 by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on that evaluation, our management concluded that our internal control over financial reporting is effective as of December 31, 2019.

We completed acquisitions in 2019, which were excluded from our management's report on internal control over financial reporting as of December 31, 2019. We acquired Freedom Communication Technologies, Inc. on July 1, 2019 and the primary operating subsidiaries from Diagnosys Test Systems Limited, on October 4, 2019. These acquisitions were included in our 2019 consolidated financial statements and constituted $55.8 million and $33.6 million of total and net assets, respectively, as of December 31, 2019 and $12.9 million and ($2.1) million of sales and net income, respectively, for the year then ended.

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in this Annual Report on Form 10-K and, as part of their audit, has issued their report, included herein, on the effectiveness of our internal control over financial reporting.

By:	/s/ Peter J. Gundermann	March 2, 2020
	Peter J. Gundermann	
	President & Chief Executive Officer	
	(Principal Executive Officer)	
	/s/ David C. Burney	March 2, 2020
	David C. Burney	
	Executive Vice President and Chief Financial Officer	
	(Principal Financial Officer)	

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and Board of Directors of Astronics Corporation

Opinion on Internal Control Over Financial Reporting

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

As indicated in the accompanying Management's Report on Internal Control Over Financial Reporting, management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of Freedom Communication Technologies, Inc. ("FCT") and the primary operating subsidiaries of Diagnosys Test Systems Limited ("Diagnosys"), which are included in the 2019 consolidated financial statements of the Company and constituted approximately 7% and 10% of total and net assets, respectively, as of December 31, 2019 and approximately 2% and (4)% of sales and net income, respectively, for the year then ended. Our audit of internal control over financial reporting of the Company also did not include an evaluation of the internal control over financial reporting of FCT and Diagnosys.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the 2019 consolidated balance sheets of the Company as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income, shareholders' equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and financial statement schedule listed in the Index at Item 15(a)(2) and our report dated March 2, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

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

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

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

Definition and Limitations of Internal Control Over Financial Reporting

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

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

/s/ Ernst & Young LLP

Buffalo, New York
March 2, 2020

ASTRONICS CORPORATION

CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended December 31,		
(In thousands, except per share data)	2019	2018	2017
Sales	$ 772,702	$ 803,256	$ 624,464
Cost of Products Sold	616,560	622,560	487,351
Gross Profit	156,142	180,696	137,113
Selling, General and Administrative Expenses	143,358	117,033	88,775
Impairment Loss	11,083	—	16,237
Income from Operations	1,701	63,663	32,101
Net Gain on Sale of Businesses	78,801	—	—
Other Expense, Net of Other Income	6,058	1,671	1,741
Interest Expense, Net of Interest Income	6,141	9,710	5,369
Income Before Income Taxes	68,303	52,282	24,991
Provision for Income Taxes	16,286	5,479	5,312
Net Income	$ 52,017	$ 46,803	$ 19,679
Basic Earnings Per Share	$ 1.62	$ 1.45	$ 0.60
Diluted Earnings Per Share	$ 1.60	$ 1.41	$ 0.58

See notes to consolidated financial statements.

ASTRONICS CORPORATION

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended December 31,		
(In thousands)	2019	2018	2017
Net Income	$ 52,017	$ 46,803	$ 19,679
Other Comprehensive Income (Loss):			
Foreign Currency Translation Adjustments	114	(2,691)	4,132
Retirement Liability Adjustment – Net of Tax	(2,413)	4,087	(1,990)
Other Comprehensive Income (Loss)	(2,299)	1,396	2,142
Comprehensive Income	$ 49,718	$ 48,199	$ 21,821

See notes to consolidated financial statements.

ASTRONICS CORPORATION

CONSOLIDATED BALANCE SHEETS

(In thousands, except share and per share data)	December 31, 2019	December 31, 2018
ASSETS		
Current Assets:		
Cash and Cash Equivalents	$ 31,906	$ 16,622
Accounts Receivable, Net of Allowance for Doubtful Accounts	147,998	182,308
Inventories	145,787	138,685
Prepaid Expenses and Other Current Assets	15,853	17,198
Assets Held for Sale	1,537	19,358
Total Current Assets	343,081	374,171
Property, Plant and Equipment, Net of Accumulated Depreciation	112,499	120,862
Operating Right-of-Use Assets	23,602	—
Other Assets	31,271	21,272
Intangible Assets, Net of Accumulated Amortization	127,293	133,383
Goodwill	144,970	124,952
Total Assets	$ 782,716	$ 774,640
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current Liabilities:		
Current Maturities of Long-term Debt	$ 224	$ 1,870
Accounts Payable	35,842	50,664
Accrued Payroll and Employee Benefits	22,485	31,732
Accrued Income Taxes	1,080	312
Current Operating Lease Liabilities	4,517	—
Other Accrued Expenses	25,132	15,728
Customer Advanced Payments and Deferred Revenue	31,360	26,880
Liabilities Held for Sale	—	906
Total Current Liabilities	120,640	128,092
Long-term Debt	188,000	232,112
Supplemental Retirement Plan and Other Liabilities for Pension Benefits	27,247	22,689
Long-term Operating Lease Liabilities	21,039	—
Other Liabilities	33,011	1,923
Deferred Income Taxes	3,922	3,199
Total Liabilities	393,859	388,015
Shareholders' Equity:		
Common Stock, $.01 par value, Authorized 40,000,000 Shares 26,874,223 Shares Issued and 23,348,205 Outstanding at December 31, 2019 25,978,037 Shares Issued and 24,303,323 Outstanding at December 31, 2018	269	260
Convertible Class B Stock, $.01 par value, Authorized 15,000,000 Shares 7,650,382 Shares Issued and Outstanding at December 31, 2019 8,289,794 Shares Issued and Outstanding at December 31, 2018	76	83
Additional Paid-in Capital	76,340	73,044
Accumulated Other Comprehensive Loss	(15,628)	(13,329)
Retained Earnings	428,584	376,567
Treasury Stock; 3,526,018 Shares at December 31, 2019, 1,674,714 Shares at December 31, 2018	(100,784)	(50,000)
Total Shareholders' Equity	388,857	386,625
Total Liabilities and Shareholders' Equity	782,716	774,640

See notes to consolidated financial statements.

ASTRONICS CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
(In thousands)	2019	2018	2017
Cash Flows from Operating Activities			
Net Income	$ 52,017	$ 46,803	$ 19,679
Adjustments to Reconcile Net Income to Cash Provided By Operating Activities, Excluding the Effects of Acquisitions and Divestitures:			
Non-cash Items:			
Depreciation and Amortization	33,049	35,032	27,063
Provision for Losses on Inventory and Receivables	16,947	3,271	2,973
Equity-based Compensation Expense	3,843	3,098	2,598
Deferred Tax Benefit	(14,385)	(2,680)	(5,494)
Operating Lease Expense	4,208	—	—
Net Gain on Sale of Businesses	(78,801)	—	—
Impairment Loss	11,083	—	16,237
Accrued Litigation Claim	19,619	1,000	—
Equity Investment Other Than Temporary Impairment	5,000	—	—
Restructuring Activities	6,539	—	—
Other	1,610	(668)	(937)
Cash Flows from Changes in Operating Assets and Liabilities, net of the Effects from Acquisitions and Divestitures of Businesses:			
Accounts Receivable	34,083	(47,291)	(9,844)
Inventories	(12,711)	(14,695)	(18,116)
Prepaid Expenses and Other Current Assets	(1,160)	464	(2,132)
Accounts Payable	(16,617)	9,171	10,439
Accrued Expenses	(10,737)	8,177	(702)
Income Taxes Payable	3,371	(4,460)	(376)
Customer Advanced Payments and Deferred Revenue	(11,919)	15,735	(4,918)
Operating Lease Liabilities	(3,840)	—	—
Supplemental Retirement Plan and Other Liabilities	1,490	1,924	1,313
Cash Flows from Operating Activities	42,689	54,881	37,783
Cash Flows from Investing Activities			
Acquisitions of Businesses, Net of Cash Acquired	(28,907)	—	(114,039)
Proceeds from Sale of Businesses	104,877	—	—
Capital Expenditures	(12,083)	(16,317)	(13,478)
Other Investing Activities	743	(3,350)	(2,044)
Cash Flows from Investing Activities	64,630	(19,667)	(129,561)
Cash Flows from Financing Activities			
Proceeds From Long-term Debt	117,000	35,015	147,086
Principal Payments on Long-term Debt	(156,107)	(72,834)	(23,720)
Purchase of Outstanding Shares for Treasury	(50,784)	—	(32,382)
Debt Acquisition Costs	—	(516)	—
Stock Options Activity	(545)	2,201	441
Finance Lease Principal Payments	(1,746)	—	—
Cash Flows From Financing Activities	(92,182)	(36,134)	91,425
Effect of Exchange Rates on Cash	147	(372)	366
Increase (Decrease) in Cash and Cash Equivalents	15,284	(1,292)	13
Cash and Cash Equivalents at Beginning of Year	16,622	17,914	17,901
Cash and Cash Equivalents at End of Year	$ 31,906	$ 16,622	$ 17,914
Supplemental Cash Flow Information:			
Interest Paid	$ 5,707	$ 9,710	$ 4,775
Income Taxes Paid, Net of Refunds	27,343	12,218	10,777

See notes to consolidated financial statements.

ASTRONICS CORPORATION

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY

(In thousands)	Year Ended December 31, 2019	2018	2017
Common Stock			
Beginning of Year	$ 260	$ 229	$ 220
Net Exercise of Stock Options	1	1	—
Class B Stock Converted to Common Stock	8	30	9
End of Year	$ 269	$ 260	$ 229
Convertible Class B Stock			
Beginning of Year	$ 83	$ 111	$ 120
Net Exercise of Stock Options	1	2	—
Class B Stock Converted to Common Stock	(8)	(30)	(9)
End of Year	$ 76	$ 83	$ 111
Additional Paid in Capital			
Beginning of Year	$ 73,044	$ 67,748	$ 64,709
Net Exercise of Stock Options and Equity-based Compensation Expense	3,296	5,296	3,039
End of Year	$ 76,340	$ 73,044	$ 67,748
Accumulated Other Comprehensive Loss			
Beginning of Year	$ (13,329)	$ (13,352)	$ (15,494)
Adoption of ASU 2018-02	—	(1,373)	—
Foreign Currency Translation Adjustments	114	(2,691)	4,132
Retirement Liability Adjustment – Net of Taxes	(2,413)	4,087	(1,990)
End of Year	$ (15,628)	$ (13,329)	$ (13,352)
Retained Earnings			
Beginning of Year	$ 376,567	$ 325,191	$ 305,512
Adoption of ASU 2014-09	—	3,268	—
Adoption of ASU 2018-02	—	1,373	—
Net income	52,017	46,803	19,679
Cash Paid in Lieu of Fractional Shares from Stock Distribution	—	(68)	—
End of Year	$ 428,584	$ 376,567	$ 325,191
Treasury Stock			
Beginning of Year	$ (50,000)	$ (50,000)	$ (17,618)
Purchase of Shares	(50,784)	—	(32,382)
End of Year	$ (100,784)	$ (50,000)	$ (50,000)
Total Shareholders' Equity	$ 388,857	$ 386,625	$ 329,927

See notes to consolidated financial statements.

ASTRONICS CORPORATION

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY, CONTINUED

	Year Ended December 31,		
(Share data, in thousands)	2019	2018	2017
Common Stock			
Beginning of Year	25,978	22,861	21,955
Issuance of Restricted Stock	18	—	—
Net Issuance from Exercise of Stock Options	63	166	26
Class B Stock Converted to Common Stock	815	2,951	880
End of Year	26,874	25,978	22,861
Convertible Class B Stock			
Beginning of Year	8,290	11,083	11,896
Net Issuance from Exercise of Stock Options	175	158	67
Class B Stock Converted to Common Stock	(815)	(2,951)	(880)
End of Year	7,650	8,290	11,083
Treasury Stock			
Beginning of Year	1,675	1,675	523
Purchase of Shares	1,851	—	1,152
End of Year	3,526	1,675	1,675

See notes to consolidated financial statements.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

NOTE 1 — SUMMARY OF SIGNIFICANT ACCOUNTING PRINCIPLES AND PRACTICES

Description of the Business

Astronics Corporation ("Astronics" or the "Company") is a leading provider of advanced technologies to the global aerospace, defense and electronics industries. Our products and services include advanced, high-performance electrical power generation, distribution and motion systems, lighting and safety systems, avionics products, systems and certification, aircraft structures and automated test systems.

We have principal operations in the United States ("U.S."), Canada, France and the United Kingdom ("UK"), as well as engineering offices in the Ukraine and India. We design and build our products through our wholly owned subsidiaries Astronics Advanced Electronic Systems Corp. ("AES"); Astronics AeroSat Corporation ("AeroSat"); Armstrong Aerospace, Inc. ("Armstrong"); Astronics Test Systems, Inc. ("ATS"); Ballard Technology, Inc. ("Ballard"); Astronics Custom Control Concepts Inc. ("CCC"); Astronics Connectivity Systems and Certification Corp. and subsidiaries ("CSC"); Diagnosys Inc. and its affiliates ("Diagnosys"); Astronics DME LLC ("DME"); Freedom Communication Technologies, Inc. ("Freedom"); Luminescent Systems, Inc. ("LSI"); Luminescent Systems Canada, Inc. ("LSI Canada"); Max-Viz, Inc. ("Max-Viz"); Peco, Inc. ("Peco"); and PGA Electronic s.a. ("PGA").

The Company has two reportable segments, Aerospace and Test Systems. The Aerospace segment designs and manufactures products for the global aerospace and defense industry. Our Test Systems segment designs, develops, manufactures and maintains automated test systems that support the aerospace and defense, communications and mass transit test systems as well as training and simulation devices for both commercial and military applications.

On February 13, 2019, the Company completed a divestiture of its semiconductor test business within the Test Systems segment. The business was not core to the future of the Test Systems segment. The total proceeds received for the sale amounted to $103.8 million, plus certain contingent earn-outs as described in Note 22. The Company recorded a pre-tax gain on the sale of approximately $80.1 million in the first quarter of 2019. The Company recorded income tax expense relating to the gain of $19.7 million.

On July 1, 2019, the Company acquired all of the issued and outstanding capital stock of Freedom Communication Technologies, Inc. Freedom, located in Kilgore, Texas, is a leader in wireless communication testing, primarily for the civil land mobile radio market. Freedom is included in our Test Systems segment. The total consideration for the transaction was $21.8 million, net of $0.6 million in cash acquired.

On July 12, 2019, the Company sold intellectual property and certain assets associated with its Airfield Lighting product line for $1.0 million in cash. The Airfield Lighting product line, part of the Aerospace segment, was not core to the business and represented less than 1% of revenue. The Company recorded a pre-tax loss on the sale of approximately $1.3 million.

On October 4, 2019, the Company acquired the stock of the primary operating subsidiaries as well as certain other assets from mass transit and defense market test solution provider, Diagnosys Test Systems Limited, for $7.0 million in cash, plus contingent purchase consideration ("earn-out") estimated at a fair value of $2.5 million. Diagnosys is included in our Test Systems segment. Diagnosys is a developer and manufacturer of comprehensive automated test equipment providing test, support, and repair of high value electronics, electro-mechanical, pneumatic and printed circuit boards focused on the global mass transit and defense markets. The terms of the acquisition allow for a potential earn-out of up to an additional $13.0 million over the next three years based on achievement of new order levels of over $72.0 million during that period. The acquired business has operations in Westford, Massachusetts as well as Ferndown, England, and an engineering center of excellence in Bangalore, India.

For more information regarding these acquisitions and divestitures see Note 21 and Note 22.

In the fourth quarter of 2019, in an effort to reduce the significant operating losses at our AeroSat business, we initiated a restructuring plan to reduce costs and minimize losses of our AeroSat antenna business. The plan narrows the initiatives for the AeroSat business to focus primarily on near-term opportunities pertaining to business jet connectivity. The plan has a downsized manufacturing operation remaining in New Hampshire, with significantly reduced personnel and operating expenses.

For more information regarding the restructuring plan see Note 23.

Principles of Consolidation

The consolidated financial statements include the accounts of the Company and its wholly owned subsidiaries. All intercompany transactions and balances have been eliminated.

Acquisitions are accounted for under the acquisition method and, accordingly, the operating results for the acquired companies are included in the consolidated statements of operations from the respective dates of acquisition.

For additional information on the acquired businesses, see Note 21.

Cost of Products Sold, Engineering and Development and Selling, General and Administrative Expenses

Cost of products sold includes the costs to manufacture products such as direct materials and labor and manufacturing overhead as well as all engineering and developmental costs. The Company is engaged in a variety of engineering and design activities as well as basic research and development activities directed to the substantial improvement or new application of the Company's existing technologies. These costs are expensed when incurred and included in cost of products sold. Research and development, design and related engineering expenses amounted to $108.9 million in 2019, $114.3 million in 2018 and $95.0 million in 2017. Selling, general and administrative ("SG&A") expenses include costs primarily related to our sales, marketing and administrative departments. Interest expense is shown net of interest income. Interest income was insignificant for the years ended December 31, 2019, 2018 and 2017.

Shipping and Handling

Shipping and handling costs are included in costs of products sold.

Equity-Based Compensation

The Company accounts for its stock options following Accounting Standards Codification ("ASC") Topic 718, *Compensation – Stock Compensation* ("ASC Topic 718"). This Topic requires all equity-based payments to employees, including grants of employee stock options and restricted stock units ("RSU's"), to be recognized in the statement of earnings based on the grant date fair value of the award. For awards with graded vesting, the Company uses a straight-line method of attributing the value of stock-based compensation expense, subject to minimum levels of expense, based on vesting. The Company accounts for forfeitures as they occur.

Under ASC Topic 718, stock compensation expense recognized during the period is based on the value of the portion of share-based payment awards that is ultimately expected to vest during the period. Vesting requirements vary for directors, officers and key employees. In general, options and RSU's granted to outside directors vest six months from the date of grant and options granted to officers and key employees vest with graded vesting over a five-year period, 20% each year, from the date of grant. In general, RSU's granted to officers and key employees cliff vest in three years. Equity-based compensation expense is included in selling, general and administrative expenses.

Cash and Cash Equivalents

All highly liquid instruments with a maturity of three months or less at the time of purchase are considered cash equivalents.

Accounts Receivable and Allowance for Doubtful Accounts

Accounts receivable are composed of trade and contract receivables recorded at either the invoiced amount or costs in excess of billings, are expected to be collected within one year, and do not bear interest. The Company records a valuation allowance to account for potentially uncollectible accounts receivable. The allowance is determined based on our knowledge of the business, specific customers, review of the receivables' aging and a specific identification of accounts where collection is at risk. Account balances are charged against the allowance after all means of collections have been exhausted and recovery is considered remote. The Company typically does not require collateral.

Inventories

We record our inventories at the lower of cost or net realizable value. We determine the cost basis of our inventory on a first-in, first-out or weighted average basis using a standard cost methodology that approximates actual cost. The Company records valuation reserves to provide for excess, slow moving or obsolete inventory. In determining the appropriate reserve, the Company considers the age of inventory on hand, the overall inventory levels in relation to forecasted demands as well as reserving for specifically identified inventory that the Company believes is no longer salable.

Property, Plant and Equipment

Depreciation of property, plant and equipment ("PP&E") is computed using the straight-line method for financial reporting purposes and using accelerated methods for income tax purposes. Estimated useful lives of the assets are as follows: buildings, 25-40 years; machinery and equipment, 4-10 years. Leased buildings and associated leasehold improvements are amortized over the shorter of the terms of the lease or the estimated useful lives of the assets, with the amortization of such assets included within depreciation expense.

Buildings acquired under capital leases amounted to $3.4 million ($8.2 million, net of $4.8 million of accumulated amortization) at December 31, 2018. The weighted-average interest rate on the building capital lease obligation at December 31, 2018 was 5.3%. See Note 10 for additional lease disclosures as required upon adoption of ASC 842.

The cost of properties sold or otherwise disposed of and the accumulated depreciation thereon are eliminated from the accounts and the resulting gain or loss, as well as maintenance and repair expenses, is reflected within operating income. Replacements and improvements are capitalized.

Depreciation expense was approximately $13.7 million, $15.0 million and $14.1 million in 2019, 2018 and 2017, respectively.

Long-Lived Assets

Long-lived assets to be held and used are initially recorded at cost. The carrying value of these assets is evaluated for recoverability whenever adverse effects or changes in circumstances indicate that the carrying amount may not be recoverable. Impairments are recognized if future undiscounted cash flows from operations are not expected to be sufficient to recover long-lived assets. The carrying amounts are then reduced to fair value, which is typically determined by using a discounted cash flow model.

See Note 23 for further information regarding the long-lived asset impairment charge in 2019 related to AeroSat. The charge was comprised of PP&E, intangible assets and right-of-use assets.

Assets Held for Sale

Assets held for sale are to be reported at lower of its carrying amount or fair value less cost to sell. Judgment is required in estimating the sales price of assets held for sale and the time required to sell the assets. These estimates are based upon available market data and operating cash flows of the assets held for sale.

As of December 31, 2019, the Company has agreed to sell certain facilities within the Aerospace segment. Accordingly, the property, plant and equipment assets associated with these facilities have been classified as held for sale in the consolidated Balance Sheet at December 31, 2019.

As of December 31, 2018, the Company's Board of Directors had approved a plan to sell the semiconductor test business within the Test Systems segment. Accordingly, the assets and liabilities associated with these operations have been classified as held for sale in the accompanying consolidated Balance Sheet at December 31, 2018. The carrying value of the disposal group was lower than its fair value, less costs to sell, and accordingly, no impairment loss was required at December 31, 2018.

Goodwill

The Company tests goodwill at the reporting unit level on an annual basis or more frequently if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount. The Company's nine reporting units with goodwill were subject to the goodwill impairment test as of the first day of our fourth quarter.

We may elect to perform a qualitative assessment that considers economic, industry and company-specific factors for all or selected reporting units. If, after completing the assessment, it is determined that it is more likely than not that the fair value of a reporting unit is less than its carrying value, we proceed to a quantitative test. We may also elect to perform a quantitative test instead of a qualitative test for any or all of our reporting units.

Quantitative testing requires a comparison of the fair value of each reporting unit to its carrying value. We use the discounted cash flow method to estimate the fair value of our reporting units. The discounted cash flow method incorporates various assumptions, the most significant being projected sales growth rates, operating margins and cash flows, the terminal growth rate and the weighted average cost of capital. If the carrying value of the reporting unit exceeds its fair value, goodwill is considered impaired and any loss must be measured. Accordingly, goodwill impairment is measured as the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying value of goodwill.

See Note 7 for further information regarding the goodwill impairment charge in 2019 associated to the AeroSat reporting unit. The 2018 assessment indicated no impairment to the carrying value of goodwill in any of the Company's reporting units and no impairment charge was recognized. An impairment charge associated with the Armstrong reporting unit was recorded as result of the 2017 assessment.

Intangible Assets

Acquired intangibles are generally valued based upon future economic benefits such as earnings and cash flows. Acquired identifiable intangible assets are recorded at fair value and are amortized over their estimated useful lives. Acquired intangible assets with an indefinite life are not amortized, but are reviewed for impairment at least annually or more frequently whenever events or changes in circumstances indicate that the carrying amounts of those assets are below their estimated fair values.

Impairment is tested under ASC Topic 350, *Intangibles - Goodwill and Other,* as amended by Accounting Standards Update ("ASU") 2012-2. As the undiscounted cash flows of the AeroSat reporting unit were insufficient to recover the carrying value of the long-lived assets, the Company proceeded to determine the fair value of the intangible assets in AeroSat. The Company concluded that the fair value of the intangible assets was de minimis as a result of their nominal projected future cash flows and the Company recorded a full impairment charge of approximately $6.2 million in the December 31, 2019 consolidated statement of operations associated to intangible assets of the AeroSat reporting unit in conjunction with restructuring activities. The qualitative factors applied under this new provision indicated no impairment to the Company's indefinite lived intangible assets in 2018 or 2017.

Financial Instruments

The Company's financial instruments consist primarily of cash and cash equivalents, accounts receivable, accounts payable, notes payable and long-term debt. The Company performs periodic credit evaluations of its customers' financial condition and generally does not require collateral. The Company does not hold or issue financial instruments for trading purposes. Due to their short-term nature, the carrying values of cash and equivalents, accounts receivable, accounts payable, and notes payable approximate fair value. The carrying value of the Company's variable rate long-term debt instruments also approximates fair value due to the variable rate feature of these instruments.

From time to time, the Company makes long-term, strategic equity investments in companies to promote business and strategic objectives. These investments as classified within Other Assets in the Consolidated Balance Sheets. For investments requiring equity method accounting, we recognize our share of the investee's earnings or losses within Other Expense, Net of Other Income in the Consolidated Statement of Operations. Such amounts were immaterial in the year ended December 31, 2019 and not applicable in 2018 or 2017. For investments not requiring equity method accounting, if the investment has no readily determinable fair value, we have elected the practicability exception of ASU 2016-01, under which the investment is measured at cost, less impairment, plus or minus observable price changes from orderly transactions of an identical or similar investment of the same issuer.

The Company determined there were indicators of impairment over one of its investments in 2019 as a result of the investee's deteriorating operating performance and limited access to capital. There were no observable price changes for this investment during 2019. We determined that the fair value of this investment was de minimis at December 31, 2019 and we recorded an impairment charge of $5.0 million recorded within Other Expense, Net of Other Income in the accompanying Consolidated Statement Operations.

Use of Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles ("U.S. GAAP") requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent liabilities and the reported amounts of sales and expenses during the reporting periods in the financial statements and accompanying notes. Actual results could differ from those estimates.

Foreign Currency Translation

The Company accounts for its foreign currency translation in accordance with ASC Topic 830, *Foreign Currency Translation*. The aggregate transaction loss included in operations was insignificant in 2019 and the gain included in operations was insignificant in 2018 and 2017.

Dividends

The Company has not paid any cash dividends in the three-year period ended December 31, 2019.

Loss Contingencies

Loss contingencies may from time to time arise from situations such as claims and other legal actions. Loss contingencies are recorded as liabilities when it is probable that a liability has been incurred and the amount of the loss is reasonably estimable. In all other instances, legal fees are expensed as incurred. Disclosure is required when there is a reasonable possibility that the ultimate loss will exceed the recorded provision. Contingent liabilities are often resolved over long time periods. In recording liabilities for probable losses, management is required to make estimates and judgments regarding the amount or range of the probable loss. Management continually assesses the adequacy of estimated loss contingencies and, if necessary, adjusts the amounts recorded as better information becomes known.

Acquisitions

The Company accounts for its acquisitions under ASC Topic 805, *Business Combinations and Reorganizations* ("ASC Topic 805"). ASC Topic 805 provides guidance on how the acquirer recognizes and measures the consideration transferred, identifiable assets acquired, liabilities assumed, non-controlling interests, and goodwill acquired in a business combination. ASC Topic 805 also expands required disclosures surrounding the nature and financial effects of business combinations. See Note 21 regarding the acquisitions in 2019.

Newly Adopted and Recent Accounting Pronouncements

Recent Accounting Pronouncements Adopted

Standard	Description	Financial Statement Effect or Other Significant Matters
ASU No. 2016-02 *Leases (Topic 842)*	The standard requires lessees to recognize most leases as assets and liabilities on the balance sheet, but record expenses on the statement of operations in a manner similar to current accounting. For lessors, the guidance modifies the classification criteria and accounting for sales-type and direct financing leases. The standard also requires additional disclosures about leasing arrangements and requires a modified retrospective transition approach for existing leases, whereby the standard will be applied to the earliest year presented. The provisions of the standard are effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted.	The Company adopted this guidance as of January 1, 2019 using the cumulative-effect method. The standard requires lessees to recognize a lease liability and a right-of-use ("ROU") asset on the balance sheet for operating leases. Accounting for finance leases is substantially unchanged. Prior year financial statements were not recast under the new method. We elected the package of transition provisions available for expired or existing contracts, which allowed us to carryforward our historical assessments of (1) whether contracts are or contain leases, (2) lease classification and (3) initial direct costs. As of January 1, 2019, operating lease ROU assets of approximately $18.4 million and lease liabilities of approximately $18.5 million were recognized on our balance sheet for our leased office and manufacturing facilities and equipment leases. There was a reclassification to ROU assets of $3.5 million from net PP&E for assets under existing finance leases at the transition date and a reclassification of existing lease liabilities of $6.5 million on our balance sheet for a leased facilities and equipment. The standard did not materially impact the Company's consolidated statements of operations or retained earnings. Refer to Note 19 for additional information. **Date of adoption:** Q1 2019

Recent Accounting Pronouncements Not Yet Adopted

Standard	Description	Financial Statement Effect or Other Significant Matters
ASU No. 2016-13 *Financial Instruments - Credit Losses (Topic 326)*	The standard replaces the incurred loss model with the current expected credit loss (CECL) model to estimate credit losses for financial assets measured at amortized cost and certain off-balance sheet credit exposures. The CECL model requires a Company to estimate credit losses expected over the life of the financial assets based on historical experience, current conditions and reasonable and supportable forecasts. The provisions of the standard are effective for fiscal years beginning after December 15, 2019 and interim periods within those fiscal years. Early adoption is permitted. The amendment requires a modified retrospective approach by recording a cumulative-effect adjustment to retained earnings as of the beginning of the period of adoption.	This ASU does not have a significant impact on our consolidated financial statements. **Planned date of adoption:** Q1 2020
ASU No. 2018-13 *Fair Value Measurement (Topic 820)*	The standard removes the disclosure requirements for the amount of and reasons for transfers between Level 1 and Level 2 of the fair value hierarchy. The provisions of this ASU are effective for years beginning after December 15, 2019, with early adoption permitted.	This ASU does not have a significant impact on our consolidated financial statements, as it only includes changes to disclosure requirements. **Planned date of adoption:** Q1 2020
ASU No. 2018-14 *Compensation—Retirement Benefits—Defined Benefit Plans—General (Subtopic 715-20)*	The standard includes updates to the disclosure requirements for defined benefit plans including several additions, deletions and modifications to the disclosure requirements. The provisions of this ASU are effective for years beginning after December 15, 2020, with early adoption permitted.	This ASU does not have a significant impact on our consolidated financial statements, as it only includes changes to disclosure requirements. **Planned date of adoption:** Q1 2021

We consider the applicability and impact of all ASUs. ASUs not listed above were assessed and determined to be either not applicable, or had or are expected to have minimal impact on our financial statements and related disclosures.

NOTE 2 — REVENUE

Accounting Standards Update ("ASU") No. 2014-09, Revenue from Contracts with Customers, was adopted on January 1, 2018 using the modified retrospective method, which required the recognition of the cumulative effect of the transition as an adjustment to retained earnings, net of tax effects, of $3.3 million.

Revenue is recognized when, or as, the Company transfers control of promised products or services to a customer in an amount that reflects the consideration the Company expects to be entitled in exchange for transferring those products or services. Sales shown on the Company's Consolidated Statements of Operations are from contracts with customers.

Payment terms and conditions vary by contract, although terms generally include a requirement of payment within a range from 30 to 90 days after the performance obligation has been satisfied; or in certain cases, up-front deposits. In circumstances where the timing of revenue recognition differs from the timing of invoicing, the Company has determined that the Company's contracts generally do not include a significant financing component. Taxes collected from customers, which are subsequently remitted to governmental authorities, are excluded from sales.

The Company recognizes an asset for the incremental, material costs of obtaining a contract with a customer if the Company expects the benefit of those costs to be longer than one year and the costs are expected to be recovered. These incremental costs include, but are not limited to, sales commissions incurred to obtain a contract with a customer. As of December 31, 2019, the Company does not have material incremental costs on any open contracts with an original expected duration of greater than one year.

The Company recognizes an asset for certain, material costs to fulfill a contract if it is determined that the costs relate directly to a contract or an anticipated contract that can be specifically identified, generate or enhance resources that will be used in satisfying performance obligations in the future, and are expected to be recovered. Such costs are amortized on a systematic basis that is consistent with the transfer to the customer of the goods to which the asset relates. Start-up costs are expensed as incurred. Capitalized fulfillment costs are included in Inventories in the accompanying Consolidated Condensed Balance

Sheets. Should future orders not materialize or it is determined the costs are no longer probable of recovery, the capitalized costs are written off. As of December 31, 2019, the Company does not have material capitalized fulfillment costs. Capitalized fulfillment costs were $9.6 million as of December 31, 2018. These costs were associated with a contract that is included in the divestiture of the semiconductor business and as such, the balance is included in Assets Held for Sale in the accompanying consolidated balance sheet at December 31, 2018. Amortization of fulfillment costs recognized within Cost of Products Sold was approximately $1.0 million for the year ended December 31, 2018.

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer, and is the unit of account. The majority of our contracts have a single performance obligation as the promise to transfer the individual goods or services is not separately identifiable from other promises in the contracts which are, therefore, not distinct. Thus, the contract's transaction price is the revenue recognized when or as that performance obligation is satisfied. Promised goods or services that are immaterial in the context of the contract are not separately assessed as performance obligations.

Some of our contracts have multiple performance obligations, most commonly due to the contract covering multiple phases of the product lifecycle (development, production, maintenance and support). For contracts with multiple performance obligations, the contract’s transaction price is allocated to each performance obligation using our best estimate of the standalone selling price of each distinct good or service in the contract. The primary method used to estimate standalone selling price is the expected cost plus margin approach, under which expected costs are forecast to satisfy a performance obligation and then an appropriate margin is added for that distinct good or service. Shipping and handling activities that occur after the customer has obtained control of the good are considered fulfillment activities, not performance obligations.

Some of our contracts offer price discounts or free units after a specified volume has been purchased. The Company evaluates these options to determine whether they provide a material right to the customer, representing a separate performance obligation. If the option provides a material right to the customer, revenue is allocated to these rights and recognized when those future goods or services are transferred, or when the option expires.

Contract modifications are routine in the performance of our contracts. Contracts are often modified to account for changes in contract specifications or requirements. In most instances, contract modifications are for goods or services that are distinct, and, therefore, are accounted for as new contracts. The effect of modifications has been reflected when identifying the satisfied and unsatisfied performance obligations, determining the transaction price and allocating the transaction price.

The majority of the Company’s revenue from contracts with customers is recognized at a point in time, when the customer obtains control of the promised product, which is generally upon delivery and acceptance by the customer. These contracts may provide credits or incentives, which may be accounted for as variable consideration. Variable consideration is estimated at the most likely amount to predict the consideration to which the Company will be entitled, and only to the extent it is probable that a subsequent change in estimate will not result in a significant revenue reversal when estimating the amount of revenue to recognize. Variable consideration is treated as a change to the sales transaction price and based on an assessment of all information (i.e., historical, current and forecasted) that is reasonably available to the Company, and estimated at contract inception and updated at the end of each reporting period as additional information becomes available. Most of our contracts do not contain rights to return product; where this right does exist, it is evaluated as possible variable consideration.

For contracts that are subject to the requirement to accrue anticipated losses, the company recognizes the entire anticipated loss in the period that the loss becomes probable.

For contracts with customers in which the Company promises to provide a product to the customer that has no alternative use to the Company and the Company has enforceable rights to payment for progress completed to date inclusive of profit, the Company satisfies the performance obligation and recognizes revenue over time, using costs incurred to date relative to total estimated costs at completion to measure progress toward satisfying our performance obligations. Incurred cost represents work performed, which corresponds with, and thereby best depicts, the transfer of control to the customer. Contract costs include labor, material and overhead.

The Company also recognizes revenue from service contracts (including service-type warranties) over time. The Company recognizes revenue over time during the term of the agreement as the customer is simultaneously receiving and consuming the benefits provided throughout the Company’s performance. The Company typically recognizes revenue on a straight-line basis throughout the contract period.

On December 31, 2019, we had $359.6 million of remaining performance obligations, which we refer to as total backlog. We expect to recognize approximately $300.9 million of our remaining performance obligations as revenue in 2020.

Costs in excess of billings includes unbilled amounts resulting from revenues under contracts with customers that are satisfied over time and when the cost-to-cost measurement method of revenue recognition is utilized and revenue recognized exceeds the

amount billed to the customer, and right to payment is not just subject to the passage of time. Amounts may not exceed their net realizable value. Costs in excess of billings are classified as current assets, within Accounts Receivable, Net of Allowance for Doubtful Accounts on our Consolidated Balance Sheet.

Billings in excess of cost includes billings in excess of revenue recognized as well as other elements of deferred revenue, which includes advanced payments, up-front payments, and progress billing payments. Billings in excess of cost are reported in our Consolidated Balance Sheet classified as current liabilities, within Customer Advance Payments and Deferred Revenue, and non-current liabilities, within Other Liabilities. To determine the revenue recognized in the period from the beginning balance of billings in excess of cost, the contract liability as of the beginning of the period is recognized as revenue on a contract-by-contract basis when the Company satisfies the performance obligation related to the individual contract. Once the beginning contract liability balance for an individual contract has been fully recognized as revenue, any additional payments received in the period are recognized as revenue once the related costs have been incurred.

We recognized $19.6 million and $8.1 million during the year ended December 31, 2019 and 2018, respectively, in revenues that were included in the contract liability balance at the beginning of the period.

The Company's contract assets and contract liabilities consist of costs and profits in excess of billings and billings in excess of cost and profits, respectively. Non-current contract liabilities are reported in our Consolidated Balance Sheet within Other Liabilities. The following table presents the beginning and ending balances of contract assets and contract liabilities:

(In thousands)	Contract Assets	Contract Liabilities
Beginning Balance, January 1, 2019	$ 33,030	$ 27,347
Ending Balance, December 31, 2019	$ 19,567	$ 38,758

The decrease in contract assets reflects the net impact of revenue recognized in excess of additional unbilled revenues recorded during the period. The increase in contract liabilities reflects the net impact of additional customer advances or deferred revenues recorded in excess of revenue recognized during the period and acquired contract liabilities.

The following table presents our revenue disaggregated by Market Segments as of December 31 as follows:

(In thousands)	2019	2018	2017
Aerospace Segment			
Commercial Transport	$ 523,921	$ 536,269	$ 414,523
Military	76,542	68,138	61,270
Business Jet	67,541	43,090	41,298
Other	24,605	28,128	17,512
Aerospace Total	692,609	675,625	534,603
Test Systems Segment			
Semiconductor	9,692	84,254	31,999
Aerospace & Defense	70,401	43,377	57,862
Test Systems Total	80,093	127,631	89,861
Total	$ 772,702	$ 803,256	$ 624,464

The following table presents our revenue disaggregated by Product Lines as of December 31 as follows:

(In thousands)	2019	2018	2017
Aerospace Segment			
Electrical Power & Motion	$ 338,237	$ 303,180	$ 264,286
Lighting & Safety	185,462	174,383	158,663
Avionics	106,787	131,849	53,960
Systems Certification	14,401	13,951	14,333
Structures	23,117	24,134	25,849
Other	24,605	28,128	17,512
Aerospace Total	692,609	675,625	534,603
Test Systems	80,093	127,631	89,861
Total	$ 772,702	$ 803,256	$ 624,464

NOTE 3 — ACCOUNTS RECEIVABLE

Accounts receivable at December 31 consists of:

(In thousands)	2019	2018
Trade Accounts Receivable	$ 131,990	$ 150,764
Unbilled Recoverable Costs and Accrued Profits	19,567	33,030
Total Receivables, Gross	151,557	183,794
Less Allowance for Doubtful Accounts	(3,559)	(1,486)
Total Receivables, Net	$ 147,998	$ 182,308

NOTE 4 — INVENTORIES

Inventories at December 31 are as follows:

(In thousands)	2019	2018
Finished Goods	$ 33,434	$ 33,100
Work in Progress	25,594	27,409
Raw Material	86,759	78,176
Total Inventories	$ 145,787	$ 138,685

Additionally, net Inventories of $14.4 million are classified in Assets Held for Sale at December 31, 2018. Refer to Note 22.

At December 31, 2019, the Company’s reserve for inventory valuation was $33.6 million, or 18.7% of gross inventory, inclusive of inventory and its associated reserves held for sale. At December 31, 2018, the Company’s reserve for inventory valuation was $20.8 million, or 12.0% of gross inventory.

NOTE 5 — PROPERTY, PLANT AND EQUIPMENT

Property, Plant and Equipment at December 31 are as follows:

(In thousands)	2019	2018
Land	$ 9,802	$ 11,191
Building and Improvements	74,723	83,812
Machinery and Equipment	115,202	106,327
Construction in Progress	5,453	6,404
Total Property, Plant and Equipment, Gross	$ 205,180	$ 207,734
Less Accumulated Depreciation	92,681	86,872
Total Property, Plant and Equipment, Net	$ 112,499	$ 120,862

Net Property, Plant and Equipment of $1.5 million and $3.5 million is classified in Assets Held for Sale at December 31, 2019 and 2018, respectively. Refer to Note 22.

Additionally, there was a $2.3 million impairment of property, plant and equipment in the year ended December 31, 2019, classified within Impairment Loss in the Consolidated Statement of Operations, as more fully disclosed in Note 23.

NOTE 6 — INTANGIBLE ASSETS

The following table summarizes acquired intangible assets at December 31 as follows:

		2019		2018	
(In thousands)	Weighted Average Life	Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
Patents	11 years	$ 2,146	$ 1,804	$ 2,146	$ 1,716
Non-compete Agreement	4 years	11,318	7,696	10,900	4,680
Trade Names	10 years	11,438	6,550	11,454	5,182
Completed and Unpatented Technology	9 years	48,201	21,196	36,406	14,964
Customer Relationships	15 years	142,212	50,776	136,894	37,875
Total Intangible Assets	12 years	$ 215,315	$ 88,022	$ 197,800	$ 64,417

Additionally, net Intangible Assets of $0.7 million are classified in Assets Held for Sale at December 31, 2018. Refer to Note 22.

Amortization is computed on the straight line method for financial reporting purposes. Amortization expense for intangibles was $17.6 million, $19.4 million and $12.3 million for 2019, 2018 and 2017, respectively. Additionally, there was a $6.2 million impairment of intangible assets as more fully described in Note 23. The amount is classified within Impairment Loss in the Consolidated Statement of Operations.

Based upon acquired intangible assets at December 31, 2019, amortization expense for each of the next five years is estimated to be:

(In thousands)	
2020	$ 16,620
2021	$ 15,394
2022	$ 14,963
2023	$ 13,927
2024	$ 12,908

NOTE 7 — GOODWILL

The following table summarizes the changes in the carrying amount of goodwill at December 31 as follows:

(In thousands)	Aerospace	Test Systems	Total
Balance at December 31, 2017	$ 125,645	$ —	$ 125,645
Acquisitions and Divestitures	(241)	—	(241)
Foreign Currency Translations and Other	(452)	—	(452)
Balance at December 31, 2018	$ 124,952	$ —	$ 124,952
Acquisitions and Divestitures	(262)	$ 21,932	$ 21,670
Impairment Charge	(1,610)	—	(1,610)
Foreign Currency Translations and Other	(42)	—	(42)
Balance at December 31, 2019	$ 123,038	$ 21,932	$ 144,970
Goodwill, Gross	$ 157,427	$ 21,932	$ 179,359
Accumulated Impairment Losses	(34,389)	—	(34,389)
Goodwill, Net	$ 123,038	$ 21,932	$ 144,970

As discussed in Note 1, goodwill is not amortized but is periodically tested for impairment. For the nine reporting units with goodwill on the first day of our fourth quarter, the Company performed a quantitative assessment of the goodwill's carrying value.

In the year ending December 31, 2019, we performed quantitative assessments for the reporting units which had goodwill as of the first day of the fourth quarter, prior to the initiation of the antenna business restructuring activities. Based on our quantitative assessment, the Company recorded a full impairment charge of approximately $1.6 million in the December 31, 2019 consolidated statement of operations associated with the AeroSat reporting unit. The impairment loss was incurred in the Aerospace segment and is reported within the Impairment Loss line of the Consolidated Statements of Operations.

The 2018 assessment indicated no impairment to the carrying value of goodwill in any of the Company's reporting units and no impairment charge was recognized.

NOTE 8 — LONG-TERM DEBT AND NOTES PAYABLE

Long-term Debt, including capital leases, at December 31 is as follows:

(In thousands)	2019	2018
Revolving Credit Line issued under the Fifth Amended and Restated Credit Agreement. Interest is at LIBOR plus between 1.00% and 1.50% (2.75% at December 31, 2019).	$ 188,000	$ 227,000
Other Bank Debt	224	338
Capital Lease Obligations	—	6,644
Total Debt	188,224	233,982
Less Current Maturities	224	1,870
Total Long-term Debt	$ 188,000	$ 232,112

In the year ended December 31, 2019, capital lease obligations are included within Other Accrued Expenses and Other Liabilities in the Consolidated Balance Sheets, as appropriate. Refer to Note 10 for additional detail on lease obligations and the implementation of ASC 842.

Principal maturities of long-term debt, including capital leases, are approximately:

(In thousands)	
2020	$ 224
2021	—
2022	—
2023	188,000
2024 and thereafter	—
Total Debt	$ 188,224

The Company's Fifth Amended and Restated Credit Agreement (the "Agreement") provides for a $500 million revolving credit line with the option to increase the line by up to $150 million. The maturity date of the loans under the Agreement is February 16, 2023. At December 31, 2019, there was $188.0 million outstanding on the revolving credit facility and there remains $310.9 million available, net of outstanding letters of credit. The credit facility allocates up to $20 million of the $500 million revolving credit line for the issuance of letters of credit, including certain existing letters of credit. At December 31, 2019, outstanding letters of credit totaled $1.1 million.

The maximum permitted leverage ratio of funded debt to Adjusted EBITDA (as defined in the Agreement) was 3.75 to 1, increasing to 4.50 to 1 for up to four fiscal quarters following the closing of an acquisition permitted under the Agreement, subject to limitations. The Company is in compliance with its financial covenant at December 31, 2019. The Company will pay interest on the unpaid principal amount of the facility at a rate equal to one-, three- or six-month LIBOR plus between 1.00% and 1.50% based upon the Company's leverage ratio. The Company will also pay a commitment fee to the Lenders in an amount equal to between 0.10% and 0.20% on the undrawn portion of the credit facility, based upon the Company's leverage ratio.

The Company's obligations under the Credit Agreement as amended are jointly and severally guaranteed by each domestic subsidiary of the Company other than a non-material subsidiary. The obligations are secured by a first priority lien on substantially all of the Company's and the guarantors' assets.

In the event of voluntary or involuntary bankruptcy of the Company or any subsidiary, all unpaid principal and other amounts owing under the Credit Agreement automatically become due and payable. Other events of default, such as failure to make payments as they become due and breach of financial and other covenants, change of control, judgments over a certain amount, and cross default under other agreements give the Agent the option to declare all such amounts immediately due and payable.

NOTE 9 — WARRANTY

In the ordinary course of business, the Company warrants its products against defects in design, materials and workmanship typically over periods ranging from twelve to sixty months. The Company determines warranty reserves needed by product line based on experience and current facts and circumstances. Activity in the warranty accrual, which is included in other accrued expenses on the Consolidated Balance Sheets, is summarized as follows:

(In thousands)	2019	2018	2017
Balance at Beginning of the Year	$ 5,027	$ 5,136	$ 4,675
Warranty Liabilities Divested or Acquired	(80)	—	511
Warranties Issued	3,781	2,806	1,782
Reassessed Warranty Exposure	1,451	(370)	540
Warranties Settled	(2,519)	(2,545)	(2,372)
Balance at End of the Year	$ 7,660	$ 5,027	$ 5,136

NOTE 10 — LEASES

The Company has operating and finance leases for leased office and manufacturing facilities and equipment leases. We have concluded that when an agreement grants us the right to substantially all of the economic benefits associated with an identified asset, and we are able to direct the use of that asset throughout the term of the agreement, we have a lease. We lease certain facilities and office equipment, finance leases, and we lease certain production facilities, office equipment and vehicles under

operating leases. Some of our leases include options to extend or terminate the leases and these options have been included in the relevant lease term to the extent that they are reasonably certain to be exercised.

If the lease arrangement also contains non-lease components, the Company elected the practical expedient not to separate any combined lease and non-lease components for all lease contracts. For our real estate leases, the remaining fixed minimum rental payments used in the calculation of the new lease liability, include fixed payments and variable payments (if the variable payments are based on an index), over the remaining lease term. Variable lease payments based on indices have been included in the related right-of-use assets and lease liabilities on our Consolidated Balance Sheet, while variable lease payments based on usage of the underlying asset have been excluded, as they do not represent present rights or obligations. Variable lease components for leases relate primarily to common area maintenance charges and other separately billed lessor services, sales and real estate taxes. Variable lease costs are expensed in the period they are incurred. We have also elected to adopt the practical expedient under ASC 842 to not separate lease and non-lease components in contracts where the base lease payment contains both. In this situation, these lease agreements are accounted for as a single lease component for all classes of underlying assets. While we do have real estate leases with options to purchase the facility at a market value at the date of exercise, these are not included in the calculation of the lease liability, as these options are not expected to be exercised.

Any new additional operating lease liabilities and corresponding ROU assets are based on the present value of the remaining minimum rental payments. The present value of the Company's lease liability at transition was calculated using a weighted-average incremental borrowing rate of 3.7%. In determining the incremental borrowing rate, we have considered borrowing data for secured debt obtained from our lending institution. As of December 31, 2019, the Company recognized an operating ROU asset and lease liability of $23.6 million and $25.6 million, respectively. The Company obtained ROU assets of $10.4 million in exchange for operating lease liabilities from new leases entered into or acquired, net of modifications, during the year ended December 31, 2019.

As of December 31, 2019, the Company recognized a financing ROU asset of $2.5 million included in Other Assets. As of December 31, 2019, the Company recognized a financing lease liability of $4.7 million, of which $1.9 million and $2.8 million are within Other Accrued Expenses and Other Liabilities, respectively. No new financing lease liabilities were entered into during the year ended December 31, 2019.

As permitted by ASC 842, leases with expected durations of less than 12 months from inception (i.e. short-term leases) were excluded from the Company's calculation of its lease liability and right-of-use asset. Furthermore, as permitted by ASC 842, the Company elected to apply the package of practical expedients, which allows companies not to reassess: (a) whether its expired or existing contracts are or contain leases, (b) the lease classification for any expired or existing leases, and (c) initial direct costs for any existing leases.

The following is a summary of the Company's total lease costs as of December 31:

(In thousands)	2019
Finance Lease Cost:	
Amortization of ROU Assets	$ 1,020
Interest on Lease Liabilities	314
Total Finance Lease Cost	1,334
Operating Lease Cost	5,050
Impairment Charge of Operating Lease ROU Asset	1,018
Variable Lease Cost	1,236
Short-term Lease Cost (excluding month-to-month)	223
Less Sublease and Rental (Income) Expense	(629)
Total Operating Lease Cost	6,898
Total Net Lease Cost	$ 8,232

The following is a summary of cash paid for amounts included in the measurement of lease liabilities as of December 31:

(In thousands)	2019
Operating Cash Flows Used for Finance Leases	$ 314
Operating Cash Flows Used for Operating Leases	$ 4,718
Financing Cash Flows Used for Finance Leases	$ 1,746

The weighted-average remaining term for the Company's operating and financing leases are approximately 6 years and 2 years, respectively. The weighted-average discount rates for the Company's operating and financing leases are approximately 3.4% and 5.0%, respectively.

The following is a summary of the Company's maturity of lease liabilities:

(In thousands)	Operating Leases	Financing Leases
2020	$ 4,898	$ 2,128
2021	5,370	2,181
2022	5,152	743
2023	3,911	—
2024	2,837	—
Thereafter	5,977	—
Total Lease Payments	$ 28,145	$ 5,052
Less: Interest	2,589	314
Total Lease Liability	$ 25,556	$ 4,738

NOTE 11 — INCOME TAXES

The Company recognizes deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial reporting and tax basis of assets and liabilities. Deferred tax assets are reduced, if deemed necessary, by a valuation allowance for the amount of tax benefits which are not expected to be realized. Investment tax credits are recognized on the flow through method.

The provision (benefit) for income taxes at December 31 consists of the following:

(In thousands)	2019	2018	2017
Current			
U.S. Federal	$ 23,798	$ 7,540	$ 8,436
State	4,471	(504)	2,054
Foreign	2,402	1,123	316
Current	30,671	8,159	10,806
Deferred			
U.S. Federal	(16,250)	(1,799)	(3,850)
State	727	(1,584)	(326)
Foreign	1,138	703	(1,318)
Deferred	(14,385)	(2,680)	(5,494)
Total	$ 16,286	$ 5,479	$ 5,312

The effective tax rates differ from the statutory federal income tax rate as follows:

	2019	2018	2017
Statutory Federal Income Tax Rate	21.0 %	21.0 %	35.0 %
Permanent Items			
Stock Compensation Expense	(0.5)%	(0.9)%	1.1 %
Domestic Production Activity Deduction	— %	— %	(4.7)%
Other	0.5 %	0.4 %	0.5 %
Foreign Tax Rate Differential	1.4 %	0.5 %	(5.6)%
State Income Tax, Net of Federal Income Tax Effect	6.0 %	2.8 %	4.5 %
Revised State Filing Tax Benefit, Net of Federal Income Tax Effect, Net of Reserve	— %	(6.7)%	— %
Research and Development Tax Credits	(4.6)%	(6.2)%	(11.5)%
Change in Valuation Allowance	1.1 %	— %	— %
Net GILTI and FDII Tax Expense (Benefit)	(1.2)%	0.2 %	— %
Tax Expense (Benefit) on Deemed Repatriation of Foreign Earnings	— %	(0.8)%	5.6 %
Revaluation of Deferred Taxes for Federal Tax Rate Change	— %	(0.1)%	(3.5)%
Other	0.1 %	0.3 %	(0.1)%
Effective Tax Rate	23.8 %	10.5 %	21.3 %

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes.

Significant components of the Company's deferred tax assets and liabilities at December 31, are as follows:

(In thousands)	2019	2018
Deferred Tax Assets:		
Asset Reserves	$ 17,071	$ 8,808
Deferred Compensation	6,427	5,628
State Investment and Research and Development Tax Credit Carryforwards, Net of Federal Tax	854	1,066
Customer Advanced Payments and Deferred Revenue	3,472	875
Net Operating Loss Carryforwards and Other	8,212	7,407
ASC 606 Revenue Recognition	2,612	1,641
Lease Liabilities	7,466	1,743
Other	3,170	—
Total Gross Deferred Tax Assets	49,284	27,168
Valuation Allowance for Foreign Tax Credit, State Deferred Tax Assets and Tax Credit Carryforwards, Net of Federal Tax	(13,303)	(8,098)
Deferred Tax Assets	35,981	19,070
Deferred Tax Liabilities:		
Depreciation	10,060	10,783
Goodwill and Intangible Assets	4,683	4,438
ASC 606 Revenue Recognition - Section 481(a) Adjustment	496	767
Lease Assets	6,377	904
Other	751	3,812
Deferred Tax Liabilities	22,367	20,704
Net Deferred Tax Assets (Liabilities)	$ 13,614	$ (1,634)

The net deferred tax assets and liabilities presented in the Consolidated Balance Sheets are as follows at December 31:

(In thousands)	2019	2018
Other Assets — Long-term	$ 17,536	$ 3,999
Assets Held for Sale	—	(1,528)
Deferred Tax Liabilities — Long-term	(3,922)	(3,199)
Liabilities Held for Sale	—	(906)
Net Deferred Tax Assets (Liabilities)	$ 13,614	$ (1,634)

At December 31, 2019, state tax credit carryforwards amounted to approximately $0.8 million which will expire from 2020 through 2033.

At December 31, 2019, federal net operating loss carryforwards, which the Company expects to utilize, even with annual limitations under IRC Section 382, amounted to approximately $6 million and expire at various dates between 2038 and 2039.

At December 31, 2019, state net operating loss carryforwards which the Company expects to utilize amounted to approximately $6.9 million and expire at various dates between 2027 and 2038. Due to the uncertainty as to the Company’s ability to generate sufficient taxable income in certain states in the future and utilize certain of the Company’s state operating loss carryforwards before they expire, the Company has recorded a valuation allowance accordingly. These state net operating loss carryforwards amount to approximately $108.4 million and expire at various dates from 2022 through 2039.

The Company adopted ASU No. 2016-09, *Improvements to Employee Share-Based Payment Accounting* during 2017 and beginning with 2017, the excess tax benefits associated with stock option exercises are no longer recorded directly to shareholders’ equity, but rather, are recorded in the provision for income taxes, when realized. A benefit of approximately $0.6 million, $0.7 million and $0.5 million was recorded in the provision for incomes taxes for the year ended December 31, 2019, 2018 and 2017, respectively.

At December 31, 2019, estimated foreign tax credit carryforwards, which the Company expects to utilize, amounted to approximately $0.2 million. The Company expects to generate general limitation foreign source income in the future and will utilize these foreign tax credits. Therefore, during 2019 the Company has removed the valuation allowance that was recorded at December 31, 2018.

During 2019, the Company recorded a valuation allowance on a deferred tax asset related to an equity investment impairment, as the Company does not expect to utilize the capital loss in the future. In addition, the Company also removed the state valuation allowance on the deferred tax assets of one of its subsidiaries, which are now expected to be utilized in the future. Finally, the Company added a state valuation allowance on the deferred tax assets of one of its subsidiaries, which are now expected not to be utilized in the future.

During the year ended December 31, 2018, the Company, determined that a revised state filing position could be taken which would reduce the taxable income apportioned for state income tax purposes. Based on the assessment performed, the Company concluded that amended state income tax returns would be filed for the open tax years of 2014 through 2017 to reflect this revised tax position and claim the associated tax benefits. The Company is also claiming the benefit of the revised filing position for 2018 and subsequent tax years. In addition, the revised state tax filing position also resulted in a deferred tax benefit due to the revaluation of deferred tax liabilities. Accordingly, the Company recognized the tax benefits, and related tax reserves, for the revised state filing position during the year ended December 31, 2019 and 2018. Absent a state tax audit notice related to the refund claim, the statute of limitations will expire on various dates in 2020 for the amended returns for tax years 2014 and 2015, at which time approximately $0.8 million of the unrecognized tax benefits is expected to be recognized. Absent a state tax audit notice related to the refund claim, the statute of limitations will expire one year from the date the refund checks are issued for the amended returns for tax years 2016 and 2017 and will expire in 2022 and 2023 for tax years 2018 and 2019, respectively.

The Company has analyzed its filing positions in all of the federal and state jurisdictions where it is required to file income tax returns, as well as all open tax years in these jurisdictions. Should the Company need to accrue a liability for uncertain tax benefits, any interest associated with that liability would be recorded as interest expense. Penalties, if any, would be recorded as operating expenses. During the year ended December 31, 2019, reserves for uncertain tax positions were recorded in association with revised state income tax filing positions pursuant to ASC Topic 740-10. No reserves for uncertain income tax positions

were deemed necessary for the year ended December 31, 2017. A reconciliation of the total amounts of unrecognized tax benefits, excluding interest and penalties, is as follows:

(in thousands)	2019	2018	2017
Balance at Beginning of the Year	$ 2,197	$ —	$ —
Decreases as a Result of Tax Positions Taken in Prior Years	—	—	—
Increases as a Result of Tax Positions Taken in the Current Year	368	2,197	—
Balance at End of the Year	2,565	$ 2,197	$ —

The amount of unrecognized tax benefits that, if recognized, would impact the effective tax rate amounted to $2.6 million and $2.2 million at December 31, 2019 and 2018, respectively. There are no material penalties or interest liabilities accrued as of December 31, 2019 or 2018, nor are any material penalties or interest costs included in expense for each of the years ended December 31, 2019, 2018 and 2017. The years under which we conducted our evaluation coincided with the tax years currently still subject to examination by major federal and state tax jurisdictions, those being 2016 through 2019 for federal purposes and 2015 through 2019 for state purposes.

Pretax income from the Company's foreign subsidiaries amounted to $12.2 million, $7.3 million and $1.1 million for 2019, 2018 and 2017, respectively. The balance of pretax earnings for each of those years were domestic.

On December 22, 2017, the President of the United States signed into law the Tax Cuts and Jobs Act (the "Act"). The legislation significantly changed U.S. tax law by, among other things, lowering corporate income tax rates, implementing a territorial tax system and imposing a repatriation tax on deemed repatriated earnings of foreign subsidiaries. The Act permanently reduced the U.S. corporate income tax rate from a maximum of 35% to a 21% rate, effective January 1, 2018.

The Company uses the asset and liability method of accounting for income taxes. Under this method, deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to reverse. As a result of the reduction in the U.S. corporate income tax rate from 35% to 21% under the Tax Cuts and Jobs Act, the Company revalued its ending net deferred tax liabilities at December 31, 2017 and recognized a $0.1 million tax benefit and a provisional $0.9 million tax benefit in the Company's consolidated statement of income for the years ended December 31, 2018 and 2017 respectively.

The Tax Cuts and Jobs Act provided for a one-time deemed mandatory repatriation of post-1986 undistributed foreign subsidiary earnings and profits ("E&P") through the year ended December 31, 2017. The Company had an estimated $10.3 million of undistributed foreign E&P subject to the deemed mandatory repatriation and recognized a provisional $1.4 million of income tax expense in the Company's consolidated statement of income for the year ended December 31, 2017. The Company made an adjustment to its provisional amounts included in its consolidated financial statements for the year ended December 31, 2017 resulting in a benefit of approximately $0.4 million recorded during the year ended December 31, 2018. No additional provision for U.S. federal or foreign taxes has been made as the foreign subsidiaries' undistributed earnings (approximately $29.7 million at December 31, 2019) are considered to be permanently reinvested. It is not practicable to determine the amount of outside basis differences related to the investment in foreign subsidiaries and other taxes that would be payable if these amounts were repatriated to the U.S.

While the Tax Cuts and Jobs Act provides for a territorial tax system, beginning in 2018, it includes the foreign-derived intangible income ("FDII") and global intangible low-taxed income ("GILTI") provisions. The Company elected to account for GILTI tax in the period in which it is incurred. The GILTI provisions require the Company to include in its U.S. income tax return foreign subsidiary earnings from its Controlled Foreign Corporations ("CFCs") in excess of an allowable return on the foreign subsidiary's tangible assets. The GILTI tax expense resulted from excess net tested income over net deemed tangible income return from the CFCs. The GILTI expense would have been completely offset by a foreign tax credit absent the required allocations of interest expense to the GILTI income, which created a U.S. foreign tax credit limitation. The FDII provisions allow for a deduction equal to a percentage of the foreign-derived intangible income of a domestic corporation. As a result of these provisions, net, the Company recorded a tax benefit of approximately $0.8 million during the year ended December 31, 2019 and tax expense of approximately $0.2 million during the year ended December 31, 2018.

The Base Erosion and Anti-Abuse Tax ("BEAT") provisions in the Tax Cuts and Jobs Act eliminates the deduction of certain base-erosion payments made to related foreign corporations, and impose a minimum tax if greater than regular tax. The Company does not expect it will be subject to this tax and therefore has not included any tax impacts of BEAT in its consolidated financial statements for the year ended December 31, 2019 and 2018.

On December 22, 2017, the SEC staff issued Staff Accounting Bulletin No. 118 ("SAB 118") to address the application of U.S. GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Tax Cuts and Jobs Act. The Company had recognized the provisional tax impacts related to deemed repatriated earnings and the revaluation of deferred tax assets and liabilities and included these amounts in its consolidated financial statements for the year ended December 31, 2017. The accounting for these income tax effects of the Tax Cuts and Jobs Act was completed during the fourth quarter of 2018 and the provisional tax impacts were adjusted for the year ended December 31, 2018.

NOTE 12 — PROFIT SHARING/401(k) PLAN

The Company offers eligible domestic full-time employees participation in certain profit sharing/401(k) plans. The plans provide for a discretionary annual company contribution. In addition, employees may contribute a portion of their salary to the plans which is partially matched by the Company. The plans may be amended or terminated at any time.

Total charges to income before income taxes for these plans were approximately $10.0 million, $8.3 million and $7.4 million in 2019, 2018 and 2017, respectively.

NOTE 13 — RETIREMENT PLANS AND RELATED POST RETIREMENT BENEFITS

The Company has two non-qualified supplemental retirement defined benefit plans ("SERP" and "SERP II") for certain current and retired executive officers. The accumulated benefit obligation of the plans as of December 31, 2019 and 2018 amounts to $25.2 million and $21.0 million, respectively.

The Plans provide for benefits based upon average annual compensation and years of service and in the case of SERP, there are offsets for social security and profit sharing benefits. It is the Company's intent to fund the plans as plan benefits become payable, since no assets exist at December 31, 2019 or 2018 for either of the plans.

The Company accounts for the funded status (i.e., the difference between the fair value of plan assets and the projected benefit obligations) of its pension plans in accordance with the recognition and disclosure provisions of ASC Topic 715, *Compensation, Retirement Benefits*, which requires the Company to recognize the funded status in its balance sheet, with a corresponding adjustment to Accumulated Other Comprehensive Income ("AOCI"), net of tax. These amounts will be subsequently recognized as net periodic pension cost pursuant to the Company's historical policy for amortizing such amounts. Further, actuarial gains and losses that arise in subsequent periods and are not recognized as net periodic pension cost in the same periods will be recognized as a component of AOCI. Those amounts will be subsequently recognized as a component of net periodic pension cost on the same basis as the amounts recognized in AOCI.

Unrecognized prior service costs of $2.2 million ($2.8 million net of $0.6 million in taxes) and unrecognized actuarial losses of $6.0 million ($7.6 million net of $1.6 million in taxes) are included in AOCI at December 31, 2019 and have not yet been recognized in net periodic pension cost. The prior service cost included in AOCI that is expected to be recognized in net periodic pension cost during the fiscal year-ended December 31, 2020 is $0.3 million ($0.4 million net of $0.1 million in taxes). The actuarial loss included in AOCI expected to be recognized in net periodic pension cost during the fiscal year-ended December 31, 2020 is $0.5 million ($0.6 million net of $0.1 million in taxes).

The reconciliation of the beginning and ending balances of the projected benefit obligation of the plans for the years ended December 31 is as follows:

(In thousands)	2019	2018
Funded Status		
Projected Benefit Obligation		
Beginning of the Year — January 1	$ 21,970	$ 25,141
Service Cost	181	200
Interest Cost	916	899
Actuarial Loss (Gain)	3,827	(3,922)
Benefits Paid	(347)	(348)
End of the Year — December 31	$ 26,547	$ 21,970

The assumptions used to calculate the projected benefit obligation as of December 31 are as follows:

	2019	2018
Discount Rate	3.17%	4.20%
Future Average Compensation Increases	2.00%	2.00%

The plans are unfunded at December 31, 2019 and are recognized in the accompanying Consolidated Balance Sheets as a current accrued pension liability of $0.3 million and a long-term accrued pension liability of $26.2 million. This also is the expected future contribution to the plan, since the plan is unfunded.

The following table summarizes the components of the net periodic cost for the years ended December 31:

(In thousands)	2019	2018	2017
Net Periodic Cost			
Service Cost — Benefits Earned During Period	$ 181	$ 200	$ 186
Interest Cost	916	899	897
Amortization of Prior Service Cost	386	386	387
Amortization of Losses	300	629	369
Net Periodic Cost	$ 1,783	$ 2,114	$ 1,839

The assumptions used to determine the net periodic cost are as follows:

	2019	2018	2017
Discount Rate	4.20%	3.60%	4.20%
Future Average Compensation Increases	2.00%	2.00% - 3.00%	3.00% - 5.00%

The Company expects the benefits to be paid in each of the next four years to be $0.3 million, $0.6 million in 2024, and $5.4 million in the aggregate for the next five years after that. This also is the expected Company contribution to the plans.

Participants in SERP are entitled to paid medical, dental and long-term care insurance benefits upon retirement under the plan. The measurement date for determining the plan obligation and cost is December 31.

The reconciliation of the beginning and ending balances of the accumulated postretirement benefit obligation for the years ended December 31, is as follows:

(In thousands)	2019	2018
Funded Status		
Accumulated Postretirement Benefit Obligation		
Beginning of the Year — January 1	$ 1,136	$ 1,307
Service Cost	13	16
Interest Cost	46	46
Actuarial Gain	(28)	(162)
Benefits Paid	(63)	(71)
End of the Year — December 31	$ 1,104	$ 1,136

The assumptions used to calculate the accumulated post-retirement benefit obligation as of December 31 are as follows:

	2019	2018
Discount Rate	3.17%	4.20%

The following table summarizes the components of the net periodic cost for the years ended December 31 as follows:

(In thousands)	2019	2018	2017
Net Periodic Cost			
Service Cost — Benefits Earned During Period	$ 13	$ 16	$ 7
Interest Cost	46	46	41
Amortization of Prior Service Cost	16	16	16
Amortization of Losses	43	59	31
Net Periodic Cost	$ 118	$ 137	$ 95

The assumptions used to determine the net periodic cost are as follows:

	2019	2018	2017
Discount Rate	4.20%	3.60%	4.20%
Future Average Healthcare Benefit Increases	4.98%	5.38%	5.50%

Unrecognized prior service costs of less than $0.1 million and unrecognized actuarial losses of $0.3 million for medical, dental and long-term care insurance benefits (net of taxes of $0.1 million) are included in AOCI at December 31, 2019 and have not been recognized in net periodic cost. The Company estimates that the prior service costs and net losses in AOCI as of December 31, 2019 that will be recognized as components of net periodic benefit cost during the year ended December 31, 2020 for the Plan will be insignificant. For measurement purposes, a 5.2% increase in the cost of health care benefits was assumed for 2020 and a range between 4.2% and 5.4% from 2021 through 2070. A one percentage point increase or decrease in this rate would change the post retirement benefit obligation by approximately $0.1 million. The plan is recognized in the accompanying Consolidated Balance Sheet as a current accrued pension liability of $0.1 million and a long-term accrued pension liability of $1.0 million. The Company expects the benefits to be paid in each of the next five years to be less than $0.1 million per year and approximately $0.3 million in the aggregate for the next five years after that. This also is the expected Company contribution to the plan, as it is unfunded.

The Company is a participating employer in a trustee-managed multiemployer defined benefit pension plan for employees who participate in collective bargaining agreements. The plan generally provides retirement benefits to employees based on years of service to the Company. Contributions are based on the hours worked and are expensed on a current basis. The Plan is 92.7% funded as of January 1, 2019. The Company's contributions to the plan were $1.1 million in each of 2019, 2018 and 2017. These contributions represent less than 1% of total contributions to the plan.

NOTE 14 — SHAREHOLDERS' EQUITY

Share Buyback Program

On February 24, 2016, the Company's Board of Directors authorized the repurchase of up to $50 million of common stock (the "Buyback Program"). The Buyback Program allowed the Company to purchase shares of its common stock in accordance with applicable securities laws on the open market or through privately negotiated transactions. The Company repurchased approximately 1,675,000 shares and completed that program in 2017. On December 12, 2017, the Company's Board of Directors authorized an additional repurchase of up to $50 million of common stock. The Company repurchased approximately 1,823,000 shares and completed that program in the third quarter of 2019. On September 17, 2019, the Company's Board of Directors authorized an additional repurchase of up to $50 million. An additional 28,000 shares have been repurchased under the new program as of December 31, 2019 at a cost of $0.8 million. Subsequent to December 31, 2019, approximately 282,000 additional shares have been repurchased at a cost of $7.7 million.

Reserved Common Stock

At December 31, 2019, approximately 11.8 million shares of common stock were reserved for issuance upon conversion of the Class B stock, exercise of stock options, issuance of restricted stock and purchases under the Employee Stock Purchase Plan. Class B Stock is identical to Common Stock, except Class B Stock has ten votes per share, is automatically converted to Common Stock on a one-for-one basis when sold or transferred other than via gift, devise or bequest and cannot receive dividends unless an equal or greater amount of dividends is declared on Common Stock.

Comprehensive Income and Accumulated Other Comprehensive Income (Loss)

Comprehensive income consists of net income and the after-tax impact of retirement liability adjustments. No income tax effect is recorded for currency translation adjustments.

The components of accumulated other comprehensive income (loss) are as follows:

(In thousands)	2019	2018
Foreign Currency Translation Adjustments	$ (7,042)	$ (7,156)
Retirement Liability Adjustment – Before Tax	(10,868)	(7,814)
Tax Benefit	2,282	1,641
Retirement Liability Adjustment – After Tax	(8,586)	(6,173)
Accumulated Other Comprehensive Loss	$ (15,628)	$ (13,329)

The components of other comprehensive (loss) income are as follows:

(In thousands)	2019	2018	2017
Foreign Currency Translation Adjustments	$ 114	$ (2,691)	$ 4,132
Retirement Liability Adjustment	(3,054)	5,174	(2,377)
Tax (Expense) Benefit	641	(1,087)	387
Retirement Liability Adjustment	(2,413)	4,087	(1,990)
Other Comprehensive (Loss) Income	$ (2,299)	$ 1,396	$ 2,142

NOTE 15 — EARNINGS PER SHARE

Earnings per share computations are based upon the following table:

(In thousands, except per share data)	2019	2018	2017
Net Income	$ 52,017	$ 46,803	$ 19,679
Basic Earnings Weighted Average Shares	32,028	32,351	32,874
Net Effect of Dilutive Stock Options	431	785	844
Diluted Earnings Weighted Average Shares	32,459	33,136	33,718
Basic Earnings Per Share	$ 1.62	$ 1.45	$ 0.60
Diluted Earnings Per Share	$ 1.60	$ 1.41	$ 0.58

The above information has been adjusted to reflect the impact of the three-for-twenty distribution of Class B Stock for shareholders of record on October 12, 2018.

Stock options with exercise prices greater than the average market price of the underlying common shares are excluded from the computation of diluted earnings per share because they are out-of-the-money and the effect of their inclusion would be anti-dilutive. The number of common shares excluded from the computation was approximately 0.5 million for the year ended December 31, 2019, 0.2 million for the year ended December 31, 2018, and 0.1 million for the year ended December 31, 2017.

NOTE 16 — EQUITY COMPENSATION

The Company has equity compensation plans that authorize the issuance of restricted stock units or options for shares of Common Stock to directors, officers and key employees. Equity-based compensation is designed to reward long-term contributions to the Company and provide incentives for recipients to join and to remain with the Company. The exercise price of stock options, determined by a committee of the Board of Directors, may not be less than the fair market value of the Common Stock on the grant date. Options become exercisable over periods not exceeding ten years. The Company's practice has been to issue new shares upon the exercise of the options.

The Company established Incentive Stock Option Plans for the purpose of attracting and retaining executive officers and key employees, and to align management's interest with those of the shareholders. Generally, the options must be exercised within 10 years from the grant date and vest ratably over a five-year period. The exercise price for the options is equal to the share price at the date of grant. At December 31, 2019, the Company had options outstanding for 603,184 shares under the plans.

The Company established the Directors Stock Option Plans for the purpose of attracting and retaining the services of experienced and knowledgeable outside directors, and to align their interest with those of the shareholders. The options must be exercised within ten years from the grant date. The exercise price for the option is equal to the share price at the date of grant and vests six months from the grant date. At December 31, 2019, the Company had options outstanding for 177,080 shares under the plans.

During 2017, the Company established the Long Term Incentive Plan for the purpose of attracting and retaining directors, executive officers and key employees, and to align management's interest with those of the shareholders. The Plan contemplates the use of a mix of equity award types, and contains, with certain exceptions, a three-year pro-rata vesting schedule for time-based awards. The Long Term Incentive Plan was amended on December 14, 2018 to provide a six-month pro-rata vesting schedule for directors. For stock options, the exercise price is equal to the share price on the date of grant. Upon inception, the remaining options available for future grant under the 2011 Incentive Stock Option Plan and the Directors Stock Option Plans were rolled in the Long Term Incentive Plan, and no further grants may be made out of those plans. At December 31, 2019, the Company had stock options and RSU's outstanding of 453,733 shares under the Long Term Incentive Plan, and there were 1,305,613 shares available for future grant under this plan.

Stock compensation expense recognized during the period is based on the value of the portion of share-based payment awards that is ultimately expected to vest during the period. Vesting requirements vary for directors, officers and key employees. In general, options granted to outside directors vest six months from the date of grant and options granted to officers and key employees straight line vest over a five-year period from the date of grant. RSUs granted to officers and key employees cliff vest three years from the date of grant.

The following table provides compensation expense information based on the fair value of stock options and RSU's for the years ended December 31 as follows:

(In thousands)	2019	2018	2017
Equity-based Compensation Expense	$ 3,843	$ 3,098	$ 2,598
Tax Benefit	(452)	(179)	(140)
Equity-based Compensation Expense, Net of Tax	$ 3,391	$ 2,919	$ 2,458

Stock Options

	2019	2018	2017
Weighted Average Fair Value of the Options Granted	$ 11.93	$ 14.64	$ 15.30

The weighted average fair value for these options was estimated at the date of grant using a Black-Scholes option pricing model with the following weighted-average assumptions:

	2019	2018	2017
Risk-free Interest Rate	1.67% – 1.78%	2.63% – 2.87%	2.05% – 2.36%
Dividend Yield	—%	—%	—%
Volatility Factor	0.39	0.39	0.40 – 0.41
Expected Life in Years	5.0 – 7.0	5.0 – 8.0	5.0 – 8.0

To determine expected volatility, the Company uses historical volatility based on weekly closing prices of its Common Stock and considers currently available information to determine if future volatility is expected to differ over the expected terms of the options granted. The risk-free rate is based on the U.S. Treasury yield curve at the time of grant for the appropriate term of the options granted. Expected dividends are based on the Company’s history and expectation of dividend payouts. The expected term of stock options is based on vesting schedules, expected exercise patterns and contractual terms.

A summary of the Company's stock option activity and related information for the years ended December 31 is as follows:

(Aggregate intrinsic value in thousands)	2019 Options	2019 Weighted Average Exercise Price	2019 Aggregate Intrinsic Value	2018 Options	2018 Weighted Average Exercise Price	2018 Aggregate Intrinsic Value	2017 Options	2017 Weighted Average Exercise Price	2017 Aggregate Intrinsic Value
Outstanding at January 1	1,327,919	$ 18.13	$ 13,042	1,506,604	$ 14.65	$ 23,801	1,539,017	$ 12.91	$ 35,630
Options Granted	138,300	$ 30.04	$ (289)	120,270	$ 32.33	$ (226)	118,612	$ 33.40	$ 315
Options Exercised	(313,326)	$ 5.38	$ (7,072)	(274,941)	$ 3.89	$ (7,303)	(131,904)	$ 9.77	$ (3,467)
Options Forfeited	(36,848)	$ 21.56	$ (235)	(24,014)	$ 34.13	$ 88	(19,121)	$ 24.27	$ (225)
Outstanding at December 31	1,116,045	$ 23.07	$ 5,446	1,327,919	$ 18.13	$ 16,360	1,506,604	$ 14.65	$ 32,253
Exercisable at December 31	802,873	$ 19.79	$ 6,551	1,043,596	$ 14.27	$ 16,885	1,252,315	$ 11.17	$ 31,177

The aggregate intrinsic value in the preceding table represents the total pretax option holder's intrinsic value, based on the Company's closing stock price of Common Stock which would have been received by the option holders had all option holders exercised their options as of that date. The Company's closing stock price of Common Stock was $27.95, $30.45 and $36.06 as of December 31, 2019, 2018 and 2017, respectively.

The weighted average fair value of options vested during 2019, 2018 and 2017 was $15.91, $16.54 and $12.39, respectively. The total fair value of options that vested during the year amounted to $1.6 million, $1.4 million and $1.6 million for the years ended December 31, 2019, 2018 and 2017, respectively. At December 31, 2019, total compensation costs related to non-vested awards not yet recognized amounts to $5.2 million and will be recognized over a weighted average period of 2.34 years.

The following is a summary of weighted average exercise prices and contractual lives for outstanding and exercisable stock options as of December 31, 2019:

	Outstanding			Exercisable		
Exercise Price Range	Shares	Weighted Average Remaining Life in Years	Weighted Average Exercise Price	Shares	Weighted Average Remaining Life in Years	Weighted Average Exercise Price
$ 3.19 – $ 13.63	419,944	1.9	$ 9.58	419,944	1.9	$ 9.58
$ 22.69 – $ 35.82	677,848	7.3	$ 30.82	364,676	6.0	$ 30.25
$ 45.89 – $ 45.89	18,253	5.2	$ 45.89	18,253	5.2	$ 45.89
	1,116,045	5.2	$ 23.07	802,873	3.8	$ 19.79

Restricted Stock Units

The fair value of each RSU granted is equal to the fair market value of the Company's Common Stock on the date of grant. The RSU's cliff vest three years from the date of grant. There were 87,634 RSU's granted in 2019 at a weighted-average price of $36.01, of which 17,776 awards were vested during 2019. Forfeitures during the year were insignificant. Included in total equity-based compensation expense for the year ended December 31, 2019 was $1.6 million related to RSU's. At December 31, 2019, total compensation costs related to non-vested awards not yet recognized amounts to $2.2 million and will be recognized over a weighted average period of approximately 2 years.

Employee Stock Purchase Plan

In addition to the stock options and RSU's discussed above, the Company has established the Employee Stock Purchase Plan to encourage employees to invest in Astronics Corporation. The plan provides employees the opportunity to invest up to the IRS annual maximum of approximately $25,000 in Astronics common stock at a price equal to 85% of the fair market value of the Astronics common stock, determined each October 1. Employees are allowed to enroll annually. Employees indicate the number of shares they wish to obtain through the program and their intention to pay for the shares through payroll deductions over the annual cycle of October 1 through September 30. Employees can withdraw anytime during the annual cycle, and all money withheld from the employees pay is returned with interest. If an employee remains enrolled in the program, enough money will have been withheld from the employees' pay during the year to pay for all the shares that the employee opted for under the program. At December 31, 2019, employees had subscribed to purchase 133,979 shares at $24.75 per share. The weighted average fair value of the options was approximately $8.26, $8.48 and $5.15 for options granted during the year ended December 31, 2019, 2018 and 2017, respectively.

The fair value for the options granted under the Employee Stock Purchase Plan was estimated at the date of grant using a Black-Scholes option pricing model with the following weighted-average assumptions:

	2019	2018	2017
Risk-free Interest Rate	1.73 %	2.60 %	1.31 %
Dividend Yield	— %	— %	— %
Volatility Factor	0.53	0.33	0.26
Expected Life in Years	1.0	1.0	1.0

NOTE 17 — FAIR VALUE

ASC Topic 820, *Fair Value Measurements and Disclosures*, ("ASC Topic 820") defines fair value, establishes a framework for measuring fair value and expands the related disclosure requirements. This statement applies under other accounting pronouncements that require or permit fair value measurements. The statement indicates, among other things, that a fair value measurement assumes that the transaction to sell an asset or transfer a liability occurs in the principal market for the asset or liability or, in the absence of a principal market, the most advantageous market for the asset or liability. ASC Topic 820 defines fair value based upon an exit price model. The Company's assessment of the significance of a particular input to the fair value measurement in its entirety requires judgment, and involves consideration of factors specific to the asset or liability.

ASC Topic 820 establishes a valuation hierarchy for disclosure of the inputs to valuation used to measure fair value. This hierarchy prioritizes the inputs into three broad levels as follows:

> Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities.
>
> Level 2 inputs are quoted prices for similar assets and liabilities in active markets or inputs that are observable for the asset or liability, either directly or indirectly through market corroboration, for substantially the full term of the financial instrument.
>
> Level 3 inputs are unobservable inputs based on our own assumptions used to measure assets and liabilities at fair value.

On a Recurring Basis:

A financial asset or liability's classification within the hierarchy is determined based on the lowest level input that is significant to the fair value measurement. There were no financial assets or liabilities carried at fair value measured on a recurring basis at December 31, 2019 or 2018.

The terms of the Diagnosys acquisition allow for a potential earn-out of up to an additional $13.0 million over the next three years based on achievement of new order levels of over $72.0 million during that period. The fair value of this contingent consideration is estimated at $2.5 million as of December 31, 2019. The fair value assigned to the earn-out is determined using the real options method, which requires inputs such as new order forecasts, discount rate, volatility factors, and other market variables to assess the probability of Diagnosys achieving certain order levels over the period.

On a Non-recurring Basis:

In accordance with the provisions of ASC Topic 350, *Intangibles – Goodwill and Other,* the Company estimates the fair value of reporting units, utilizing unobservable Level 3 inputs. Level 3 inputs require significant management judgment due to the absence of quoted market prices or observable inputs for assets of a similar nature. The Company utilizes a discounted cash flow method to estimate the fair value of reporting units utilizing unobservable inputs. The fair value measurement of the reporting unit under the step-one analysis of the quantitative goodwill impairment test are classified as Level 3 inputs. In 2019, we performed quantitative assessments for the reporting units which had goodwill as of the first day of the fourth quarter, prior to the initiation of the AeroSat restructuring activities. Based on our quantitative assessment, the Company recorded a full impairment charge of approximately $1.6 million in the December 31, 2019 consolidated statement of operations associated with the AeroSat reporting unit.

There were no impairment charges to goodwill in any of the Company's reporting units in 2018.

As a result of the annual goodwill impairment test for 2017, the Company recorded an impairment charge of $16.2 million related to the Armstrong reporting unit. The goodwill impairment was calculated as the amount by which the reporting unit's carrying value exceeded its fair value, not to exceed the carrying value of goodwill.

Long-lived assets are evaluated for recoverability whenever adverse effects or changes in circumstances indicate that the carrying value may not be recoverable. The recoverability test consists of comparing the undiscounted projected cash flows with the carrying amount. Should the carrying amount exceed undiscounted projected cash flows, an impairment loss would be recognized to the extent the carrying amount exceeds fair value. In conjunction with the restructuring of AeroSat in 2019, the Company recorded impairment charges to long-lived assets including intangible assets, property, plant and equipment and ROU assets of approximately $9.5 million in the Consolidated Statement of Operations associated to the AeroSat reporting unit in conjunction with restructuring activities.

There were no impairment charges to any of the Company's long-lived assets in either of the Company's segments in 2018 or 2017.

From time to time, the Company makes long-term, strategic equity investments in companies to promote business and strategic objectives. These investments are included in Other Assets on the Consolidated Balance Sheets. One of the investments incurred a full impairment charge which accounts for $5.0 million recorded within the Other Expense, Net of Other Income line in the accompanying Consolidated Statement of Operations for the year ended December 31, 2019. This is a Level 3 measurement as there were no observable price changes during the year.

The Freedom and Diagnosys intangible assets were valued using a discounted cash flow methodology, as of their respective acquisitions dates, and are classified as Level 3 inputs.

Due to their short-term nature, the carrying value of cash and equivalents, accounts receivable, accounts payable, and notes payable approximate fair value. The carrying value of the Company's variable rate long-term debt instruments also approximates fair value due to the variable rate feature of these instruments.

NOTE 18 — SELECTED QUARTERLY FINANCIAL INFORMATION

The following table summarizes selected quarterly financial information for 2019 and 2018:

	Quarter Ended							
(Unaudited) (In thousands, except for per share data)	**Dec. 31, 2019**	**Sep. 28, 2019**	**June 29, 2019**	**March 30, 2019**	**Dec. 31, 2018**	**Sep. 29, 2018**	**June 30, 2018**	**March 31, 2018**
Sales	$198,412	$177,018	$189,098	$208,174	$202,917	$212,674	$208,606	$179,059
Gross Profit (sales less cost of products sold)	$ 26,908	$ 36,794	$ 40,363	$ 52,077	$ 47,672	$ 46,320	$ 49,572	$ 37,132
Impairment Loss	$ 11,083	$ —	$ —	$ —	$ —	$ —	$ —	$ —
Income Before Income Taxes	$(43,282)	$ 1,760	$ 8,830	$100,995	$ 15,594	$ 15,580	$ 17,182	$ 3,926
Net Income	$(34,065)	$ 1,210	$ 6,726	$ 78,146	$ 12,485	$ 16,999	$ 14,025	$ 3,294
Basic Earnings Per Share	$ (1.10)	$ 0.04	$ 0.21	$ 2.40	$ 0.38	$ 0.53	$ 0.43	$ 0.10
Diluted Earnings Per Share	$ (1.10)	$ 0.04	$ 0.20	$ 2.35	$ 0.37	$ 0.52	$ 0.42	$ 0.10

Information for 2019 includes the results of Freedom, acquired on July 1, 2019, and Diagnosys, acquired on October 4, 2019, each from the acquisition date forward. Information for 2019 reflects the divestiture of the semiconductor business on February 13, 2019.

Additionally, several events occurred in the fourth quarter of 2019 which impacted the results as presented. Information included in 2019 is impacted by a significant increase to a legal reserve as well as restructuring, impairment and other charges as discussed in Note 19 and Note 23 in our consolidated financial statements, respectively.

NOTE 19 — COMMITMENTS AND CONTINGENCIES

The Company leases certain facilities and equipment under various lease contracts with terms that meet the accounting definition of operating leases, as well as finance leases. Refer to Note 10 for additional information.

Legal Proceedings

On December 29, 2010, Lufthansa Technik AG ("Lufthansa") filed a Statement of Claim in the Regional State Court of Mannheim, Germany. Lufthansa's claim asserted that a subsidiary of the Company, AES, sold, marketed, and brought into use in Germany a power supply system that infringes upon a German patent held by Lufthansa. Lufthansa sought an order requiring AES to stop selling and marketing the allegedly infringing power supply system, a recall of allegedly infringing products sold to commercial customers in Germany since November 26, 2003, and compensation for damages related to direct sales of the allegedly infringing power supply system in Germany (referred to as "direct sales"). The claim did not specify an estimate of damages and a related damages claim is being pursued by Lufthansa in separate court proceedings in an action filed in July 2017, as further discussed below.

In February 2015, the Regional State Court of Mannheim, Germany rendered its decision that the patent was infringed. The judgment did not require AES to recall products that are already installed in aircraft or had been sold to other end users. On July 15, 2015, Lufthansa advised AES of their intention to enforce the accounting provisions of the decision, which required AES to provide certain financial information regarding direct sales of the infringing product in Germany to enable Lufthansa to make an estimate of requested damages.

The Company appealed to the Higher Regional Court of Karlsruhe. On November 15, 2016, the Higher Regional Court of Karlsruhe issued its ruling and upheld the lower court's decision. The Company submitted a petition to grant AES leave for appeal to the German Federal Supreme Court. On April 18, 2018, the German Federal Supreme Court granted Astronics' petition in part, namely with respect to the part concerning the amount of damages. On January 8, 2019, the German Federal Supreme Court held the hearing on the appeal. By judgment of March 26, 2019, the German Federal Supreme Court dismissed AES's appeal. With this decision, the above-mentioned proceedings are complete.

In July 2017, Lufthansa filed an action in the Regional State Court of Mannheim for payment of damages caused by the court's decision that AES infringed the patent, specifically related to direct sales of the product into Germany (associated with the original December 2010 action discussed above). In this action, which was served to AES on April 11, 2018, Lufthansa claimed payment of approximately $6.2 million plus interest. An oral hearing was held on September 13, 2019. A first instance decision is in this matter was handed down on December 6, 2019. According to this ruling, Lufthansa was awarded damages in the amount of approximately $3.2 million plus interest. Inclusive of interest, this equates to approximately $4.5 million through December 31, 2019. Interest will continue to accrue at a statutory rate until final payment to Lufthansa. In February 2020 we received notice that Lufthansa's intention is to provide a security and to enforce payment on the first instance judgment. If Lufthansa provides a security deposit in a sufficient amount, as they have stated is their intention, the Company will be required to remit the payment. Based on this information, we believe payment for damages and interest on the direct sales claim will be required in 2020. AES has appealed this decision and the appeal is currently pending before the Higher Regional Court of Karlsruhe. If the first instance judgment is later reversed on appeal, the Company could reclaim any amounts that the court determines to be "excessive", but there can be no assurances that we will be successful on such appeal. Prior to 2019, the Company had accrued $1.0 million related to this matter. As a result of the judgment on direct sales into Germany, the Company has reflected an incremental reserve of $3.5 million in its December 31, 2019 financial statements related to this matter, for a total reserve of $4.5 million.

On December 29, 2017, Lufthansa filed another infringement action against AES in the Regional State Court of Mannheim claiming that sales by AES to its international customers have infringed Lufthansa's patent if AES's customers later shipped the products to Germany (referred to as "indirect sales"). This action, therefore, addresses sales other than those covered by the action filed on December 29, 2010, discussed above. In this action, served on April 11, 2018, Lufthansa sought an order obliging AES to provide information and accounting and a finding that AES owes damages for the attacked indirect sales. Moreover, Lufthansa sought accounting and a finding that the sale of individual components of the EmPower system – either directly to Germany or to international customers if these customers later shipped products to Germany – constitutes an indirect patent infringement of Lufthansa's patent in Germany. In addition, Lufthansa sought an order obliging AES to confirm by an affidavit that the accounting provided in September 2015 was accurate and a finding that AES is also liable for damages for the sale of modified products if the modification of the products was not communicated to all subsequent buyers of the products. No amount of claimed damages has been specified by Lufthansa.

An oral hearing in this matter was held on September 13, 2019, as part of the oral hearing for the direct sales damages claim discussed above. A first instance decision in this matter was handed down on December 6, 2019. According to this judgment, Lufthansa's claims were granted in part. The court granted Lufthansa's claims for a finding that indirect sales (as defined above)

by AES to international customers constitute a patent infringement under the conditions specified in the judgment and that the sale of components of the EmPower system to Germany constitutes an indirect patent infringement. Moreover, the Court granted Lufthansa's request for an affidavit confirming that the accounting provided in September 2015 was accurate. The Court rejected Lufthansa's request for a finding that AES is also liable for damages for the sale of modified products as inadmissible. This is relevant, as it provides that once AES modified the system to remove the infringing feature, any subsequent outlets are deemed not to be infringing outlets for purposes of calculating damages. AES and Lufthansa both appealed this decision and the appeal is currently pending before the Higher Regional Court of Karlsruhe. The appeal is not likely to be settled in 2020.

If the decision is confirmed on appeal, this would mean that AES would be responsible for payment of damages for indirect sales of patent-infringing EmPower in-seat power supply systems in the period from December 29, 2007 to May 22, 2018. AES modified the outlet units at the end of 2014 and the modified outlet units sold from 2015 do not infringe the patent of Lufthansa. Since only sales of systems comprising patent-infringing outlet units trigger damages claims, the period for which AES is liable for damages in connection with indirect sales finished at the end of 2014.

After the accounting, Lufthansa is expected to enforce its claim for damages in separate court proceedings. These proceedings would probably be tried before the Mannheim Court again, which makes it probable that the Mannheim court will determine the damages for the indirect sales on the basis of the same principles as in the direct sales proceedings. Based on the information available currently, we estimate that the resulting damages would be approximately $11.6 million plus approximately $4.5 million of accrued interest at the end of 2019, for a total of approximately $16.1 million. Similar to the direct sales claim, interest will accrue at a rate of 5% above the European Central Bank rate until final payment to Lufthansa.

Based upon the determination of the damages in the direct sales claim discussed above, in the December 31, 2019 consolidated financial statements, we have reflected a total accrual (inclusive of interest through December 31, 2019) of $4.5 million related to the direct sales claim, and $16.1 million related to the indirect sales claim as management's best estimate of the total exposure related to these matters that is probable and that can be reasonably estimated at this time. Expenses recorded in 2019 related to these claims ($3.5 million related to the direct sales claim and $16.1 million related to the indirect sales claim) have been recorded within Selling, General and Administrative Expense in the Company's Consolidated Statement of Operations. We estimate that payment for the damages and related interest of the direct sales claim will be paid before December 31, 2020, therefore the liability related to this matter, totaling $4.5 million, is classified within Other Accrued Expenses (current) in the Consolidated Balance Sheet at December 31, 2019. In connection with the indirect sales claims, we currently believe it is unlikely that the appeals process will be completed and the damages and related interest will be paid before December 31, 2020. Therefore the liability related to this matter, totaling $16.1 million, is classified within Other Liabilities (non-current) in the Consolidated Balance Sheet at December 31, 2019.

In December 2017, Lufthansa filed patent infringement cases in the UK and in France against AES. The Lufthansa patent expired in May 2018. In those cases, Lufthansa accuses AES of having manufactured, used, sold and offered for sale a power supply system, and offered and supplied parts for a power supply system that infringed upon a Lufthansa patent in those respective countries. In the UK matter, a trial has been scheduled for June 2020 to address the issues of infringement and validity.

The France and UK claims are separate and apart from the claims in Germany and validity and infringement of the Lufthansa patent will first need to be determined by the courts in these countries, whose laws differ from those in Germany. Also the principles of calculating damages in German patent infringement proceedings differ substantially from the calculation methods in the UK and France. Therefore the Company has assessed this separate from the German claims. However, it reasonably possible that additional damages and interest could be incurred if the courts in France and the UK were to rule in favor of Lufthansa, but at this time we cannot reasonably estimate the range of loss. As loss exposure is neither probable nor estimable at this time, the Company has not recorded any liability with respect to these matters as of December 31, 2019.

On November 26, 2014, Lufthansa filed a complaint in the United States District for the Western District of Washington. Lufthansa's complaint in that action alleges that AES manufactures, uses, sells and offers for sale a power supply system that infringes upon a U.S. patent held by Lufthansa. The patent at issue in the U.S. action is based on technology similar to that involved in the German action. On April 25, 2016, the Court issued its ruling on claim construction, holding that the sole independent claim in the patent is indefinite, rendering all claims in the patent indefinite. Based on this ruling, AES filed a motion for summary judgment on the grounds that the Court's ruling that the patent is indefinite renders the patent invalid and unenforceable. On July 20, 2016, the U.S. District Court granted the motion for summary judgment and issued an order dismissing all claims against AES with prejudice.

Lufthansa appealed the District Court's decision to the United States Court of Appeals for the Federal Circuit. On October 19, 2017, the Federal Circuit affirmed the district court's decision, holding that the sole independent claim of the patent is

indefinite, rending all claims on the patent indefinite. Lufthansa did not file a petition for en banc rehearing or petition the U.S. Supreme Court for a writ of certiorari. Therefore, there is no longer a risk of exposure from that lawsuit.

Other than these proceedings, we are not party to any significant pending legal proceedings that management believes will result in a material adverse effect on our financial condition or results of operations.

NOTE 20 — SEGMENTS

Segment information and reconciliations to consolidated amounts for the years ended December 31 are as follows:

(In thousands)	2019	2018	2017
Sales:			
Aerospace	$ 692,614	$ 675,744	$ 534,724
Less Inter-segment Sales	(5)	(119)	(121)
Total Aerospace Sales	692,609	675,625	534,603
Test Systems	80,495	127,679	89,861
Less Inter-segment Sales	(402)	(48)	—
Test Systems	80,093	127,631	89,861
Total Consolidated Sales	$ 772,702	$ 803,256	$ 624,464
Operating Profit and Margins:			
Aerospace	$ 16,657	$ 69,761	$ 38,888
	2.4 %	10.3 %	7.3 %
Test Systems	4,494	10,718	7,359
	5.6 %	8.4 %	8.2 %
Total Operating Profit	$ 21,151	$ 80,479	$ 46,247
	2.7 %	10.0 %	7.4 %
Additions to (Deductions from) Operating Profit:			
Net Gain on Sale of Businesses	$ 78,801	$ —	$ —
Interest Expense, Net of Interest Income	(6,141)	(9,710)	(5,369)
Corporate and Other Expenses, Net	(25,508)	(18,487)	(15,887)
Income before Income Taxes	$ 68,303	$ 52,282	$ 24,991
Depreciation and Amortization:			
Aerospace	$ 27,879	$ 29,947	$ 22,111
Test Systems	4,534	4,500	4,302
Corporate	636	585	650
Total Depreciation and Amortization	$ 33,049	$ 35,032	$ 27,063
Assets:			
Aerospace	$ 629,371	$ 647,870	$ 621,047
Test Systems	110,994	97,056	90,859
Corporate	42,351	29,714	24,050
Total Assets	$ 782,716	$ 774,640	$ 735,956
Capital Expenditures:			
Aerospace	$ 11,552	$ 14,680	$ 10,656
Test Systems	380	1,370	2,721
Corporate	151	267	101
Total Capital Expenditures	$ 12,083	$ 16,317	$ 13,478

Operating profit is sales less cost of products sold and other operating expenses, excluding interest expense and other corporate expenses. Cost of products sold and other operating expenses are directly identifiable to the respective segment.

For the year ended December, 31 2019, there was a goodwill impairment loss of $1.6 million and intangible asset impairment of $6.2 million recorded in the Aerospace segment. In 2018, there were no goodwill or purchased intangible asset impairment losses in either the Aerospace or Test System segment. In 2017, there was a goodwill impairment loss of $16.2 million recorded in the Aerospace segment. In the Aerospace segment, goodwill amounted to $123.0 million and $125.0 million at December 31, 2019 and 2018, respectively. In the Test Systems segment, goodwill amounted to $21.9 million as of December 31, 2019. There was no goodwill in the Test Systems segment as of December 31, 2018.

The following table summarizes the Company's sales into the following geographic regions for the years ended December 31:

(In thousands)	2019	2018	2017
United States	$ 583,589	$ 575,830	$ 482,219
North America (excluding United States)	12,585	10,834	6,198
Asia	40,764	112,135	58,732
Europe	130,227	98,193	73,677
South America	862	1,973	1,280
Other	4,675	4,291	2,358
Total	$ 772,702	$ 803,256	$ 624,464

The following table summarizes the Company's property, plant and equipment by country for the years ended December 31:

(In thousands)	2019	2018
United States	$ 101,169	$ 110,738
France	8,740	9,241
India	1,509	—
Canada	1,081	883
Total	$ 112,499	$ 120,862

Sales recorded by the Company's foreign operations were $85.9 million, $70.6 million and $53.9 million in 2019, 2018 and 2017, respectively. Net income from these locations was $8.6 million, $5.5 million and $2.2 million in 2019, 2018 and 2017, respectively. Net assets held outside of the U.S. total $66.4 million and $45.0 million at December 31, 2019 and 2018, respectively. The exchange loss included in determining net income was insignificant in 2019 and 2018. Cumulative translation adjustments amounted to $(7.0) million and $(7.2) million at December 31, 2019 and 2018, respectively.

The Company has a significant concentration of business with two major customers; The Boeing Company ("Boeing") and Panasonic Aviation Corporation ("Panasonic"). The following is information relating to the activity with those customers:

	2019	2018	2017
Percent of Consolidated Sales			
Boeing	13.6%	14.3%	16.8%
Panasonic	13.0%	14.4%	19.1%

(In thousands)	2019	2018
Accounts Receivable at December 31,		
Boeing	$ 21,806	$ 24,649
Panasonic	$ 15,831	$ 14,994

Sales to Boeing and Panasonic are primarily in the Aerospace segment.

NOTE 21 — ACQUISITIONS

Diagnosys Inc. and its affiliates

On October 4, 2019, the Company acquired the stock of the primary operating subsidiaries as well as certain other assets from mass transit and defense market test solution provider, Diagnosys Test Systems Limited for $7.0 million in cash, plus an earn-out estimated at a fair value of $2.5 million. The terms of the acquisition allow for a potential earn-out of up to an additional

$13.0 million over the next three years based on achievement of new order levels of over $72.0 million during that period. The acquired business has operations in Westford, Massachusetts as well as Ferndown, England, and an engineering center of excellence in Bangalore, India. Diagnosys is included in our Test Systems segment. Diagnosys is a developer and manufacturer of comprehensive automated test equipment providing test, support, and repair of high value electronics, electro-mechanical, pneumatic and printed circuit boards focused on the global mass transit and defense markets.

The purchase price allocation for this acquisition has not yet been finalized. Purchased intangible assets and goodwill are not expected to be deductible for tax purposes. This transaction was not considered material to the Company's financial position or results of operations.

Freedom Communication Technologies, Inc.

On July 1, 2019, the Company acquired all of the issued and outstanding capital stock of Freedom Communication Technologies, Inc. Freedom, located in Kilgore, Texas, is a leader in wireless communication testing, primarily for the civil land mobile radio market. Freedom is included in our Test Systems segment. The total consideration for the transaction was $21.8 million, net of $0.6 million in cash acquired. The purchase price allocation for this acquisition has not yet been finalized. Purchased intangible assets and goodwill are not expected to be deductible for tax purposes. This transaction was not considered material to the Company's financial position or results of operations.

Astronics Connectivity Systems and Certification Corp.

On December 1, 2017, Astronics completed the acquisition of substantially all of the assets and liabilities of Telefonix Inc., including 100% of the stock of a related company, Product Development Technologies, LLC and its subsidiaries. The combined group designs and manufactures advanced in-flight entertainment and connectivity equipment, and provides industry leading design consultancy services for the global aerospace industry. The company's products include wireless access points, file servers, content loaders, passenger control units and cord reels, as well as engineering services for its customers. We purchased the assets of these companies for $103.8 million, net of $0.2 million in cash acquired. All of the goodwill and purchased intangible assets are expected to be deductible for tax purposes over 15 years. The acquired companies are included in our Aerospace reporting segment. Adjustments made to the preliminary purchase price valuation during the measurement period were not significant. The purchase price allocation for this acquisition has been finalized.

The following is a summary of the sales and amounts included in income from operations for CSC included in the consolidated financial statements of the Company from the date of acquisition to December 31, 2017 (in thousands):

Sales	$	6,174
Operating Loss	$	(499)

The following summary, prepared on a pro forma basis, combines the consolidated results of operations of the Company with those of CSC as if the acquisition took place on January 1, 2017. The pro forma consolidated results include the impact of certain adjustments, including increased interest expense on acquisition debt, amortization of purchased intangible assets and income taxes.

		Unaudited
(In thousands, except earnings per share)		2017
Sales	$	683,541
Net income	$	18,302
Basic earnings per share	$	0.56
Diluted earnings per share	$	0.54

The pro forma results are not necessarily indicative of what actually would have occurred if the acquisition had been in effect for the year ended December 31, 2017. In addition, they are not intended to be a projection of future results.

Astronics Custom Control Concepts, Inc.

On April 3, 2017, Astronics Custom Control Concepts Inc., a wholly owned subsidiary of the Company, acquired substantially all the assets and certain liabilities of Custom Control Concepts LLC ("CCC"), located in Kent, Washington. CCC is a provider of cabin management and in-flight entertainment systems for a range of aircraft. The total consideration for the transaction was $10.2 million, net of $0.5 million in cash acquired. All of the goodwill and purchased intangible assets are expected to be deductible for tax purposes over 15 years. CCC is included in our Aerospace segment. The purchase price allocation for this acquisition has been finalized.

NOTE 22 — DIVESTITURE ACTIVITIES

Semiconductor Test Business

As of December 31, 2018, the Company's Board of Directors approved a plan to sell the semiconductor test business within the Test Systems segment. Accordingly, the assets and liabilities associated with these operations have been classified as held for sale in the accompanying consolidated Balance Sheet at December 31, 2018. The carrying value of the disposal group was lower than its fair value, less costs to sell, and accordingly, no impairment loss was required at December 31, 2018.

The following is a summary of the assets and liabilities held for sale as of December 31:

(In thousands)		2018
Assets Held for Sale		
Inventories	$	14,385
Prepaid Expenses and Other Current Assets		87
Net Property, Plant and Equipment		3,521
Other Assets		714
Intangible Assets, Net of Accumulated Amortization		651
Total Assets Held for Sale	$	19,358
Liabilities Held for Sale		
Deferred Income Taxes	$	906

On February 13, 2019, the Company completed the divestiture. The business was not core to the future of the Test Systems segment. The total proceeds received for the sale amounted to $103.8 million. The Company recorded a pre-tax gain on the sale of approximately $80.1 million in the first quarter of 2019. The income tax expense relating to the gain was $19.7 million.

The transaction also includes two elements of contingent earnouts. The First Earnout is calculated based on a multiple of all future sales of existing and certain future derivative products to existing and future customers in each annual period from 2019 through 2022. The First Earnout may not exceed $35.0 million in total. The Second Earnout is calculated based on a multiple of future sales related to an existing product and program with an existing customer exceeding an annual threshold for each annual period from 2019 through 2022. The Second Earnout is not capped. For the Second Earnout, if the applicable sales in an annual period do not exceed the annual threshold, no amounts will be paid relative to such annual period; the sales in such annual period do not carry over to the next annual period. Due to the degree of uncertainty associated with estimating the future sales levels of the divested business and its underlying programs, and the lack of reliable predictive market information, the Company will recognize such earnout proceeds, if received, as additional gain on sale when such proceeds are realized or realizable. No amounts were payable to the Company under the First Earnout.

Airfield Lighting Product Line

On July 12, 2019, the Company sold intellectual property and certain assets associated with its Airfield Lighting product line for $1.0 million in cash. The Airfield Lighting product line, part of the Aerospace segment, was not core to the business and represented less than 1% of revenue. The Company recorded a pre-tax loss on the sale of approximately $1.3 million. This amount is reported in the Consolidated Condensed Statement of Operations in Net Gain on Sales of Businesses in the year ended December 31, 2019.

As of December 31, 2019, the Company has agreed to sell certain facilities within the Aerospace segment. Accordingly, the property, plant and equipment assets associated with these facilities of $1.5 million have been classified as held for sale in the consolidated Balance Sheet at December 31, 2019.

NOTE 23 — RESTRUCTURING, IMPAIRMENTS AND OTHER CHARGES

Antenna Business Impairment and Restructuring

In 2019, we performed quantitative assessments for the reporting units which had goodwill as of the first day of the fourth quarter, prior to the initiation of the antenna business restructuring activities. Based on our quantitative assessment, the Company recorded a full goodwill impairment charge of approximately $1.6 million in the December 31, 2019 Consolidated Statement of Operations associated with the AeroSat reporting unit.

In the fourth quarter of 2019, in an effort to reduce the significant operating losses at our AeroSat business, we initiated a restructuring plan to reduce costs and minimize losses of our AeroSat antenna business. The plan narrows the initiatives for the AeroSat business to focus primarily on near-term opportunities pertaining to business jet connectivity. The plan has a downsized manufacturing operation remaining in New Hampshire, with significantly reduced personnel and operating expenses.

As a result of the restructuring plan, the Company's total impairments and restructuring charges recorded in the fourth quarter of 2019 (including the goodwill impairment described above) amounted to $28.8 million, all of which is included in the Aerospace segment. Any future restructuring actions will depend upon market conditions, customer actions and other factors.

A summary of the restructuring, impairment and other charges, and their location on the Consolidated Statement of Operations, are presented as of December 31, 2019:

	Restructuring Charges			
(In thousands)	Cost of Products Sold	Selling, General and Administrative	Impairment Loss	Amounts
Accounts Receivable, Net	$ —	$ 1,785	$ —	$ 1,785
Inventories	9,429	—	—	9,429
Prepaid Expenses and Other Current Assets	1,227	—	—	1,227
Property, Plant and Equipment, Net	—	—	2,268	2,268
Other Assets	—	122	1,019	1,141
Intangible Assets, Net	—	—	6,186	6,186
Goodwill	—	—	1,610	1,610
Accrued Payroll and Employee Benefits	—	449	—	449
Other Accrued Expenses	164	—	—	164
Other Liabilities	4,577	—	—	4,577
	$ 15,397	$ 2,356	$ 11,083	$ 28,836

The charge to Prepaid Expenses and Other Current Assets is comprised of prepaid installation fees associated with programs that were either cancelled or are no longer being pursued as a result of the restructuring. The charge to Other Assets is comprised of the right-of-use asset values for the AeroSat facility lease. The charge to Accrued Payroll and Employee Benefits is comprised of employee termination benefits expected to be paid in 2020. The charge to Other Accrued Expenses and Other Liabilities represents the estimated current and non-current portions of payments to be made under non-cancelable inventory purchase commitments in the future for inventory which is not expected to be purchased prior to the expiration date of such agreements as a result of the restructuring plan. None of the restructuring or impairment charges resulted in the utilization of cash during 2019.

Financial Instrument Impairment

From time to time, the Company makes long-term, strategic equity investments in companies to promote business and strategic objectives. These investments are included in Other Assets on the Consolidated Balance Sheets. One of the investments incurred a full impairment charge which accounts for $5.0 million recorded within the Other Expense, Net of Other Income line in the accompanying Consolidated Statement of Operations for the year ended December 31, 2019.

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

Not applicable.

ITEM 9A. ***CONTROLS AND PROCEDURES***

Disclosure Controls and Procedures

The Company carried out an evaluation, under the supervision and with the participation of Company Management, including the Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of the Company's disclosure controls and procedures as defined in Exchange Act Rules 13a-15(e) and 15d-15(e). Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that these disclosure controls and procedures are effective as of the end of the period covered by this report, to ensure that information required to be disclosed in reports filed or submitted under the Exchange Act is made known to them on a timely basis, and that these disclosure controls and procedures are effective to ensure such information is recorded, processed, summarized and reported within the time periods specified in the Commission's rules and forms.

Management's Report on Internal Control over Financial Reporting

See the report appearing under Item 8, Financial Statements and Supplemental Data, Managements Report on Internal Control Over Financial Reporting.

Changes in Internal Control over Financial Reporting

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

ITEM 9B. ***OTHER INFORMATION***

None

PART III

ITEM 10. *DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE*

The information regarding directors is contained under the captions "Election of Directors" and "Security Ownership of Certain Beneficial Owners and Management" and is incorporated herein by reference to the 2020 Proxy to be filed within 120 days of the end of our fiscal year is incorporated herein by reference.

The executive officers of the Company, their ages, their positions and offices with the Company, and the date each assumed their office with the Company as of December 31, 2019, are as follows:

Name and Age of Executive Officer	Positions and Offices with Astronics	Year First Elected Officer
Peter J. Gundermann Age 57	President, Chief Executive Officer and Director of the Company	2001
David C. Burney Age 57	Executive Vice President, Secretary and Chief Financial Officer of the Company	2003
Mark A. Peabody Age 60	Astronics Advanced Electronic Systems President and Executive Vice President of Astronics Corporation	2010
James S. Kramer Age 56	Luminescent Systems Inc. President and Executive Vice President of Astronics Corporation	2010
James F. Mulato Age 59	President of Astronics Test Systems, Inc. and Executive Vice President of Astronics Corporation	2019
Michael C. Kuehn Age 59	Astronics Connectivity Systems & Certification Corp. and Armstrong Aerospace, Inc. President and Executive Vice President of Astronics Corporation	2019

The principal occupation and employment for Messrs. Gundermann, Burney, Kramer, Mulato and Peabody for the past five years has been with the Company in their respective current roles.

Mr. Kuehn and Mr. Mulato became Executive Vice Presidents of the Company on January 1, 2019.

Mr. Kuehn has been the President of Astronics Connectivity Systems & Certification Corp. ("ACSC") since its acquisition by the Company in 2017, and the President of Armstrong Aerospace, Inc. since 2018. Prior to acquisition, Mr. Kuehn ran the ACSC business as President of Telefonix, Incorporated for eight years.

The Company has adopted a Code of Business Conduct and Ethics that applies to the Chief Executive Officer, Chief Financial Officer as well as other directors, officers and employees of the Company. This Code of Business Conduct and Ethics is available upon request without charge by contacting Astronics Corporation at (716) 805-1599. The Code of Business Conduct and Ethics is also available on the Investors section of the Company's website at www.astronics.com.

ITEM 11. *EXECUTIVE COMPENSATION*

The information contained under the caption "Executive Compensation" and "Summary Compensation Table" in the Company's definitive Proxy Statement to be filed within 120 days of the end of our fiscal year is incorporated herein by reference.

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

The information contained under the captions "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters" and "Executive Compensation" in the Company's definitive Proxy Statement to be filed within 120 days of the end of our fiscal year is incorporated herein by reference.

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

The information contained under the captions "Certain Relationships and Related Transactions and Director Independence" and "Proposal One: Election of Directors" in the Company's definitive Proxy Statement to be filed within 120 days of the end of our fiscal year is incorporated herein by reference.

ITEM 14. *PRINCIPAL ACCOUNTANT FEES AND SERVICES*

The information contained under the caption “Audit and Non-Audit Fees” in the Company’s definitive Proxy Statement to be filed within 120 days of the end of our fiscal year is incorporated herein by reference.

PART IV

ITEM 15. ***EXHIBITS AND FINANCIAL STATEMENT SCHEDULES***

a. The documents filed as a part of this report are as follows:

1. *The following financial statements are included:*

   i. Consolidated Statements of Operations for the years ended December 31, 2019, 2018 and 2017
   ii. Consolidated Statements of Comprehensive Income for the years ended December 31, 2019, 2018 and 2017
   iii. Consolidated Balance Sheets as of December 31, 2019 and 2018
   iv. Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018 and 2017
   v. Consolidated Statements of Shareholders' Equity for the years ended December 31, 2019, 2018 and 2017
   vi. Notes to Consolidated Financial Statements
   vii. Reports of Independent Registered Public Accounting Firm
   viii. Management's Report on Internal Control Over Financial Reporting

2. *Financial Statement Schedule*

   Schedule II. Valuation and Qualifying Accounts

All other consolidated financial statement schedules are omitted because they are inapplicable, not required, or the information is included elsewhere in the consolidated financial statements or the notes thereto.

3. *Exhibits*

Exhibit No.	Description
3 (a)	Restated Certificate of Incorporation, incorporated by reference to the registrant's 2013 Annual Report on Form 10-K, Exhibit 3(a), filed March 7, 2014 (File No. 000-07087).
(b)	By-Laws, as amended, incorporated by reference to the registrant's 2008 Annual Report on Form 10-K, Exhibit 3(b), filed March 11, 2009 (File No. 000-07087).
(c)	Certificate of Amendment of the Certificate of Incorporation of Astronics Corporation, incorporated by reference to the registrant's Form 8-K, Exhibit 3.1, filed July 1, 2016 (File No. 000-07087).
10.1*	Restated Thrift and Profit Sharing Retirement Plan, incorporated by reference to the registrant's 2010 Annual Report on Form 10-K, Exhibit 10.1, filed March 3, 2011 (File No. 000-07087).
10.2*	2001 Stock Option Plan, incorporated by reference to the registrant's 2010 Annual Report on Form 10-K, Exhibit 10.4, filed March 3, 2011 (File No. 000-07087).
10.3*	Non-Qualified Supplemental Retirement Plan, incorporated by reference to the registrant's 2010 Annual Report on Form 10-K, Exhibit 10.5, filed March 3, 2011 (File No. 000-07087).
10.4*	Employment Termination Benefits Agreement dated December 16, 2003 between Astronics Corporation and Peter J. Gundermann, President and Chief Executive Officer of Astronics Corporation, incorporated by reference to the registrant's 2010 Annual Report on Form 10-K, Exhibit 10.6, filed March 3, 2011 (File No. 000-07087).
10.5*	Employment Termination Benefits Agreement dated December 16, 2003 between Astronics Corporation and David C. Burney, Vice President and Chief Financial Officer of Astronics Corporation, incorporated by reference to the registrant's 2010 Annual Report on Form 10-K, Exhibit 10.7, filed March 3, 2011 (File No. 000-07087).
10.6*	2005 Director Stock Option Plan, incorporated by reference to the registrant's 2010 Annual Report on Form 10-K, Exhibit 10.8, filed March 3, 2011 (File No. 000-07087).
10.7*	Supplemental Retirement Plan, Amended and Restated, March 6, 2012, incorporated by reference to the registrant's 2012 Annual Report on Form 10-K, Exhibit 10.10, filed February 22, 2013 (File No. 000-07087).
10.8*	First Amendment of the Employment Termination Benefits Agreement dated December 30, 2008 between Astronics Corporation and Peter J. Gundermann, President and Chief Executive Officer of Astronics, incorporated by reference to the registrant's 2008 Annual Report on Form 10-K, Exhibit 10.11, filed March 11, 2009 (File No. 000-07087).
10.9*	First Amendment of the Employment Termination Benefits Agreement dated December 30, 2008 between Astronics Corporation and David C. Burney, Vice President and Chief Financial Officer of Astronics Corporation, incorporated by reference to the registrant's 2008 Annual Report on Form 10-K, Exhibit 10.12, filed March 11, 2009 (File No. 000-07087).
10.10*	Employment Termination Benefits Agreement Dated February 18, 2005 between Astronics Corporation and Mark A. Peabody, Executive Vice President of Astronics Advanced Electronic Systems, Inc., incorporated by reference to the registrant's 2010 Annual Report on Form 10-K, Exhibit 10.13, filed March 3, 2011 (File No. 000-07087).
10.11*	First Amendment of the Employment Termination Benefits Agreement dated December 31, 2008 between Astronics Corporation and Mark A. Peabody, Executive Vice President of Astronics Advanced Electronic Systems, Inc., incorporated by reference to the registrant's 2010 Annual Report on Form 10-K, Exhibit 10.14, filed March 3, 2011 (File No. 000-07087).
10.12*	Form of Indemnification Agreement as executed by each of Astronics Corporation's Directors and Executive Officers, incorporated by reference to the registrant's 2010 Annual Report on Form 10-K, Exhibit 10.15, filed March 3, 2011 (File No. 000-07087).
10.13*	2011 Employee Stock Option Plan, incorporated by reference to the registrant's Form S-8, Exhibit 4.1 filed on August 4, 2011 (File No. 000-07087).
10.14*	Supplemental Retirement Plan II, incorporated by reference to the registrant's 2012 Annual Report on Form 10-K, Exhibit 10.18, filed February 22, 2013 (File No. 000-07087).

10.15*	Astronics Corporation 2017 Long Term Incentive Plan (incorporated by reference as Exhibit A to the Registrant's Definitive Proxy Statement on Schedule 14A, as filed with the Commission on April 17, 2017).
10.16	Asset Purchase Agreement dated as of March 16, 2017 by and between UJB Acquisition Corp. and Custom Control Concepts LLC filed as Exhibit 10.1 on Form 8-K filed on April 6, 2017 (File No. 000-07087).
10.17	Asset Purchase Agreement entered as of October 26, 2017, by and among Talon Acquisition Corp., Telefonix, Incorporated, Product Development Technologies, LLC, and Paul Burke filed as Exhibit 10.1 on Form 8-K filed on October 27, 2017 (File No. 000-07087).
10.18	Fifth Amended and Restated Credit Agreement entered into by and among Astronics Corporation, HSBC Bank USA, National Association, HSBC Securities (USA) Inc. and Merrill Lynch, Pierce, Fenner & Smith Inc., and Suntrust Bank, filed as Exhibit 10.1 on Form 8-K filed on February 21, 2018 (File No. 000-07087).
10.19	Amended and Restated Asset Purchase Agreement dated as of February 13, 2019 by and Among Astronics Test Systems, Inc., Astronics Corporation and Advantest Test Solutions, Inc., filed as Exhibit 10.1 on Form 8-K filed on February 19, 2019 (File No. 000-07087).
10.20	Stock Purchase Agreement dated as of July 1, 2019, among Astronics Corporation, Freedom Communication Technologies, the Sellers and Hanover Partners, filed as Exhibit 10.1 on Form 8-K Filed on July 1, 2019 (File No. 000-07087)
10.21	Amendment to the Astronics Corporation 2017 Long Term Incentive Plan, dated December 14, 2018.
21**	Subsidiaries of the Registrant; filed herewith.
23**	Consent of Independent Registered Public Accounting Firm; filed herewith.
31.1**	Certification of Chief Executive Officer pursuant to Exchange Act Rule 13a-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002; filed herewith.
31.2**	Certification of Chief Financial Officer pursuant to Exchange Act Rule 13a-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002; filed herewith.
32**	Certification pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002; filed herewith.
101.INS**	XBRL Instance Document
101.SCH**	XBRL Taxonomy Extension Schema Document
101.CAL**	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF**	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB**	XBRL Taxonomy Extension Label Linkbase Document
101.PRE**	XBRL Taxonomy Extension Presentation Linkbase Document

* Identifies a management contract or compensatory plan or arrangement as required by Item 15(a) (3) of Form 10-K.

** Submitted electronically herewith

SCHEDULE II

Valuation and Qualifying Accounts

Year	Description	Balance at the Beginning of Period	Additions Charged to Cost and Expense	Write-Offs/ Other	Balance at End of Period
(In thousands)					
2019	Allowance for Doubtful Accounts	$ 1,486	$ 2,144	$ (71)	$ 3,559
	Reserve for Inventory Valuation	20,826	14,803	(2,023)	33,606
	Deferred Tax Valuation Allowance	8,098	5,205	—	13,303
2018	Allowance for Doubtful Accounts	$ 960	$ 589	$ (63)	$ 1,486
	Reserve for Inventory Valuation	18,013	2,682	131	20,826
	Deferred Tax Valuation Allowance	7,823	275	—	8,098
2017	Allowance for Doubtful Accounts	$ 602	$ 87	$ 271	$ 960
	Reserve for Inventory Valuation	15,410	2,885	(282)	18,013
	Deferred Tax Valuation Allowance	3,816	4,007	—	7,823

ITEM 16. *FORM 10-K SUMMARY*

None.

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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, on March 2, 2020.

Astronics Corporation

By /s/ Peter J. Gundermann	By /s/ David C. Burney
Peter J. Gundermann President and Chief Executive Officer	David C. Burney, Executive Vice President, Chief Financial Officer

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

Signature	Title	Date
/s/ Peter J. Gundermann Peter J. Gundermann	President and Chief Executive Officer (Principal Executive Officer)	March 2, 2020
/s/ David C. Burney David C. Burney	Executive Vice President, Chief Financial Officer (Principal Financial Officer)	March 2, 2020
/s/ Nancy L. Hedges Nancy L. Hedges	Corporate Controller and Principal Accounting Officer	March 2, 2020
/s/ Raymond W. Boushie Raymond W. Boushie	Director	March 2, 2020
/s/ Robert T. Brady Robert T. Brady	Director	March 2, 2020
/s/ Tonit Calaway Tonit Calaway	Director	March 2, 2020
/s/ Jeffry D. Frisby Jeffry D. Frisby	Director	March 2, 2020
/s/ Peter J. Gundermann Peter J. Gundermann	Director	March 2, 2020
/s/ Warren C. Johnson Warren C. Johnson	Director	March 2, 2020
/s/ Robert S. Keane Robert S. Keane	Director	March 2, 2020
/s/ Neil Kim Neil Kim	Director	March 2, 2020
/s/ Mark J. Moran Mark J. Moran	Director	March 2, 2020

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SHAREHOLDER INFORMATION

Corporate Headquarters

Astronics Corporation
130 Commerce Way
East Aurora, New York 14052
716.805.1599
www.astronics.com

2020 Annual Meeting

Astronics Corporation's Annual Meeting of Shareholders will be held at 10:00 am ET on May, 21, 2020 at
Astronics Connectivity Systems and Certification Corp.
804 S. Northpoint Blvd
Waukegan, IL 60085

Investor Relations

Investors, stockbrokers, security analysts and others seeking information about Astronics Corporation should contact:

David C. Burney
Chief Financial Officer
716.805.1599
invest@astronics.com

Deborah K. Pawlowski
Kei Advisors LLC
716.843.3908
dpawlowski@keiadvisors.com

Transfer Agent

For services, such as reporting a change of address, replacement of lost stock certificates, conversion of Class B shares, changes in registered ownership, or for inquiries about your account, contact:

EQ Shareowner Services
1110 Centre Pointe Curve, Suite 101
Mendota Heights, MN 55120
Tel: 800.468.9716
651.450.4064
www.shareowneronline.com

Attorneys

Hodgson Russ LLP
Buffalo, New York

Independent Auditors

Ernst & Young LLP
Buffalo, New York

DIRECTORS AND OFFICERS

EXECUTIVE LEADERSHIP

Peter J. Gundermann
Chairman, President and Chief Executive Officer,
Astronics Corporation

David C. Burney
Executive Vice President- Finance and Chief Financial Officer,
Astronics Corporation

James S. Kramer
Executive Vice President, Astronics Corporation;
President, Astronics Luminescent Systems, Inc.

Michael C. Kuehn
Executive Vice President, Astronics Corporation;
President, Astronics Connectivity Systems and Certification Corporation

James F. Mulato
Executive Vice President, Astronics Corporation;
President, Astronics Test Systems, Inc.

Mark A. Peabody
Executive Vice President, Astronics Corporation;
President, Astronics Advanced Electronic Systems Corporation

BOARD OF DIRECTORS

Peter J. Gundermann
President and Chief Executive Officer, Astronics Corporation
Chairman of the Board, Astronics Corporation

Raymond W. Boushie [1, 2C]
President and Chief Executive Officer, retired,
Crane Aerospace and Electronics

Robert T. Brady [1C, 3]
Chief Executive Officer and Executive Chairman of the Board,
retired, Moog Inc.

Tonit Calaway [2, 3]
Executive Vice President, Chief Legal Officer and Secretary,
BorgWarner Inc.

Jeffry D. Frisby [1, 3C]
President and Chief Executive Officer, PCX Aerostructures, LLC;
former President and Chief Executive Officer, Triumph Group Inc.

Warren C. Johnson [2, 3]
President, retired, Aircraft Group for Moog, Inc.

Robert Keane [1, 2]
Chairman, President and Chief Executive Officer, Cimpress plc

Neil Kim [1, 2]
Executive Vice President and Chief Technology Officer, retired,
Marvell Technology Group Ltd.

Mark Moran [2, 3]
Chief Operations Officer, retired,
Continental Airlines

[1] Audit Committee [2] Compensation Committee
[3] Nominating/Governance Committee [C] Committee Chairman

ASTRONICS CORPORATION

Nasdaq: ATRO

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716.805.1599 ● www.astronics.com