

August 2019

Investment Banking

**Convergence Amid a Shifting
Industrial Landscape**

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Convergence Amid a Shifting Landscape

Advancements in technology are powering the advent of fully connected manufacturing environments and transforming business models throughout the industrial sector.

More recently, automation has defined productivity advancements in the manufacturing sector. Developments in fundamental technologies have also brought lower production cost, high-performance sensing, connectivity, and data processing to the supply chain and manufacturing sector—all helping transform the way businesses operate and essentially “closing the loop” across the entire enterprise—from manufacturing to delivery to the end user.

Lines that once delineated segments of the manufacturing environment have disappeared as devices on the plant floor provide real-time visibility to the executive suite. This convergence is allowing traditional manufacturing businesses to embrace new business models—opening the door to new revenue streams from software, analytics, and services—that focus on delivering value procured through recurring operating expenditures as opposed to traditional price-times-volume purchase-order economics.

These trends and others are shaping strategic roadmaps and acquisition strategies throughout the industrial technology sector. In this report, we will examine what these changes mean and how investors should frame their decision-making and acquisition

theses as they identify opportunities to transform their industries.

What Is Industrial Technology?

To understand what defines industrial technology, it is important to begin by understanding what it is not. The sector isn’t simply industrial businesses with engineered products, significant aftermarket sales, growth that far exceeds the rate of GDP expansion, and/or high-profit margins. While industrial technology companies generally display these characteristics, we believe that industrial technology companies are defined by the benefits that their solutions enable in terms of providing actionable insights, connecting hardware, automating process, or leveraging data to generate revenue-producing insights. This includes all of the sensors, electronics, software, and services that enable businesses to transform stand-alone hardware into fully automated solutions.

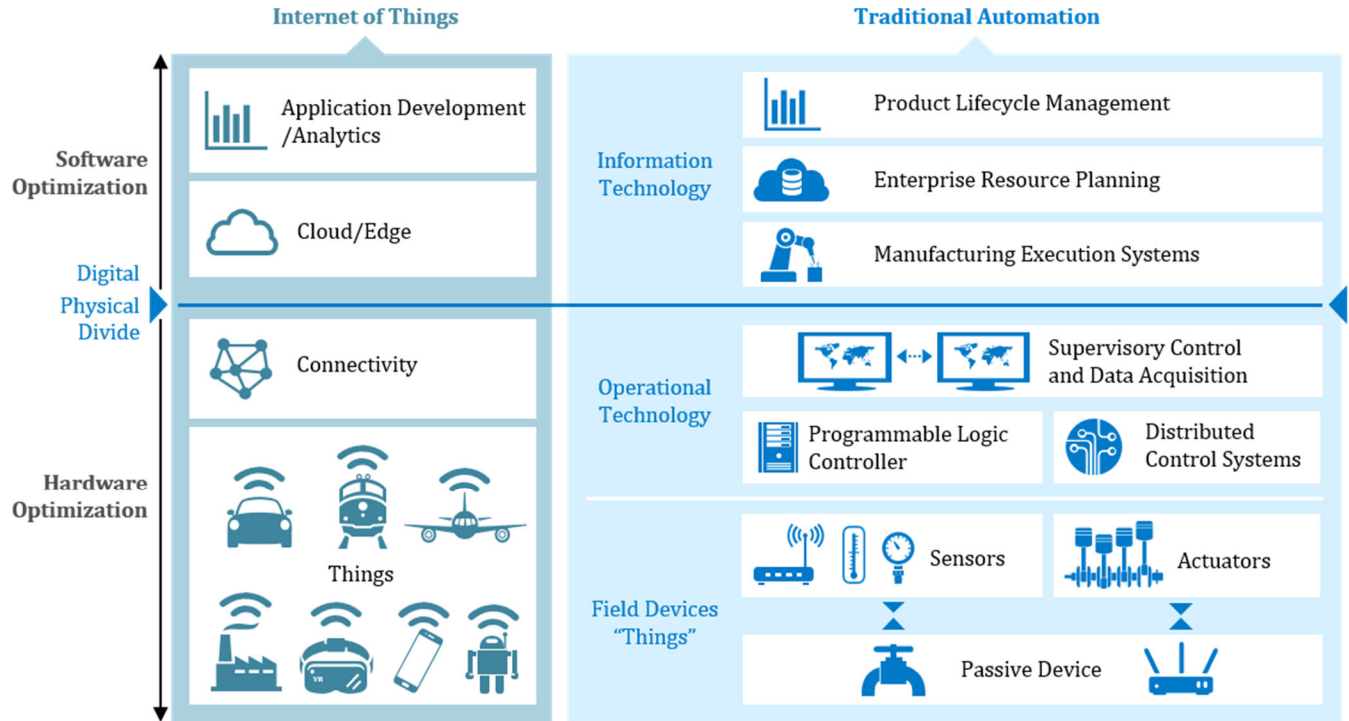
Traditional industrial business models have focused on selling hardware based on traditional value drivers such as quality, price, and lead times. For most, the business model was focused on driving high aftermarket content in hardware rather than a solution-based approach that fixed a specific pain point for a customer. New technologies have enabled cheaper computing, greater connectivity, and more sophisticated sensing into this environment—enabling new business models and opportunities to capture additional value. Moreover, the erosion of the value (maybe more aptly described as protected/proprietary go-to-market channels) created by the traditional exclusive distributor/rep network has

created an opening for suppliers to look at acquiring businesses they wouldn’t have considered in the past because of the potential for major channel conflict.

The Industrial Technology Stack

One of the most valuable aspects of an industrial technology business is its ability to provide solutions throughout the “technology stack” through integration of software and data analytics into processes that enable real-time decision-making across the enterprise both inter- and intra-factory. The industrial technology stack is the collection of software and hardware required to collect data, extract useful information, and provide actionable insights into the manufacturing environment. The top of the stack is typically segmented into “information technology” (IT) functions controlled at the corporate/enterprise level and “operational technologies” (OT) designed to control production processes at the plant level. In most organizations, those individuals responsible for purchasing and vendor selection processes varied by the IT and OT environment. This separation created a natural choke point where data and information either remained at the factory or was distributed to senior management as a report produced on a periodic basis.

Industrial Technology Stack



The development of the Industrial Internet of Things (IIoT) has occurred in parallel to the traditional automation stack and is also transforming the way manufacturing businesses operate by bypassing barriers between IT, OT, and the factory floor. Devices on the plant floor (e.g., equipment, machinery, controls, etc.) can now connect directly to enterprise-wide digital platforms that have access to large amounts of data from a multitude of devices and processes across an enterprise. These systems enable businesses to optimize production and supply chain processes in near real time, leveraging emerging artificial intelligence and analytics software. By providing an enterprise-level view of operations, these digital platforms enable better decision-making,

process optimization, and, ultimately, new business models for suppliers designed to transform one-time hardware sales into recurring revenue streams by selling a longer-term value proposition.

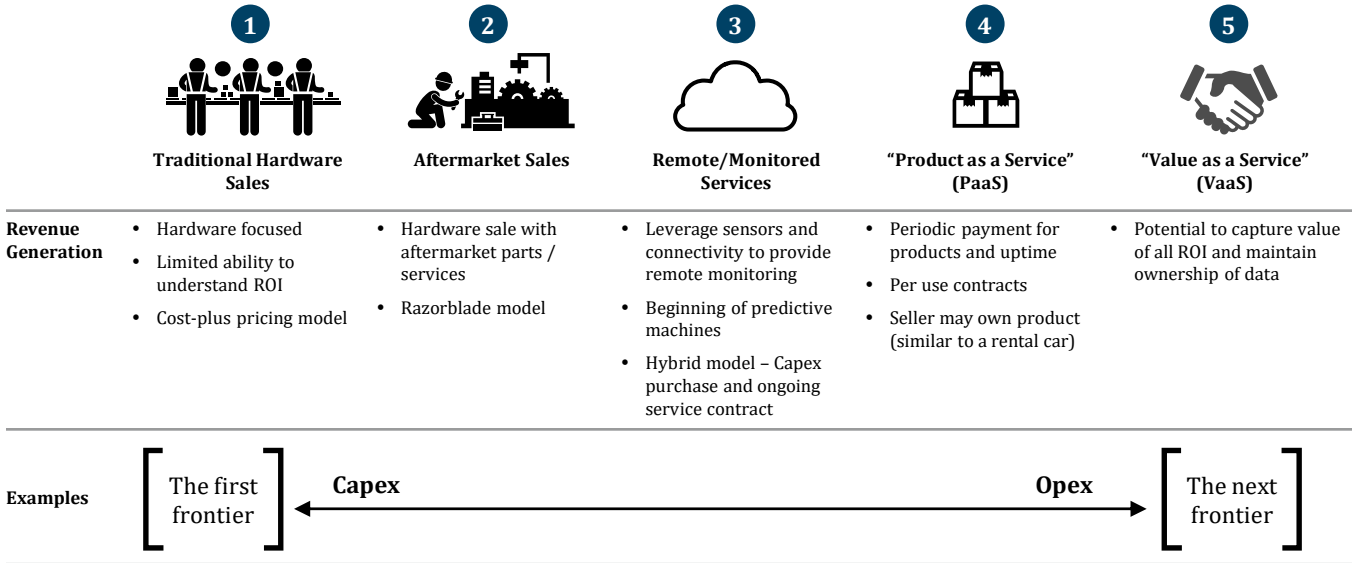
Business Models Are Evolving

Convergence within the industrial technology stack has also created powerful new opportunities for industrial companies to transform business models. In the past, the basic model for a hardware company was to sell the equipment and then sell the aftermarket parts once the original system needed repairs or upkeep. Now that sensing and connectivity systems are embedded in many products, companies can offer predictive maintenance, performance optimization, and other services. This

creates opportunities for performance-based contract structuring and other creative pricing models. For example, companies can now sell machine uptime or monetize the insights gleaned from a broad installed base. This enables hybrid business models that combine one-time capex purchases with ongoing service contracts that drive high-margin, recurring periodic sales, as well as opportunities to foster direct-to-consumer interaction, building deeper brand loyalty and engagement.

We believe that an industrial businesses' ability to transform their revenue mix from one-time product sales is limited by their ability to capture data and analyze the performance of their systems in the field. Acting as a steward of the

Transformation of Industrial Business Models



production data generated by the company’s systems may enable a business to generate new service-based revenue streams. These additional services could include anything from basic services—such as remote monitoring and predictive maintenance—to more advanced software to help customers optimize their overall process performance—artificial intelligence.

Ultimately, we believe there is a longer-term path for some businesses to develop and implement even more intriguing business models, such as “Value as a Service” (VaaS). Under this model, the hardware provider retains ownership of the equipment and data it generates and charges a fee based directly on the returns that it is able to provide to customers. Historically, these ROI-based payment structures wouldn’t have been possible, not because the hardware provider didn’t

control the manufacturing process, but because the hardware provider lacked visibility of the data necessary to create a record of its hardware’s performance.

Convergence Trends and a Roadmap for Value Creation

There are three key convergence trends taking place that will create opportunities for manufacturers to differentiate themselves, expand use-cases for their product offerings, and implement new business models to capture value. We believe that the industrial technology stack provides a framework for thinking about how these convergence trends will define investment opportunities.

1. Higher IP Hardware and Connected Devices – Industrial product manufacturers are working to incorporate sensors and connectivity solutions into their products in an effort to offer scalable, reliable, and

more cost-effective solutions while providing enhanced capabilities. For example, a simple valve used in an oil and gas application will require external input to control flow rates, automatic shutdown, and other functions. However, integrating metering and connectivity into the valve allows a valve manufacturer to offer monitoring, predictive maintenance, and a host of other solutions. As manufacturers work to create closed loops at the facility level, this transition is creating massive market opportunities for companies whose solutions build on this trend by capturing data from machinery and turning it into actionable intelligence.

From an M&A perspective, we believe that hardware suppliers will lead the way in providing connected smart systems, largely because these suppliers typically have the customer or end-user relationships, which are critical in enabling these

transformations—simply put there is no established trust that the IT suite will make the best decisions for the factory floor. Identifying “passive” traditional industrial hardware solutions that can be fully integrated into larger operations, but controlled and monitored externally, is an ideal starting point for investors looking to enter the industrial technology sector. These businesses typically have large installed bases that can be retrofitted to add sensing and connectivity solutions and generate new value propositions for their existing customers. In addition, suppliers of sensing and connectivity hardware should seek to identify niche applications where the addition of their technology could create new capabilities and efficiencies as part of an overall production process.

2. Software-Enhanced Processes –

The cost of computing power and connectivity solutions has declined exponentially, enabling the proliferation of devices capable of generating production data. This, in turn, has created new demands on industrial businesses as they attempt to process this data and turn it into actionable insights to improve their overall processes. This has resulted in a fundamental shift in how industrial companies think about their digital capabilities and how they can leverage software to improve demand forecasting and operational efficiency. This convergence of software into the industrial sector has had a transformative effect on key subsectors such as industrial IoT applications for predictive maintenance, connected warehouses for faster fill times, and logistics

providers for better visibility and shorter supply chains.

3. Progression of Services Across the Stack – The proliferation of new technology in the manufacturing environment has widened the skills gap between the workers on the floor and the knowledge and training required to integrate, operate, and maintain new hardware, software, and systems. This gap has created the opening for a new ecosystem of specialized engineering firms to help with the integration and maintenance of the key aspects of the factory floor.

Systems integrators generally focus on two distinct areas. Control systems integration firms focus on the integration of informational technology (IT) and plant-level operational technology (OT) systems—the top of the stack—to allow manufacturers to be more agile in how they use data and more fully optimize their processes. This will lead to improvements in calculating key performance indicators, tracking asset performance, and optimizing processes throughout the enterprise. The second group of integrators focus on the design and integration of automated production lines—the bottom of the stack—from robotic cells to logistics facilities on the supply chain.

The integration market is highly fragmented with a few larger firms focused on broader applications and hundreds of smaller firms specializing in one market and/or one application. The best-positioned firms have identified ways to create streamlined processes to replicate design work on new projects, adhere to strict project bidding guidelines, and diversify their

geographic and end-market exposure. We believe that the systems integration market is ripe for consolidation as financial investors seek to play the macro trends without making bets on specific technologies.

Identifying Value Drivers in the Industrial Technology Sector

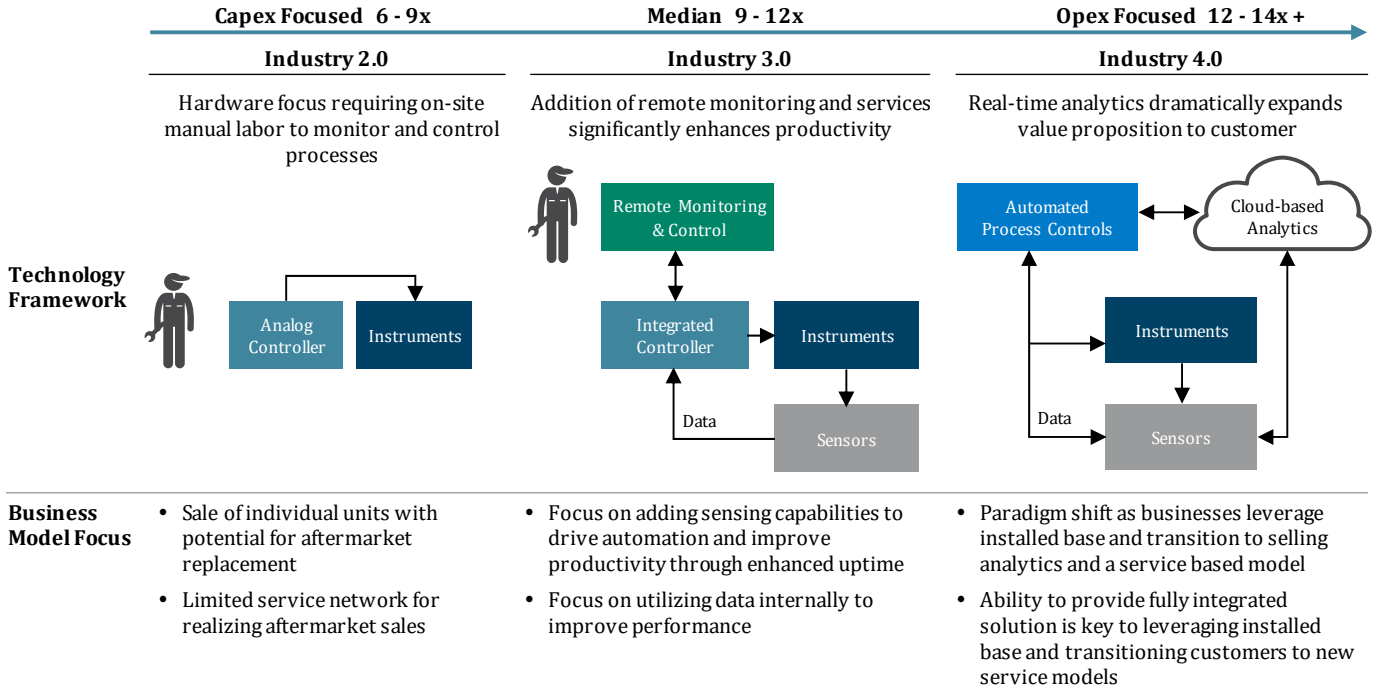
Drawing on our understanding of the convergence trends shaping the industrial technology sector, we have developed a framework for identifying transformative investment opportunities.

Industry “N.0” Framework to Identify Value:

Investors seeking investments in the industrial technology sector can leverage the Industry N.0 framework to assess whether a business either a) enables the connectivity and sensing capabilities required in an Industry 4.0 environment or b) is capable of incorporating such enabling technologies to make the transformation directly. Industry N.0 is an allusion to the proliferation of the Fourth Industrial Revolution that has frequently been referenced in the popular press. We have experienced four major technological upheavals over the past 150 years:

- Industry 1.0 – Steam Powered Manufacturing
- Industry 2.0 – Electrically Powered Mass Production
- Industry 3.0 – Computer Powered Automation
- Industry 4.0 – Internet of Things

Industry “N.0” Framework



We believe businesses that can leverage their product offering and/or installed base to provide new and differentiated solutions for their customers along these dimensions (i.e., transform from Industry 2.0 → Industry 3.0 → Industry 4.0) have the greatest value-accretion opportunities. This progression has a direct correlation to the valuation these businesses are typically worth. The following provides an overview of the profile of typical businesses operating in each of these paradigms.

Industry 2.0: The bulk of industrial businesses tend to operate in the Industry 2.0 framework. This model is designed to drive the sale of hardware and replacement parts on a purchase-order-by-purchase-order basis. These businesses are heavily reliant on their customers returning to them, either directly or through a third-party

network, to replace failing systems or request spare parts. This limits a company’s ability to drive aftermarket sales, putting the company at risk of replacement by higher-value products or systems with more compelling value propositions. These businesses are most successful when the company sells mission-critical systems into old economy industries (e.g., infrastructure, government, etc.) and is the entrenched player in the space.

Industry 3.0: High-quality industrial businesses operate in the Industry 3.0 framework. They understand the importance of adding connectivity, sensing, and control features to their products as a value enhancer for their customers. They use hardware characterized by higher levels of intellectual property to provide data to customers about the product’s performance as part of their

customers’ overall process. Industry 3.0 companies use this data to deliver higher uptime, predictive maintenance, and failure monitoring as a means to drive higher-margin sales and higher-visibility aftermarket services and spare parts.

Industry 4.0: There are very few businesses operating today in the Industry 4.0 framework. These businesses are leveraging hardware with high levels of intellectual property to derive actionable insights and real-time optimization of their products. These businesses are able to capitalize on opportunities to expand their high-margin (90%-plus gross margin), subscription-based offerings that support safety and automation of customer processes, including remote monitoring and control, emergency shutdown, and asset tracking. For these companies, having ownership of

the data generated by the hardware and processes is often critical to driving full value potential.






Typical Characteristics of Leading Industrial Technology Companies

The financial profiles of industrial technology companies reflect their rapidly growing importance in driving productivity and profitability enhancements for manufacturers. As recently as 2015, industrial technology companies typically generated gross profit margins of about 40% and EBITDA margins of about 20%. Today, those benchmarks have risen to 50%-plus for gross profit margins and 25%-plus for EBITDA margins at leading industrial technology businesses that have

incorporated substantial software- and subscription-based revenue streams into their solution offerings. These figures vary depending on how well-positioned the company's business model is to capitalize on the convergence trends that are driving much of the industry's growth and the macro tailwinds described above that are elevating the financial profiles of companies across the industrial technology sector.

To learn more about these and other trends shaping the deal-making landscape in industrial technology, please do not hesitate to contact the William Blair Industrial Technology team.

Industrial Technology Valuation Continuum

		Market asset, small, standard value			Scarce asset, outlier value			
		EBITDA						
		8x	(Standard)	10x	12x	(Premium)	14x +	Metric
	Market Position/Scale	<ul style="list-style-type: none"> Numerous competitors that are equal or larger in size Less established brand and reputation in the industry 			<ul style="list-style-type: none"> #1 or #2 in target segments – industrial tech companies tend to be niche leaders Scale important, particularly in terms of meeting global demand 			#1/#2 Market Position
	Product Value Proposition	<ul style="list-style-type: none"> Limited product differentiation Potential threat from low-cost competition Build vs. buy decision less clear 			<ul style="list-style-type: none"> Often the “go to” product for an industry/application Broader product offering Proven compelling ROI to customer 			>50% Gross Margin
	R&D/New Product Development	<ul style="list-style-type: none"> Limited resources to reinvest in R&D May have some interesting IP/technology, but usually limited scalability/application 			<ul style="list-style-type: none"> Viewed as an “Innovation Engine” in the industry High level of product vitality 			6-8% of Sales
	Software/ Services	<ul style="list-style-type: none"> Limited replacement opportunity Lack resources to service installed base More lumpy and “exposed” revenue profile 			<ul style="list-style-type: none"> Potential performance risk from third-party replacements Proprietary products or entrenched systems sales drives service needs and protects aftermarket 			50%+ Aftermarket/ Service Revenue
	End Market TAM and Growth	<ul style="list-style-type: none"> Smaller TAM's with more limited growth prospects Cyclicality of end-markets (vs. stable demand) 			<ul style="list-style-type: none"> High growth (or even stable) end-markets Larger TAMs and/or higher grow mitigates worry of niche end-market leadership position Attractive adjacent market opportunities that can be attacked and successfully penetrated 			High Single Digit Addressable Market Growth

William Blair Spotlight on Recent Transactions



- Leading provider of laser measurement and projection systems with applications in healthcare (patient positioning) and industrial production processes
- Diversified market exposure to several highly attractive niche end-markets such as radiology, wind energy, aerospace, and composites
- The Company's easy-to-use and reliable product portfolio precisely meets the requirements of a broad and diversified customer base consisting of many global OEMs
- Based in Lüneburg, Germany, LAP maintains a global and commercially oriented organization with a sales force across the U.S., Europe, and Asia



- Based in Davenport, IA, and with operations across the U.S., Japan, and Mexico, Genesis is an industry-leading integrator of robotic systems
- 35 years of operations as a leading independent provider, Genesis has completed 4,900+ robotic integrations and has 30+ patents
- One-stop-shop, full solutions provider supported by the company's vertically integrated tooling, design for manufacturing, and assembly operations



- Global industry leader in mission-critical powering solutions for broadband, telecom and wireless, renewable energy, and industrial customers globally
- Alpha's powering solutions comprise systems, software, and services, and are sold across a highly diversified set of networks and applications, including HFC / fiber, LTE, 5G, fixed wireless, and IoT
- Alpha has established its position as a trusted solutions provider across a large base of blue-chip customers, such as Comcast, Charter Spectrum, Verizon Wireless, and AT&T
- Alpha is based in Bellingham, Washington, and Burnaby, British Columbia, Canada, with several worldwide locations and has over 1,000 employees



- World leader in mechanical, precision automation, and motion control solutions leveraging industry-leading manufacturing capabilities, technology, and proprietary design
- Serves numerous high-growth end-markets, capturing the entire aftermarket generated by its global installed base
- Proprietary, in-house developed software platform drives unique design and manufacturing processes that allow for highly customized products, minimal tooling expenses, world-class lead times, and very minimal finished goods inventory
- Significant investment in new product development, specifically in the robotics markets, positions the business for substantial growth

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Drawing on our deep sector expertise and the strength of our relationships with buyers around the world, William Blair has built a leading industrial technology banking franchise. Business owners turn to us for outstanding execution for their M&A and capital raising objectives.

Recent transactions include:

Not Disclosed



has been acquired by



July 2019

Not Disclosed



has been acquired by



May 2019

Not Disclosed



has been acquired by



May 2019

Not Disclosed



has been acquired by



March 2019

Not Disclosed



has been acquired by



December 2018

Not Disclosed



has been acquired by



December 2018

\$750,000,000



has been acquired by



December 2018

\$115,000,000



has acquired



December 2018

\$227,700,000



Follow-on Offering

November 2018

**William Blair
By the Numbers**

300+

bankers globally with local cultural knowledge






























600+

M&A transactions since 2014

\$215+

billion in transaction value for our clients since 2014

Leading Industrial Technology Franchise:

<p>Not Disclosed</p>  <p>has been acquired by</p>  <p>October 2018</p>	<p>\$230,000,000</p>  <p>Follow-on Offering</p> <p>September 2018</p>	<p>Not Disclosed</p>  <p>has been acquired by</p>  <p>August 2018</p>
<p>Not Disclosed</p>  <p>has received a strategic investment from</p>  <p>August 2018</p>	<p>\$775,000,000</p>  <p>has been acquired by</p>  <p>July 2018</p>	<p>Not Disclosed</p>  <p>has been acquired by</p>  <p>July 2018</p>
<p>Not Disclosed</p>  <p>has been acquired by</p>  <p>July 2018</p>	<p>\$1,110,000,000</p>  <p>has been acquired by</p>  <p>June 2018</p>	<p>Not Disclosed</p>  <p>has been acquired by</p>  <p>June 2018</p>
<p>Not Disclosed</p>  <p>has been acquired by</p>  <p>June 2018</p>	<p>CHF 185,000,000</p>  <p>has been acquired by</p>  <p>June 2018</p>	<p>Not Disclosed</p>  <p>has been acquired by</p>  <p>May 2018</p>
<p>Not Disclosed</p>  <p>has been acquired by</p>  <p>April 2018</p>	<p>Not Disclosed</p>  <p>has been recapitalized by</p>  <p>November 2017</p>	<p>Not Disclosed</p>  <p>has acquired</p>  <p>July 2017</p>

Industrial Technology Market Update

Recent Select Industrial Technology M&A Transactions

(\$ in millions)

Announced Date	Target Name	Business Description	Buyer Name	EV	EV / LTM EBITDA
6/21/2019	Ampac Technologies	Fire detection and alarm systems for commercial, industrial, and multi-residential complexes	Halma	\$135	ND
6/19/2019	AutoStore	Automated warehousing and storage systems	T.H. Lee	ND	ND
6/18/2019	LAP	Laser projection systems for composite materials during production and processing	IK Investment Partners	ND	ND
6/6/2019	Intelix	Web and mobile software solutions for environmental, health, safety, and quality management	Industrial Scientific	\$570	ND
6/5/2019	Gas and Flame Detection (3M)	Provider of gas and flame detection products	Teledyne Technologies	\$230	ND
5/26/2019	First Sensor	Sensor solutions for the detection of light, radiation, pressure, flow, level, and acceleration	TE Connectivity	\$342	13.3x
5/21/2019	CIRCOR	Engineered products and subsystems, for the energy, aerospace and defense, and industrial segments	Crane Co.	\$1,607	12.5x
5/17/2019	Covidence	Miniature video surveillance equipment	EMK Capital	ND	ND
5/16/2019	Masternaut	Develops telematics solutions for fleet tracking and optimisation	Michelin	ND	ND
5/9/2019	API Technologies	FR and microwave signal conditioning and electromagnetic spectrum management solutions	AEA Investors	\$550	11.0x
5/3/2019	Alpha Sensors	Precision thermal measurement systems and devices	TE Connectivity	ND	ND
4/29/2019	LORD Corp	Adhesives, coatings, motion management devices, and sensing technologies	Parker-Hannifin	\$3,675	16.5x
4/23/2019	JR Automation	Systems integrator providing automated manufacturing and distribution technology solutions	Hitachi	\$1,425	ND
4/17/2019	Ingenia-Cat	Motion control products and custom motion systems	Celera Motion	ND	ND
4/17/2019	Superior Controls	Automation and control systems integration services	E-Technologies	ND	ND
4/15/2019	Onicon	Flow meters and energy measurement systems	TASI Group	ND	ND
3/18/2019	Foundry Visionmongers	Software solutions for artists and designers	Roper	\$542	ND
3/15/2019	Thermocoax	Custom heating and temperature measurement solutions	Spirax-Sarco	\$180	12.2x
3/6/2019	Catron	Wireless communication and remote control solution	Harbour Group	ND	ND
2/11/2019	Endeavor Robotics	Mobile robots for defense and military, public safety, energy, and industrial markets	FLIR	\$385	ND
2/5/2019	Gasper Engineering	Provides automated assembly, conveyance, labeling, and sortation systems	Eckhart & Associates	ND	ND
2/1/2019	OpTek	Laser processing equipment and micro machining as well as optical fiber processing services	Safety Technology	ND	ND
1/29/2019	Fluid Flow	Distributes measurement, control, and filtration products	Bertram Capital	ND	ND
1/28/2019	Aeryon Labs	Manufactures small unmanned aerial systems	FLIR	\$200	ND
1/28/2019	Emulate3d	Software products that facilitate the demonstration and sale of automated material handling systems	Rockwell Automation	ND	ND
1/28/2019	Edi Customs Brokers / MSRCustoms	and foreign trade compliance services	Descartes Systems	\$249	ND
1/2/2019	GRIDSMART	Develops traffic management systems	Cubic Transportation	\$87	10.9x
12/20/2018	Kenall Manufacturing	Commercial lighting solutions	Legrand	ND	ND
12/19/2018	Princeton, Photometrics, Lumenera, other brands	Cameras and custom imaging solutions	Teledyne	\$225	ND

(\$ in millions)

Announced Date	Target Name	Business Description	Buyer Name	EV	EV / LTM EBITDA
12/10/2018	Syntron	Manufactures material handling equipment	Kadant	\$179	ND
11/27/2018	Spectro Scientific	Instruments for machine condition monitoring	AMETEK	\$190	ND
11/26/2018	E2M Technologies	Electric motion technology, control loading systems, and custom electric actuator solutions	MTS Systems	\$80	ND
11/5/2018	Genesis Systems	Robotic arc welding systems, assembly automation systems, and robotic tooling and material handling solutions	IPG Photonics	\$115	ND
10/30/2018	Electro Scientific	Laser-based microfabrication solutions	MKS Instruments	\$928	7.1x
10/29/2018	Alpha Technologies	Powering solutions to the broadband and renewable energy industries	EnerSys	\$750	15.0x
10/24/2018	Trafficware	Transportation analysis software solutions for improving traffic flow	Cubic Transportation	\$236	15.0x
10/16/2018	Lakesight Technologies	European machine vision platform	TKH Group	\$160	ND
10/16/2018	Micron Optics	Optical components and laser-based equipment that advance the quality of optical measurements	Luna Technologies, Inc.	ND	ND
10/11/2018	Spireon	Cloud-based GPS vehicle tracking and fleet management solutions	Greenbriar Equity	ND	ND
10/9/2018	Glenmount Global	Automation and control, drive system, and industrial IT services and solutions	E-Technologies	ND	ND
10/2/2018	Laser Quantum	Laser equipment for researchers, clinicians, and instrument manufacturers	Novanta	\$190	ND
10/2/2018	GE Intelligent Platforms	High performance embedded computing and graphics solutions	Emerson	ND	ND
10/1/2018	Transnorm	Conveyor modules for use in bin and box conveyor systems and parcel and airport baggage handling systems	Honeywell	\$491	15.0x
9/24/2018	Autonomous Surface Vehicles	Unmanned and autonomous marine systems	L3 Technologies	ND	ND
9/24/2018	GIGAVAC	High voltage, vacuum, and gas filled relays as well as current contactors	Sensata	\$233	ND
9/20/2018	Gimatic	Pneumatic and electric grippers for industrial automation worldwide	Barnes	\$435	ND
9/18/2018	Rollon	Linear motion applications including linear and telescopic guides, linear actuators, and systems for automation	Timken	\$545	13.4x
8/29/2018	OnRobot	Gripping and sensing end-of-arm tooling devices that used in industrial automation	Summit Partners; Vækstfonden	ND	ND
8/13/2018	Thales Calibration	Commercial calibration services defense, commercial, medical, petro-chemical, and pharmaceutical industries	Keysight Technologies	ND	ND
7/31/2018	SKF Motion	Linear motion components and solutions	Triton Funds	\$313	ND
7/30/2018	LumaSense	Temperature and gas sensing devices	Advanced Energy	\$85	ND
7/26/2018	Motec	Camera systems for commercial vehicles, construction vehicles, and agricultural machines	AMETEK	\$93	ND
7/24/2018	Cone Drive	Precision motion control technology	Timken	ND	ND
7/12/2018	Asic Robotics	Industrial robotics and automation	Paragon Partners	ND	ND
7/10/2018	Prodomax	Automated manufacturing solutions	Jenoptik	ND	ND
7/2/2018	Gordian	Construction cost analytics, pricing data, and procurement software and services	Fortive	\$775	ND

Sources: Dealogic and Capital IQ

From a public markets perspective, we breakdown Industrial Technology into seven sub-verticals: Automation, Industrial IoT, Electronics & Connectivity, Sensors & Instrumentation, Discrete Technologies, Process Technologies, and Engineered Machinery. William Blair has deep sector experience and intimate buyer knowledge across each sub-vertical.



Selected William Blair Transactions by Type

1 Automation



2 Industrial IoT



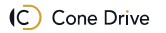
3 Electronics & Connectivity



4 Sensors & Instrumentation



5 Discrete Technologies



6 Process Technologies



7 Engineered Machinery



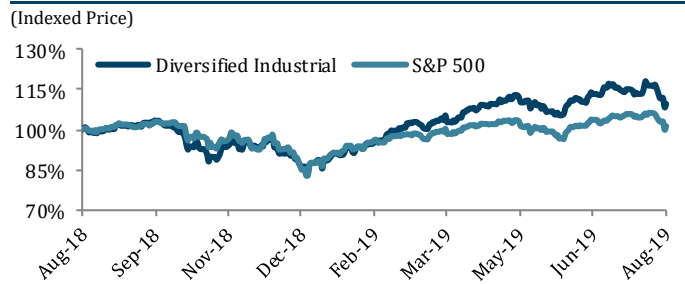
Diversified Industrial Technology

(\$ in millions)

Company	% of 52 Week High	LTM Financials		LTM Margins		OCF Conversion ⁽¹⁾	Historical Revenue 3-Yr CAGR	Valuation			
		Revenue	EBITDA	Gross Profit	EBITDA			Enterprise Value	EV/LTM Revenue	EV/LTM EBITDA	Net Debt/EBITDA
AMETEK, Inc.	92.1%	\$5,041	\$1,372	34.4%	27.2%	92.9%	12.3%	\$21,634	4.3x	15.8x	1.5x
Danaher Corporation	95.1%	\$23,253	\$5,720	55.6%	24.6%	87.8%	6.4%	\$129,328	5.6x	22.6x	4.8x
ESCO Technologies Inc.	87.4%	\$807	\$160	37.3%	19.8%	80.3%	5.0%	\$2,129	2.6x	13.3x	1.1x
Fortive Corporation	77.2%	\$6,816	\$1,473	50.5%	21.6%	92.3%	5.5%	\$28,658	4.2x	19.5x	3.6x
Honeywell International Inc.	92.3%	\$38,618	\$8,706	33.7%	22.5%	90.8%	5.2%	\$127,739	3.3x	14.7x	0.8x
IDEX Corporation	93.3%	\$2,539	\$709	45.2%	27.9%	91.4%	8.4%	\$12,943	5.1x	18.3x	0.7x
Roper Technologies, Inc.	91.4%	\$5,313	\$1,972	63.5%	37.1%	97.3%	10.3%	\$42,127	7.9x	21.4x	2.4x
Siemens Aktiengesellschaft	77.6%	\$96,878	\$11,034	29.6%	11.4%	71.7%	2.1%	\$114,218	1.2x	10.5x	2.9x
Teradyne, Inc.	89.1%	\$2,145	\$644	58.7%	30.0%	82.8%	9.5%	\$8,908	4.2x	13.8x	N/A
Mean		\$20,157	\$3,532	45.4%	24.7%	87.5%	7.2%	\$54,187	4.3x	16.6x	2.2x
Median		\$5,313	\$1,473	45.2%	24.6%	90.8%	6.4%	\$28,658	4.2x	15.8x	1.9x

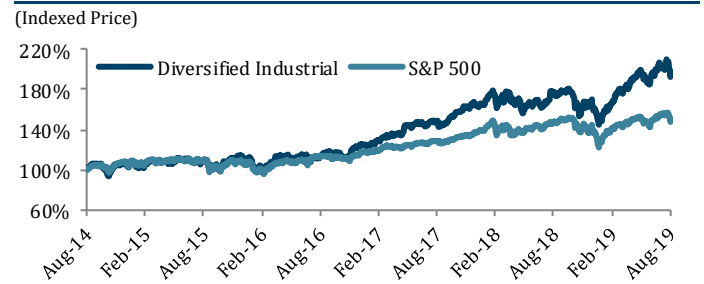
(1) Operating cash flow (OCF) calculated as EBITDA less capital expenditures divided by EBITDA
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 12 Months



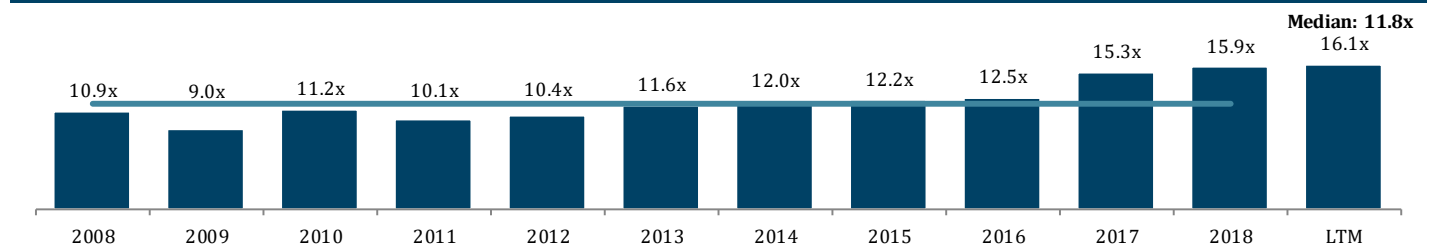
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 5 Years



Source: Capital IQ as of August 6, 2019

Diversified Industrial Technology- EV/LTM EBITDA



Source: Capital IQ as of August 6, 2019 and William Blair market analysis

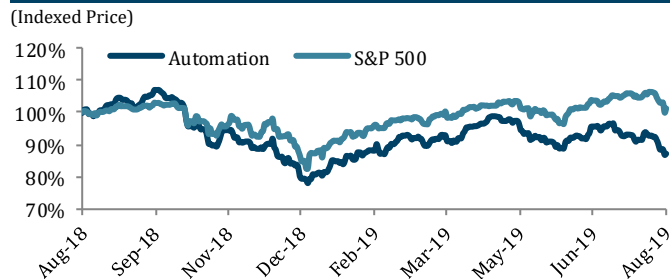
Automation

(\$ in millions)

Company	% of 52 Week High	LTM Financials		LTM Margins		OCF Conversion ⁽¹⁾	Historical Revenue 3-Yr CAGR	Valuation			
		Revenue	EBITDA	Gross Profit	EBITDA			Enterprise Value	EV/LTM Revenue	EV/LTM EBITDA	Net Debt/EBITDA
ABB Ltd	76.7%	\$28,508	\$3,718	30.9%	13.0%	78.4%	5.3%	\$48,403	1.7x	13.0x	2.2x
ATS Automation Tooling Systems Inc.	79.6%	\$1,026	\$141	26.2%	13.7%	88.6%	9.2%	\$1,463	1.4x	10.5x	0.7x
Emerson Electric Co.	73.1%	\$18,289	\$3,951	42.5%	21.6%	82.3%	2.6%	\$40,475	2.2x	10.2x	1.2x
Fanuc Corporation	78.6%	\$5,288	\$1,567	40.7%	29.6%	28.0%	14.2%	\$27,840	5.0x	16.8x	N/A
Honeywell International Inc.	92.3%	\$38,618	\$8,706	33.7%	22.5%	90.8%	5.2%	\$127,739	3.3x	14.7x	0.8x
KUKA Aktiengesellschaft	43.5%	\$3,632	\$136	21.9%	3.7%	(43.2%)	4.9%	\$2,205	0.6x	16.5x	0.8x
Rockwell Automation, Inc.	75.6%	\$6,694	\$1,534	43.3%	22.9%	89.9%	6.3%	\$19,033	2.8x	12.4x	0.9x
Schneider Electric S.E.	89.8%	\$30,346	\$5,769	39.2%	19.0%	90.0%	2.5%	\$55,091	1.8x	9.7x	1.4x
Siemens Aktiengesellschaft	77.6%	\$96,878	\$11,034	29.6%	11.4%	71.7%	2.1%	\$114,218	1.2x	10.5x	2.9x
Yokogawa Electric Corporation	79.2%	\$3,647	\$487	43.3%	13.4%	85.4%	2.3%	\$4,624	1.2x	9.0x	N/A
Mean		\$23,293	\$3,704	35.1%	17.1%	66.2%	5.5%	\$44,109	2.1x	12.3x	1.3x
Median		\$12,492	\$2,643	36.4%	16.4%	83.9%	5.0%	\$34,157	1.8x	11.5x	1.0x

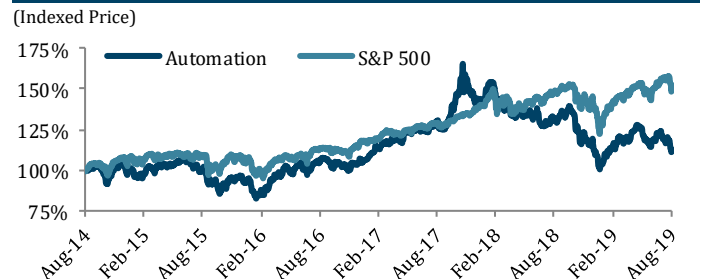
(1) Operating cash flow (OCF) calculated as EBITDA less capital expenditures divided by EBITDA
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 12 Months



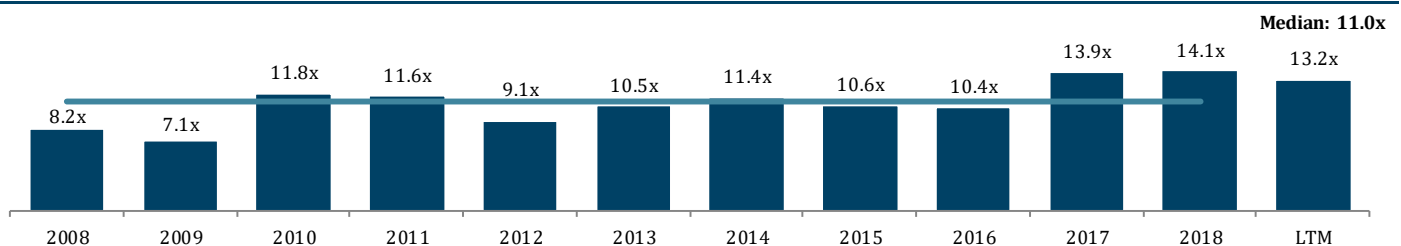
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 5 Years



Source: Capital IQ as of August 6, 2019

Automation - EV/LTM EBITDA



Source: Capital IQ as of August 6, 2019 and William Blair market analysis

Industrial IoT

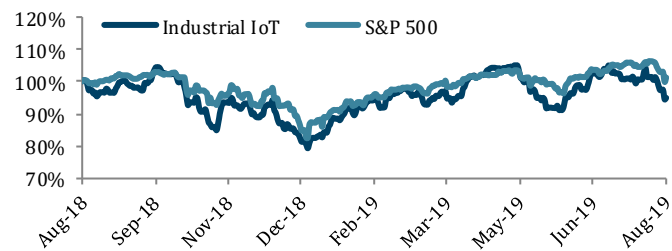
(\$ in millions)

Company	% of 52 Week High	LTM Financials		LTM Margins		OCF Conversion ⁽¹⁾	Historical Revenue 3-Yr CAGR	Valuation			
		Revenue	EBITDA	Gross Profit	EBITDA			Enterprise Value	EV/LTM Revenue	EV/LTM EBITDA	Net Debt/EBITDA
Altair Engineering Inc.	77.3%	\$452	\$54	72.8%	12.0%	81.3%	19.0%	\$2,592	5.7x	47.6x	0.3x
CalAmp Corp.	42.1%	\$358	\$44	40.7%	12.4%	66.4%	1.2%	\$490	1.4x	11.1x	3.0x
Digi International Inc.	94.5%	\$256	\$27	46.5%	10.7%	65.2%	10.5%	\$320	1.3x	11.7x	NMF
Hexagon AB (publ)	81.6%	\$4,427	\$1,356	62.2%	30.6%	86.6%	9.3%	\$19,722	4.5x	14.8x	1.9x
MiX Telematics Limited	79.9%	\$144	\$44	66.5%	30.9%	67.9%	13.5%	\$317	2.4x	7.7x	N/A
Sierra Wireless, Inc.	52.2%	\$770	\$38	32.1%	4.9%	54.4%	7.5%	\$386	0.5x	10.2x	N/A
Trimble Inc.	80.5%	\$3,237	\$691	54.6%	21.4%	89.9%	11.8%	\$11,234	3.5x	16.2x	2.4x
Xilinx, Inc.	72.9%	\$3,224	\$1,265	68.2%	39.2%	92.7%	12.8%	\$25,253	7.8x	20.0x	N/A
Mean		\$1,609	\$440	55.5%	20.3%	75.6%	10.7%	\$7,539	3.4x	17.4x	1.9x
Median		\$611	\$49	58.4%	16.9%	74.6%	11.1%	\$1,541	2.9x	13.2x	2.1x

(1) Operating cash flow (OCF) calculated as EBITDA less capital expenditures divided by EBITDA
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 12 Months

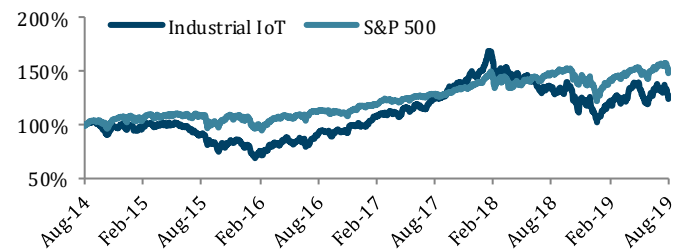
(Indexed Price)



Source: Capital IQ as of August 6, 2019

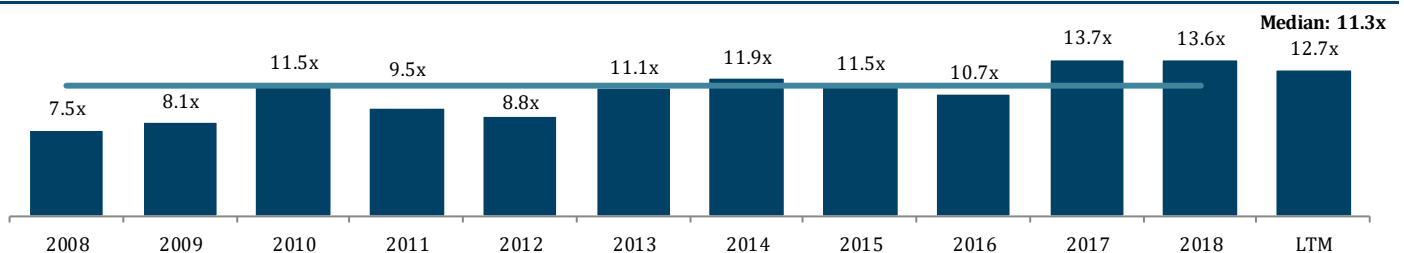
Indexed Stock Performance - Last 5 Years

(Indexed Price)



Source: Capital IQ as of August 6, 2019

Industrial IoT - EV/LTM EBITDA



Source: Capital IQ as of August 6, 2019 and William Blair market analysis

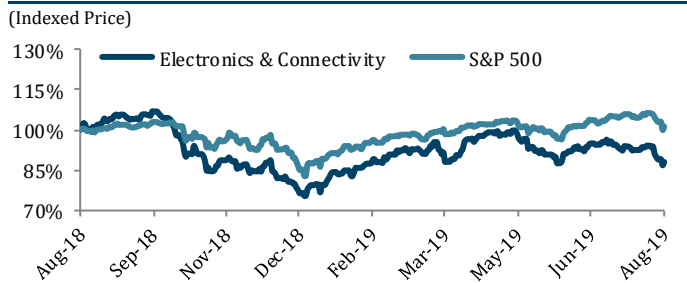
Electronics & Connectivity

(\$ in millions)

Company	% of 52 Week High	LTM Financials		LTM Margins		OCF Conversion ⁽¹⁾	Historical Revenue 3-Yr CAGR	Valuation			
		Revenue	EBITDA	Gross Profit	EBITDA			Enterprise Value	EV/LTM Revenue	EV/LTM EBITDA	Net Debt/EBITDA
Acuity Brands, Inc.	67.4%	\$3,796	\$590	39.5%	15.5%	91.3%	5.2%	\$5,059	1.3x	8.6x	0.0x
Amphenol Corporation	81.6%	\$8,328	\$2,112	32.2%	25.4%	84.5%	14.2%	\$29,533	3.5x	14.0x	1.5x
Belden Inc.	58.6%	\$2,536	\$452	39.5%	17.8%	75.9%	2.4%	\$3,278	1.3x	7.2x	2.7x
Hubbell Incorporated	91.3%	\$4,608	\$779	29.3%	16.9%	87.6%	6.2%	\$8,557	1.9x	11.0x	2.1x
Legrand SA	94.3%	\$7,114	\$1,689	51.8%	23.7%	89.4%	9.3%	\$22,138	3.2x	13.3x	2.0x
Synaptics Incorporated	67.1%	\$1,472	\$208	34.6%	14.2%	88.6%	1.6%	\$1,321	0.9x	6.3x	0.7x
TE Connectivity Ltd.	90.0%	\$13,657	\$3,102	33.1%	22.7%	73.2%	6.0%	\$33,502	2.5x	10.8x	1.1x
TT Electronics plc	77.0%	\$613	\$75	25.4%	12.2%	72.2%	13.6%	\$534	0.9x	7.6x	1.4x
Mean		\$5,265	\$1,126	35.7%	18.6%	82.8%	7.3%	\$12,990	1.9x	9.9x	1.5x
Median		\$4,202	\$684	33.9%	17.4%	86.1%	6.1%	\$6,808	1.6x	9.7x	1.5x

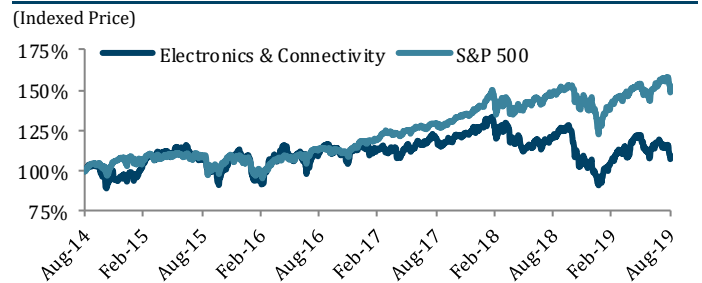
(1) Operating cash flow (OCF) calculated as EBITDA less capital expenditures divided by EBITDA
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 12 Months



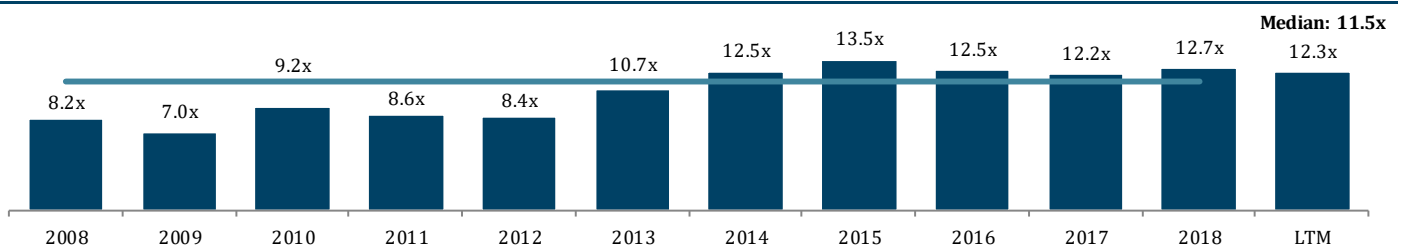
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 5 Years



Source: Capital IQ as of August 6, 2019

Electronics & Connectivity - EV/LTM EBITDA



Source: Capital IQ as of August 6, 2019 and William Blair market analysis

Sensors & Instruments

(\$ in millions)

Company	% of 52 Week High	LTM Financials		LTM Margins		OCF Conversion ⁽¹⁾	Historical Revenue 3-Yr CAGR	Valuation			
		Revenue	EBITDA	Gross Profit	EBITDA			Enterprise Value	EV/LTM Revenue	EV/LTM EBITDA	Net Debt/EBITDA
Cognex Corporation	72.7%	\$798	\$270	74.1%	33.9%	91.0%	23.4%	\$7,015	8.8x	25.9x	N/A
CTS Corporation	78.2%	\$477	\$99	34.9%	20.8%	76.8%	8.9%	\$1,016	2.1x	10.2x	0.5x
FARO Technologies, Inc.	71.1%	\$400	\$27	56.1%	6.8%	64.7%	11.3%	\$747	1.9x	27.6x	N/A
FLIR Systems, Inc.	74.0%	\$1,810	\$492	51.0%	27.2%	92.9%	3.4%	\$7,066	3.9x	14.4x	1.1x
Keyence Corporation	81.6%	\$5,209	\$2,814	82.2%	54.0%	97.6%	15.7%	\$62,314	11.3x	20.9x	N/A
Keysight Technologies, Inc.	91.3%	\$4,147	\$1,012	57.8%	24.4%	86.8%	8.8%	\$16,824	4.1x	16.6x	0.5x
MTS Systems Corporation	94.6%	\$866	\$131	38.1%	15.2%	84.8%	0.2%	\$1,568	1.8x	11.9x	3.0x
Sensata Technologies Holding plc	80.0%	\$3,476	\$956	35.0%	27.5%	81.7%	4.9%	\$9,887	2.8x	10.3x	2.7x
Spectris plc	77.8%	\$2,116	\$404	56.0%	19.1%	68.8%	7.8%	\$3,634	1.8x	9.6x	1.0x
Mean		\$2,144	\$690	53.9%	25.4%	82.8%	9.4%	\$12,230	4.3x	16.4x	1.5x
Median		\$1,810	\$404	56.0%	24.4%	84.8%	8.8%	\$7,015	2.8x	14.4x	1.0x

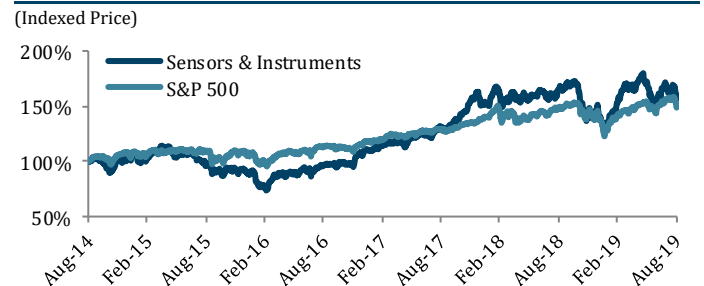
(1) Operating cash flow (OCF) calculated as EBITDA less capital expenditures divided by EBITDA
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 12 Months



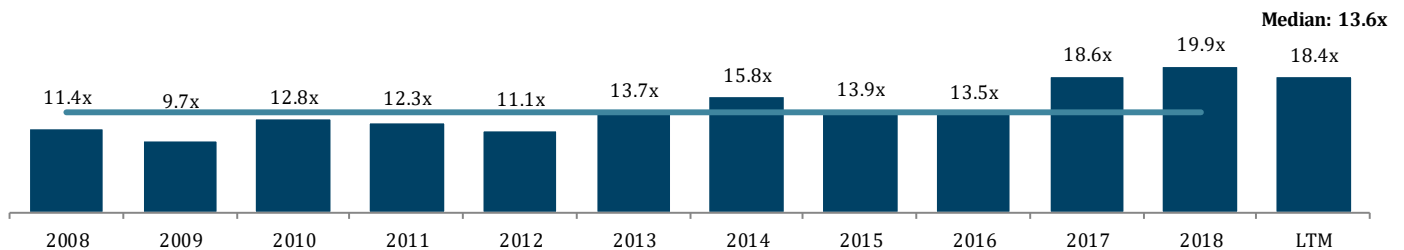
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 5 Years



Source: Capital IQ as of August 6, 2019

Sensors & Instruments - EV/LTM EBITDA



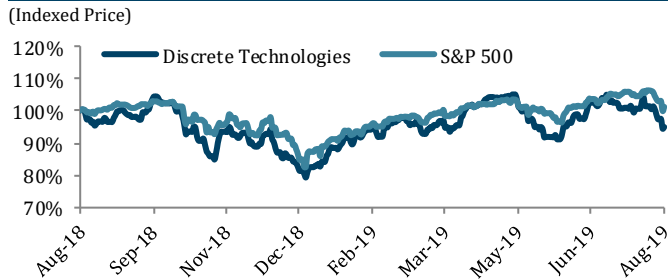
Source: Capital IQ as of August 6, 2019 and William Blair market analysis

Discrete Technologies

Company	% of 52 Week High	LTM Financials		LTM Margins		OCF Conversion ⁽¹⁾	Historical Revenue 3-Yr CAGR	Valuation			
		Revenue	EBITDA	Gross Profit	EBITDA			Enterprise Value	EV/LTM Revenue	EV/LTM EBITDA	Net Debt/EBITDA
AB SKF (publ)	83.3%	\$9,428	\$1,388	24.4%	14.7%	73.2%	4.1%	\$8,851	1.0x	6.6x	1.1x
Altra Industrial Motion Corp.	58.8%	\$1,884	\$385	35.2%	20.4%	87.9%	5.1%	\$3,246	1.7x	8.4x	4.0x
Delta Electronics, Inc.	89.9%	\$8,284	\$1,046	27.4%	12.6%	67.1%	5.2%	\$13,613	1.7x	13.2x	NMF
Nidec Corporation	79.6%	\$13,568	\$1,744	21.9%	12.9%	33.0%	9.5%	\$39,281	2.8x	21.5x	1.0x
Parker-Hannifin Corporation	86.7%	\$14,320	\$2,657	25.4%	18.6%	92.7%	2.4%	\$25,595	1.8x	9.6x	1.4x
Regal Beloit Corporation	85.4%	\$3,535	\$502	27.0%	14.2%	81.4%	1.3%	\$4,183	1.2x	8.3x	1.9x
Rexnord Corporation	88.1%	\$2,056	\$441	38.6%	21.4%	91.0%	4.8%	\$4,108	2.0x	9.3x	2.4x
The Timken Company	81.9%	\$3,771	\$737	29.7%	19.5%	84.8%	7.6%	\$5,031	1.3x	6.8x	2.2x
WEG S.A.	98.4%	\$3,258	\$514	29.2%	15.8%	76.7%	7.0%	\$13,570	4.2x	26.9x	1.0x
YASKAWA Electric Corporation	76.1%	\$4,080	\$489	32.5%	12.0%	57.6%	4.1%	\$8,359	2.0x	16.3x	0.3x
Mean		\$6,418	\$990	29.1%	16.2%	74.5%	5.1%	\$12,584	2.0x	12.7x	1.7x
Median		\$3,926	\$625	28.3%	15.3%	79.0%	5.0%	\$8,605	1.8x	9.5x	1.4x

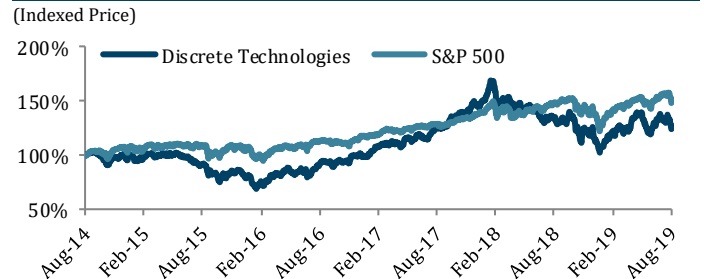
(1) Operating cash flow (OCF) calculated as EBITDA less capital expenditures divided by EBITDA
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 12 Months



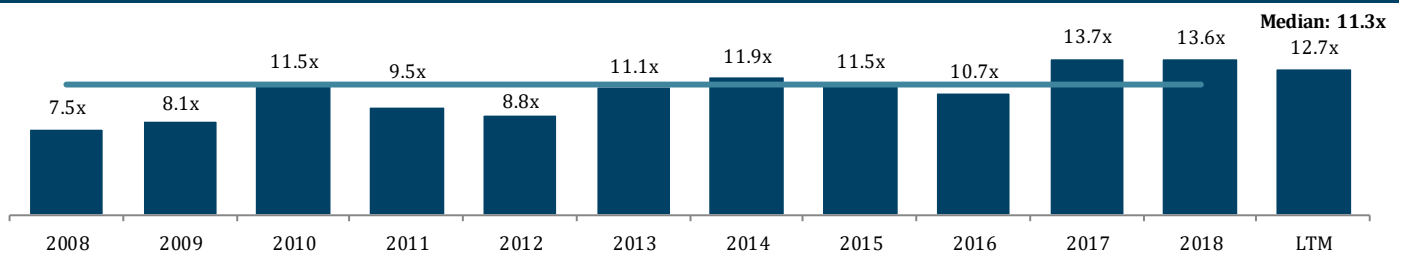
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 5 Years



Source: Capital IQ as of August 6, 2019

Discrete Technologies - EV/LTM EBITDA



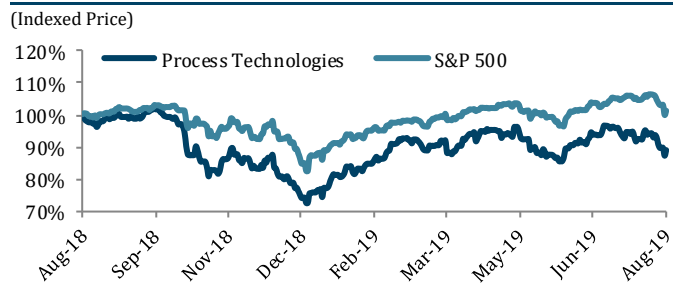
Source: Capital IQ as of August 6, 2019 and William Blair market analysis

Process Technologies

Company	% of 52 Week High	LTM Financials		LTM Margins		OCF Conversion ⁽¹⁾	Historical Revenue 3-Yr CAGR	Valuation			
		Revenue	EBITDA	Gross Profit	EBITDA			Enterprise Value	EV/LTM Revenue	EV/LTM EBITDA	Net Debt/EBITDA
A. O. Smith Corporation	75.2%	\$3,080	\$605	40.4%	19.7%	86.4%	7.9%	\$7,578	2.5x	12.5x	NMF
Badger Meter, Inc.	89.2%	\$423	\$88	38.9%	20.8%	91.1%	4.7%	\$1,590	3.8x	18.1x	NMF
Evoqua Water Technologies Corp.	77.5%	\$1,398	\$217	30.1%	15.5%	58.5%	6.5%	\$2,726	1.9x	12.6x	4.1x
Flowserve Corporation	79.4%	\$3,820	\$568	33.3%	14.9%	86.3%	(4.9%)	\$6,994	1.8x	12.3x	1.9x
Franklin Electric Co., Inc.	82.6%	\$1,305	\$174	32.7%	13.3%	87.7%	5.1%	\$2,348	1.8x	13.5x	1.2x
Graco Inc.	87.5%	\$1,656	\$504	52.7%	30.4%	80.8%	8.7%	\$8,277	5.0x	16.4x	0.2x
ITT Inc.	88.1%	\$2,844	\$515	32.0%	18.1%	81.6%	3.3%	\$5,031	1.8x	9.8x	NMF
Pentair plc	81.3%	\$2,940	\$561	35.2%	19.1%	89.8%	1.8%	\$7,526	2.6x	13.4x	2.2x
Rexnord Corporation	88.1%	\$2,056	\$441	38.6%	21.4%	91.0%	4.8%	\$4,108	2.0x	9.3x	2.4x
Rotork plc	91.2%	\$884	\$218	45.2%	24.6%	91.7%	5.6%	\$3,289	4.0x	16.1x	NMF
SPX FLOW, Inc.	71.6%	\$1,484	\$194	31.6%	13.1%	84.7%	(6.3%)	\$2,203	1.5x	11.3x	2.8x
Sulzer Ltd	74.6%	\$3,566	\$399	28.8%	11.2%	75.2%	4.2%	\$3,770	1.0x	9.3x	1.2x
Watts Water Technologies, Inc.	99.7%	\$1,584	\$262	42.3%	16.5%	86.6%	2.2%	\$3,422	2.2x	13.1x	0.8x
Xylem Inc.	90.4%	\$5,255	\$973	39.0%	18.5%	73.8%	5.7%	\$16,380	3.1x	16.8x	2.4x
Mean		\$2,307	\$408	37.2%	18.4%	83.2%	3.5%	\$5,374	2.5x	13.2x	1.9x
Median		\$1,856	\$420	36.9%	18.3%	86.4%	4.8%	\$3,939	2.1x	12.8x	2.0x

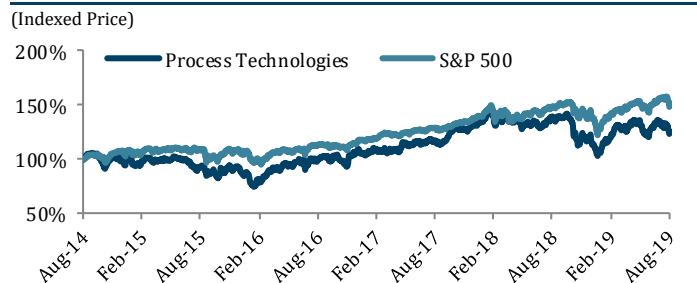
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Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 12 Months



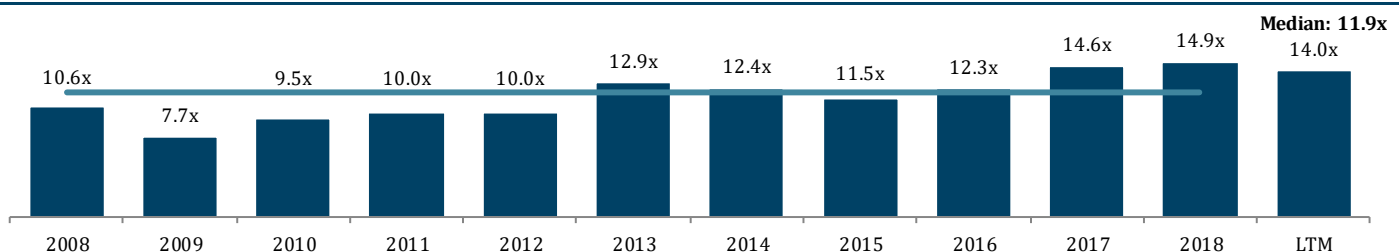
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 5 Years



Source: Capital IQ as of August 6, 2019

Process Technologies - EV/LTM EBITDA



Source: Capital IQ as of August 6, 2019 and William Blair market analysis

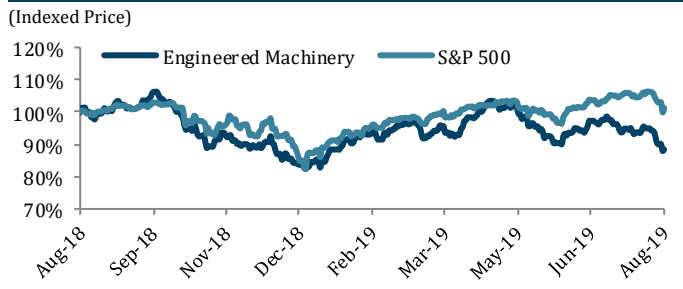
Engineered Machinery

(\$ in millions)

Company	% of 52 Week High	LTM Financials		LTM Margins		OCF Conversion ⁽¹⁾	Historical Revenue 3-Yr CAGR	Valuation			
		Revenue	EBITDA	Gross Profit	EBITDA			Enterprise Value	EV/LTM Revenue	EV/LTM EBITDA	Net Debt/EBITDA
Andritz AG	62.8%	\$7,222	\$615	49.9%	8.5%	75.2%	(1.7%)	\$4,339	0.6x	7.2x	0.9x
Bobst Group SA	51.1%	\$1,617	\$105	37.7%	6.5%	55.4%	7.1%	\$881	0.5x	8.2x	1.1x
DMG MORI AKTIENGESELLSCHAFT	87.5%	\$3,098	\$352	44.6%	11.4%	78.4%	4.6%	\$3,598	1.2x	10.4x	NMF
Doosan Corporation	63.3%	\$16,601	\$1,662	18.1%	10.0%	75.8%	2.4%	\$15,163	0.9x	9.4x	5.8x
Dover Corporation	89.3%	\$7,092	\$1,295	36.7%	18.3%	87.2%	5.7%	\$16,801	2.4x	13.0x	2.4x
Dürr Aktiengesellschaft	58.4%	\$4,563	\$401	21.9%	8.8%	86.6%	0.9%	\$2,120	0.5x	5.4x	0.4x
Illinois Tool Works Inc.	93.8%	\$14,354	\$3,948	41.8%	27.5%	91.5%	3.3%	\$55,469	3.9x	14.1x	1.6x
John Bean Technologies Corporation	82.2%	\$1,930	\$290	29.9%	15.0%	86.6%	15.1%	\$4,161	2.2x	14.3x	2.6x
Marel hf.	94.1%	\$1,442	\$260	39.3%	18.0%	87.2%	7.1%	\$3,735	2.6x	14.6x	0.6x
Okuma Corporation	74.7%	\$1,835	\$283	31.3%	15.4%	79.3%	2.8%	\$1,161	0.6x	3.9x	NMF
Sandvik AB	77.8%	\$11,116	\$2,585	41.2%	23.3%	85.4%	5.2%	\$20,710	1.9x	8.4x	0.8x
Mean		\$6,443	\$1,072	35.7%	14.8%	80.8%	4.8%	\$11,649	1.6x	9.9x	1.8x
Median		\$4,563	\$401	37.7%	15.0%	85.4%	4.6%	\$4,161	1.2x	9.4x	1.1x

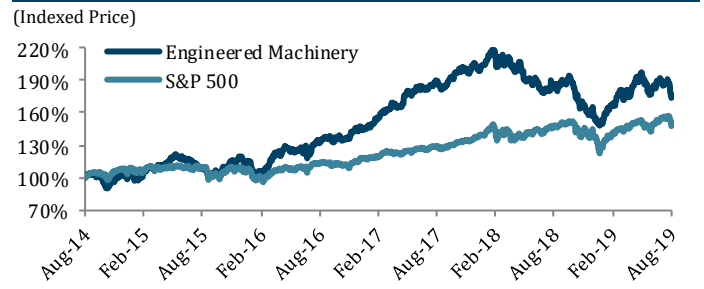
(1) Operating cash flow (OCF) calculated as EBITDA less capital expenditures divided by EBITDA
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 12 Months



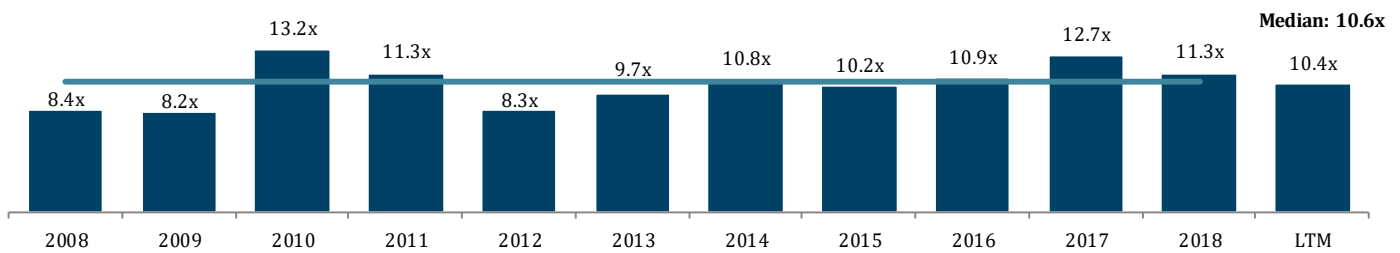
Source: Capital IQ as of August 6, 2019

Indexed Stock Performance - Last 5 Years



Source: Capital IQ as of August 6, 2019

Engineered Machinery - EV/LTM EBITDA



Source: Capital IQ as of August 6, 2019 and William Blair market analysis

William Blair – Equity Research Coverage

Coverage



Brian Drab



Nicholas Heymann



Lawrence De Maria



Louie DiPalma



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