

October 26, 2017

Advanced Energy Industries: AEIS

Hunter Sanna

Sector: Technology

Industry: Diversified Electronics

Current Price: \$90.34

Target Price: \$100.98

Company Description: Advanced Energy Industries tames electric for its high-tech clients using alternative energy. The power conversion products transform raw electricity to high performance, high precision, and consistent production in manufacturing. AE products are also used in the production of solar panels and other thin-film products such as cell-phones, computers, cars, and glass panels.

BUY

Current Price:	\$90.34
Target Price:	\$100.98
Market Cap:	\$3.57B
Beta:	1.38
Gross Margin:	52.61%
ROIC:	40.42%
WACC:	11.10%
Operating Margin:	28.41%
EBITDA Margin:	27.84%

Catalysts:

Short Term: High demand for new generation of product 3DNAND.

Mid Term: Thin-film area will see rapid growth due to a large demand of screens and movement toward OLED screens.

Long Term: Large growth within the semiconductor space as technology increases and innovation is needed.



Thesis:

AE has strong growth potential in the future as the technology industries continue to explode. They have organic growth coming from the industrial side of their business, as well as strong revenue growth year over year. Being the industry leader in semis, they control a majority of the market share and have pricing power within this segment.

Earnings Performance:

AE experienced a record quarter in Q2 of 2017 with revenues growing 40% year over year to \$166 million. The main driver for this was sales within the semiconductor industry, which experienced an increase of 50% year over year. Furthermore, they also outperformed the broader wafer fab equipment industry. Also, industrial growth continued in all sectors and service surpassed historical levels. Revenues reached \$117 Million, which was driven by AE's new product the 3DNAND. The semiconductor business is the largest segment of AE totaling at about 71% of their total sales. This market is fast growing and has a lot of potential in the future due to the overall increase of usage of technology. As the semiconductor business is changing from planar to 3D, AE is confident that this product will be the biggest driver for their semiconductor markets over the next few years and currently demand is well ahead of current capacity. Looking forward into next quarter, AE expects the semi revenue to stay constant with the previous quarter or even grow.

AE made advancements within their power segment of their company, ramping up high volume manufacturing and shipping of their Navigator-II FastCapsolid-state match product. This reflects AE's expertise in radio frequency power and early collaboration with customers to address their needs and challenges for advance tech applications. All businesses grew this quarter within our OEM sector. This was led by a record period in Korea, where AE's sales to OEMS increased over 100% from last year's second quarter. AE also secured designs with indigenous Wafer Fab Equipment companies in China. By locally engaging with their global customers early in the design process, we can help them perform their complex processes. This is a win for AE because these wins are a direct result of continuing to be innovative and to continue our leading position within the precision power solutions sector.



The industrial business revenues grew 19% over last year, which was driven by an increase in AE's targeted thin films markets. This was led by the ramp up of industrial coating for consumer electronics, which found a capacity expansion in the glass coating market. This drove demand for new coaters as well as retrofits and upgrades from the existing line of glass. As this increase in demand for glass expanded across many regions, AE opened their first integrated power system for glass formation. With securing many design wins within the glass market, Ae expanded in the U.S., China, and Japan, where their technology is being more widely accepted and adopted. Additionally, the

successful evaluation of power solutions enabled the formation of these engineered materials with improved

film qualities. Looking forward, the thin film segment should accelerate due to more demand and advancement within the coating industry.

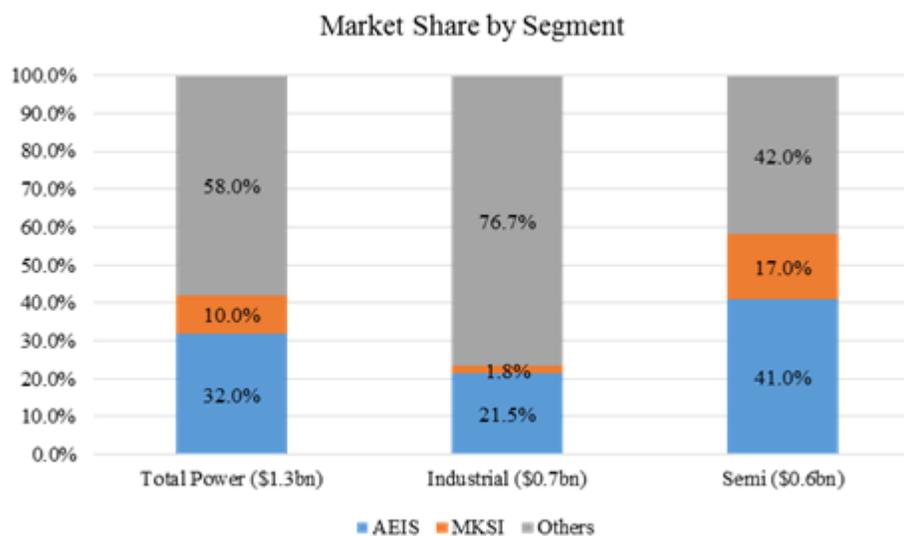
Industry Overview:

The overall technology sector has made an outstanding 32% gain within the financial markets for 2017. The current outlook within the technology sector is bullish as our society becomes consumed with the idea of Internet of Things and many other variables. This idea is how everything we use will eventually have somewhat of a relationship with technology. Relating everything to the internet will make everyday devices smarter and more efficient. We are currently in a special place with technology because millennials are one of the first generations to always have technology around them. That being said, there is room for growth within this sector. As many companies seek efficiencies, they will turn to technology to streamline the process for them. That being said, a large market within the technology sector is smartphones, which many people have nowadays. If one looks deeper into what really is inside the smartphone they would find semiconductor chips, which AE produces.

Market Share:

AE is an industry leader in Industrial Power and Semiconductor space. They have recently expanded to gain more traction overseas in other profitable areas like Korea and China. In Korea, AE has expanded their footprint by increasing sales to local OEM (original equipment manufacturer) over 100% from last year's second quarter. Along with Korea, AE has also opened three new locations in Asia. The locations in Shenzhen, China, and Japan are improving their proximity to their customers so that AE has the highest quality and most responsive service for their growing customer base. Within these new locations, Asia is currently AE highest growing sector next to the US at 19.4% of their total sales.

AE closest rival within all three sectors they operate in is MKS Instruments, which holds very little market share relative to the industry leader AE. Within the very fragmented Industrial market AE holds more than 10x the market share compared to MKSI.



AE currently generates a large amount of their semiconductor revenue, (57%) which forms two major market leaders Applied Materials (AMAT) and LAM Research (LAM). This relationship has been ongoing for over 10 years and the two companies are considered loyal customers to AE. AMAT has received many rewards and is on Fortune's world's most admired companies, as well as one of the world's most ethical companies. AMAT has a revenue of \$10.8 Billion dollars and has secured over 10,200 patents within the semiconductor space. They are also located in 82 locations in 17 countries and is the world's number one semiconductor and display equipment company in the space. AMAT has expertise in modifying materials at atomic levels, and on an industrial scale, enables customers to transform possibilities into reality with their technology. Along with this, AMAT has also been recognized by Intel as their preferred quality supplier award for the 5th consecutive year, as well as TSCM's supplier award for the 6th consecutive year. LAM is slightly smaller, producing revenues of \$6.4 Billion and has locations in 16 countries worldwide, and is the leading supplier of wafer fabrication equipment and services to the global semiconductor industry. LAM's main goal is to develop innovative products to help their customers build smaller, faster, more powerful, and more power-efficient electronic devices. Through powerful research and development, LAM allows chipmakers to build device features that are more than 1,000 times smaller than a grain of sand and hold the leading edge in integrated circuits within the semiconductor market.

Growth Drivers:

General Power products and solutions:

Within AE's general power products, their main focus is on green energy. Many companies are making that push toward a cleaner energy source. According to Forbes, 100 Fortune 500 companies have gone 100% alternative energy. While this trend continues, AE will be a benefactor. AE uses the most efficient product application to convert this energy into more useful energy, especially within the solar cell and TAM (wind power) spaces. While AE makes these systems run more efficiently, they also have analytics for these products and information displayed for the company to see the benefits of their product. The current trend in this industry is a migration from discrete boxes to configurable systems that are much smaller. In addition, AE just acquired Excelsys, which recently released a product with no cooling fans. This was an all-cash transaction of \$17.7 million, and is focused in the wind power sector. This acquisition will add around \$150-200 million in revenue to their bottom line.

Semiconductor Processes:

The semiconductor industry is a very fast and actively growing space, especially within the smartphone industry. The main way the major players in the smartphone industry differ and innovates is through better cameras, faster processing power, and longer battery life. With these differentiators in mind, two of the three (faster processing power and longer battery life) are enabled by semiconductors. Another fast growing market where semis play a huge role is Augmented Reality, Virtual Reality, Artificial Intelligence, IoT, and Robotics, which is the future of technology. In the future, AR and VR are going to revolutionize the world in training people and giving them real hands on experience through a simulation. Artificial intelligence will make computers smarter and let them learn, which will make them more widely used across many different fields. The Internet of Things are all enabled through semis, and as our world become more connected through technology, semiconductors will be used in many products. There is also a huge demand for more memory and advance logic in a smaller size, which the new 3DNAND does more efficiently compared to its competitors because it is placed vertically instead of horizontally hence the name 3D.

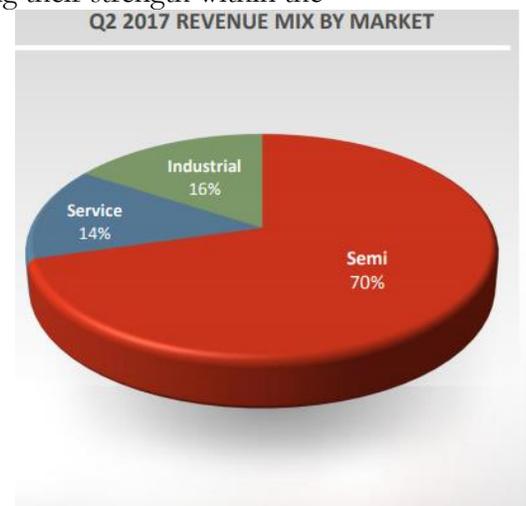
Industrial thin film processing:

The thin films industry also has numerous applications currently and in the future. Its main growth drivers are the adoption of advance FDP products, such as 4K and 8K screens, as well as OLED screen. Each of these products are relatively new in the market place of Televisions and smartphone screens. As the TV sector is growing in the high definition space, there will be a shift to all TV's being higher definition and the only way to improve the definition is by the 4k and 8k technology. Past the TV sector, these screens can also be used in computer screen and in the future we will see all new products that come to the market to have this high standard of viewing definition. As for the OLED system, we will see more products shift toward these screens as smartphone industry leaders like Apple and Samsung are currently using these screens. With these industry leaders using these screens to keep up with completion, other players will have to advance their technology and shift screens as well to stay relevant. These OLED screens offer more colors to the users, which look more appealing than older generations. AE is current reducing the cost of these thin film processing, which in turn makes them have more of a margin on these products and can offer lower prices to the customers.

Market Overview:

Thin Film:

The thin film segment a major component in AE's industrial strategy. With a very small revenue compared to other markets that AE is in, this is a differentiator due to the possibilities this segment has. AE currently is trying to capitalize on their thin film industry by leveraging their strength within the semiconductor market, expanding on their geographic footprint, and investing in sales and marketing infrastructure. The thin film coat can go on many products like windows on skyscrapers, smart phone screens, computers, car windows, as well as TVs. This market has a diverse customer base, with various sales channels and global OEMs serving in multiple applications. A way for this segment to grow is to use the vast amount of cash AE keep on hand overseas to merge or acquire a company to accelerate diversification within this sector.



Global Service:

Currently, AE has a best in class lifecycle services, which reduce variability and with opening new service centers overseas for aftermarket needs, their service could only get better. With a record of 14% of total revenue, AE can differentiate themselves between competitors in the market. Their products can have very long useful life, sometimes up to 15-20 years, this causes somewhat of a long term investment to have additional revenue that does not cost them anything. This service market is not geographically segmented either, while they have a decent mix internationally of where their products go, they also have world-class repair centers around the world to be responsive to their customers. They have a uniformly trained staff, which creates consistent quality repairs in all locations. Due to their unique customer base, this is an advantage to the customer to have this service be flexible and to fit all customer needs.

Semiconductor:

Within the semiconductor space, AE has positioned itself for success. They are currently the market leader within this segment, controlling 42% of the customers. Their closest competitor is at 17% market share. This market share leads AE to have superior pricing power within the segment, and with the new trend with semiconductors moving to 3D compared to plasma. Their recent revenue was driven by their new 3DNAND product, which resulted in \$117 million in sales. The semi also makes up about 70% of their total sales, which strengthens their position to increase in value due to IoT. PWC is currently projecting a 42% CAGR within IoT related chips sector. The semi marketplace is also quickly growing in China, where a main focus of AE growth is taking place by building three new locations to take advantage of this opportunity.

EBITDA and Margin Performance:

AE has put a focus on increasing their margins since Yuval Wasserman, the current CEO, has been appointed. In years past, AE has struggled and has gone through their speed bumps, but with the change in leadership came a change of focus as well. In 2014, AE had to fully drop one of their large parts of their business in solar panel development due to poor revenue and growth. Once they completely dropped that segment, their margins skyrocketed and have continued to operate at a high level. EBITDA also was lacking in 2014, but shot up due to the disengagement in a sector that was hurting their overall business. Margins should continue to increase, as they hold a considerable amount of market share and control pricing power in their highest revenue generating market, semiconductors. In 2017, AE has already increased their EBITDA, and with the high projected growth rates within the semi business, they should operate even more efficiently within this market. In 2015, AE faced some trouble with their profit by losing business within their solar energy business. Their profit margin has lagged within 2015 but looking forward in 2016, they have turned their profit margins around and expect an increase in 2017.

12 Months Ending	12/31/2014	12/31/2015	12/31/2016	06/30/2017	12/31/2017	12/31/2018
 Gross Margin	33.28	52.28	52.34	52.61		
 EBITDA Margin	10.52	27.84	27.84	29.79		
 Profit Margin	8.06	-38.21	26.35	27.42	28.63	27.19

Name (BICS Best Fit)	Ticker	Mkt Cap	T12M EBITDA Mrgn:Q	Rev - 1 Yr Gr:Q	PM LF
Median		2.43B	21.89%	32.72%	12.21%
100) ADVANCED ENERGY INDU...	AEIS US	3.76B	29.82%	39.66%	27.76%
101) MKS INSTRUMENTS INC	MKSI US	5.80B	23.86%	27.74%	15.63%
102) APPLIED MATERIALS INC	AMAT US	60.46B	30.07%	32.72%	24.71%
103) ENTEGRIS INC	ENTG US	4.57B	25.60%	16.48%	11.84%
104) AMKOR TECHNOLOGY INC	AMKR US	2.62B	21.89%	7.86%	11.67%
105) CABOT MICROELECTRONI...	CCMP US	2.43B	26.79%	11.49%	19.38%
106) BROOKS AUTOMATION INC	BRKS US	2.33B	14.33%	23.17%	9.55%
107) FORMFACTOR INC	FORM US	1.28B	16.11%	73.29%	12.21%
108) AXCELIS TECHNOLOGIES ...	ACLS US	1.01B	11.43%	59.49%	13.55%
109) VEECO INSTRUMENTS INC	VECO US	864.31M	1.69%	52.71%	-15.98%

The main problems within their margins was the organizational structure from business units to a single function organization with various product lines. So as AE experienced their difficulties, they have

rebounded and look strong as margins go heading into the future. The margins will increase as the nature of the business is fast growing, and their less cyclical side of the industry (industrials) has major growth opportunities. The industrials side is more concentrated, which will lead to better pricing power and higher margins than the semi business.

Conclusion:

In conclusion, AE is a market leader in across many sectors, which takes out of the cyclical semiconductor business. Being a market leader with a large majority of the market, AE will continue to grow organically and with the aid of acquisitions. They hold strong pricing power and are in a very high growth segment where they get a majority of their revenues. With the future of technology, AE will only become larger and operate more efficiently due to their dynamic management team who focuses heavily on their shareholders, ROIC, and are strong capital allocators.

Advanced Energy Industries, Inc. (AEIS)

CENTER FOR GLOBAL FINANCIAL STUDIES

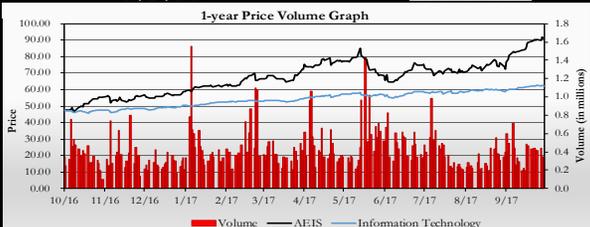
NEUTRAL

Analysis by Hunter Sanna
10/27/2017

Current Price: **\$93.97**
Divident Yield: **0.0%**

Intrinsic Value: **\$90.84**
Target Price: **\$100.98**

Target 1 year Return: 7.46%
Probability of Price Increase: 85.5%

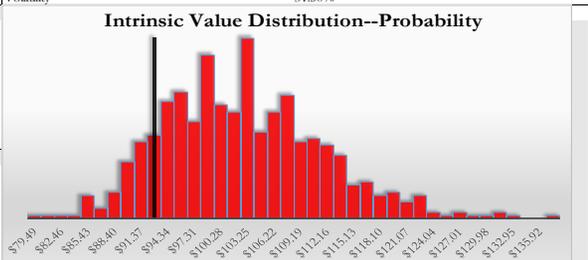


Description	
Advanced Energy Industries, Inc., together with its subsidiaries, designs, manufactures, sells, and supports power conversion and control products that transform power into various usable forms.	
General Information	
Sector	Information Technology
Industry	Semiconductors and Semiconductor Equipment
Last Guidance	November 3, 2015
Next earnings date	October 30, 2017
Estimated Country Risk Premium	5.95%
Effective Tax rate	23%
Effective Operating Tax rate	23%

Market Data	
Market Capitalization	\$3,651.96
Daily volume (mil)	0.51
Shares outstanding (mil)	39.94
Diluted shares outstanding (mil)	40.11
% shares held by institutions	71%
% shares held by investments Managers	79%
% shares held by hedge funds	8%
% shares held by insiders	0.69%
Short interest	2.99%
Days to cover short interest	3.26
52 week high	\$92.10
52-week low	\$46.39
Volatility	31.50%

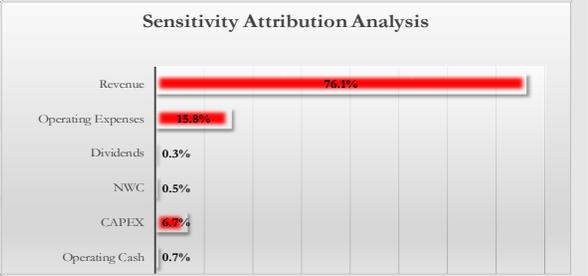
Past Earning Surprises	
Quarter ending	Revenue
6/30/2016	5.70%
9/30/2016	3.06%
12/31/2016	1.65%
3/31/2017	-1.07%
6/30/2017	5.18%
Mean	2.91%
Standard error	1.2%

EBITDA	
6/30/2016	-5.95%
9/30/2016	-4.34%
12/31/2016	-2.65%
3/31/2017	-8.11%
6/30/2017	4.50%
Mean	-3.29%
Standard error	2.2%



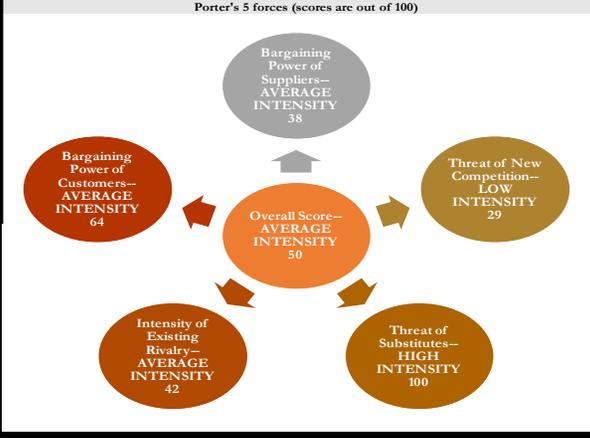
Management	
Wasserman, Yuval	Chief Executive Officer, Pre
Liguori, Thomas	Chief Financial Officer, Chi
McGimpsey, Thomas	Executive Vice President, Ge
Trupkiewicz, William	Vice President and Corporate
	0 0
	0 0

Total compensations growth	
33.62% per annum over 5y	8.68% per annum over 5y
-22.5% per annum over 1y	93.94% per annum over 1y
21.84% per annum over 5y	8.68% per annum over 5y
-1.19% per annum over 2y	51.99% per annum over 2y
N/M	N/M
N/M	N/M



Profitability	
Return on Capital (GAAP)	50.0%
Operating Margin	23%
Revenue/Capital (GAAP)	2.19
ROE (GAAP)	27.9%
Net margin	22.7%
Revenue/Book Value (GAAP)	1.23

Peers	
FormFactor, Inc.	
Trendline, Inc.	
KLA-Tencor Corporation	
Veeva Instruments Inc.	
Brooks Automation, Inc.	
Asxelis Technologies, Inc.	
MKS Instruments, Inc.	
Nanonometrics Incorporated	



Period	Revenue Growth Forecast
Base Year	38%
6/30/2018	21%
6/30/2019	12%
6/30/2020	11%
6/30/2021	10%
6/30/2022	9%
6/30/2023	8%
6/30/2024	7%
6/30/2025	6%
6/30/2026	5%
6/30/2027	4%
Continuing Period	4%

Valuation	
NOPAT Margin Forecast	26.8%
Revenue to Capital Forecast	0.76
	25.5%
	0.83
	26.6%
	0.88
	27.2%
	0.93
	27.8%
	0.99
	28.2%
	1.04
	28.7%
	1.09
	29.8%
	1.13
	30.2%
	1.15
	30.5%
	1.17
	30.9%
	1.18
	31.2%
	1.20

Period	Return on Invested Capital Forecast
Base Year	20.3%
6/30/2018	21.1%
6/30/2019	23.5%
6/30/2020	25.4%
6/30/2021	27.6%
6/30/2022	29.5%
6/30/2023	31.2%
6/30/2024	33.7%
6/30/2025	34.8%
6/30/2026	35.7%
6/30/2027	36.6%
Continuing Period	37.4%

Period	WACC Forecast	Price per share Forecast
Base Year	9.5%	\$88.57
6/30/2018	9.8%	\$98.45
6/30/2019	9.8%	\$108.31
6/30/2020	9.7%	\$118.68
6/30/2021	9.8%	\$129.57
6/30/2022	9.8%	\$140.97
6/30/2023	9.8%	\$152.84
6/30/2024	9.8%	\$165.15
6/30/2025	9.9%	\$177.89
6/30/2026	9.9%	\$191.01
6/30/2027	9.9%	\$204.47
Continuing Period	9.9%	