

The background is a collage of images related to energy and technology. On the left, there is a close-up of a person wearing safety glasses and a face mask, looking at a circuit board. In the center, there are two tall, lattice-structured towers, likely power transmission towers. The overall color scheme is blue and white, with green and orange accents at the bottom and top right.

Advanced Energy (AEIS) 2019 Analyst Day

DECEMBER 16, 2019

SAFE HARBOR STATEMENT

The company's guidance with respect to anticipated financial results for the fourth quarter ending December 31, 2019, potential future growth and profitability, our future business mix, expectations regarding future market trends and the company's future performance within specific markets, the anticipated closing of the acquisition of Artesyn Embedded Power and other statements herein or made on the above-announced conference call that are not historical information are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Forward-looking statements are subject to known and unknown risks and uncertainties that could cause actual results to differ materially from those expressed or implied by such statements. Such risks and uncertainties include, but are not limited to: (a) the effects of global macroeconomic conditions upon demand for our products and services; (b) the volatility and cyclicity of the industries the company serves, particularly the semiconductor industry; (c) delays in capital spending by end-users in our served markets; (d) the risks and uncertainties related to the acquisition and integration of Artesyn Embedded Power; (e) the accuracy of the company's estimates related to fulfilling solar inverter product warranty and post-warranty obligations; (f) the company's ability to realize its plan to avoid additional costs after the solar inverter wind-down; (g) the accuracy of the company's assumptions on which its financial statement projections are based; (h) the impact of product price changes, which may result from a variety of factors; (i) the timing of orders received from customers; (j) the company's ability to realize benefits from cost improvement efforts including avoided costs, restructuring plans and inorganic growth; (k) the company's ability to obtain in a timely manner the materials necessary to manufacture its products; (l) unanticipated changes to management's estimates, reserves or allowances; (m) changes and adjustments to the tax expense and benefits related to the U.S. tax reform that was enacted in late 2017; and (n) the effects of U.S. government trade and export restrictions, Chinese retaliatory trade actions, and other governmental action related to tariffs upon the demand for our, and our customers', products and services and the U.S. economy. These and other risks are described in Advanced Energy's Form 10 K, Forms 10 Q and other reports and statements filed with the Securities and Exchange Commission (the "SEC"). These reports and statements are available on the SEC's website at www.sec.gov. Copies may also be obtained from Advanced Energy's investor relations page at ir.advanced-energy.com or by contacting Advanced Energy's investor relations at 970 407 6555. Forward-looking statements are made and based on information available to the company on the date of this press release. Aspirational goals and targets discussed on the conference call or in the presentation materials should not be interpreted in any respect as guidance. The company assumes no obligation to update the information in this press release.

PRESENTERS TODAY



Yuval Wasserman
President and
Chief Executive Officer



Isabel Yang
Senior Vice President
and Chief Technology Officer



Peter Gillespie
Vice President,
Semiconductor Solutions



Dana Huth
Chief Revenue Officer,
Embedded Power



Neil Brinker
Executive Vice President
and Chief Operating Officer



Paul Oldham
Executive Vice President
and Chief Financial Officer

AGENDA



| Presenter | Topic |
|-----------------|----------------------------------------------------|
| Yuval Wasserman | Powering the 4 th Industrial Revolution |
| Isabel Yang | Innovation |
| Peter Gillespie | Advanced Power Products |
| | Break |
| Dana Huth | Embedded Power Products |
| Neil Brinker | Artesyn Integration |
| Paul Oldham | Value Creation |
| All | Q&A |

A collage of images including a person in a surgical mask and cap, a microchip, and two communication towers, set against a geometric background of blue and white triangles.

Powering the 4th Industrial Revolution

YUVAL WASSERMAN | DECEMBER 16, 2019

POWERING THE 4TH INDUSTRIAL REVOLUTION

- Delivering on our strategic plans over the last 5 years
- Leading in precision power conversion, measurement and control
- Growing share and content across our markets
- Expanding market presence through inorganic investments
- Accelerating earnings growth and Return on Invested Capital

AE 2020 AND BEYOND

Lead the world in the application of advanced electrical energy conversion to improve lives and to create value for our global stakeholders.

We will do this through science-based innovation to create sustainable energy solutions and by delighting our customers, empowering our employees, supporting our communities and providing long-term value to our shareholders.



MISSION

Enable customer innovation by delivering highly-engineered, application-critical, precision power solutions



VISION

Drive sustainable growth as the recognized world leader and trusted partner in precision power technology and applications

AE'S KEY ATTRIBUTES

Pure Play Power Conversion Leader

Highly engineered solutions focused on power electronics

Enabling mission-critical applications

Delivering best-in-class technology, value and performance

Leading in customer intimacy, collaboration and support

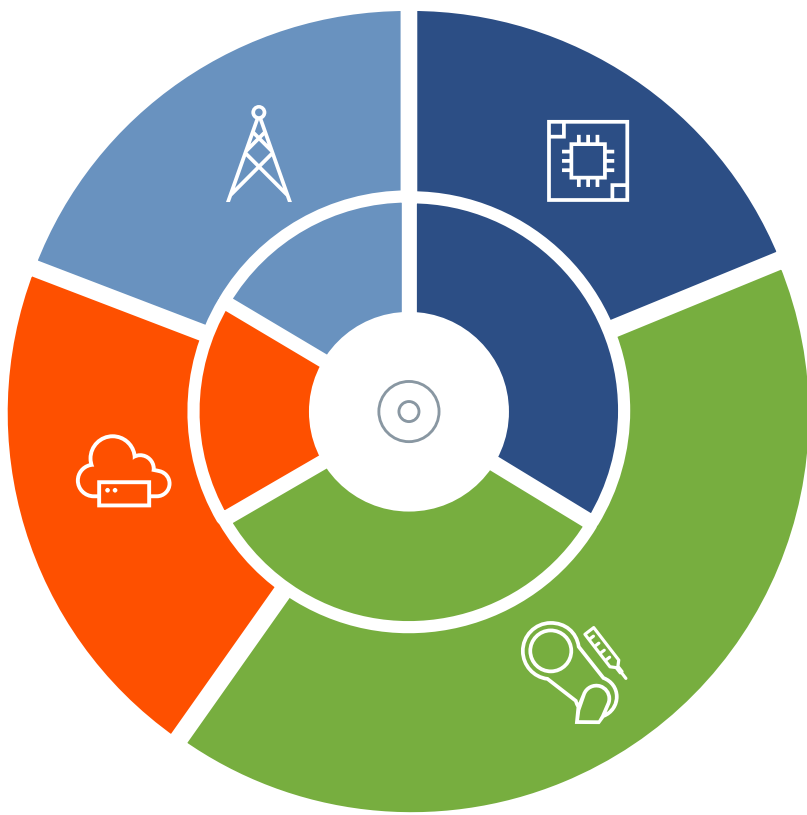
Leverage differentiated capabilities and operational excellence

Best in peer financial performance and value creation

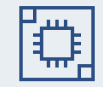
THE 4TH INDUSTRIAL REVOLUTION IS HERE



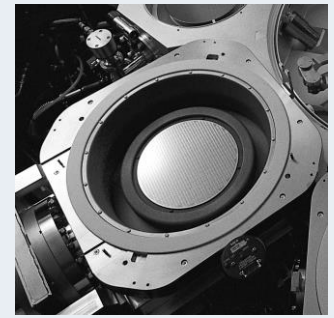
ADDRESSING CRITICAL MARKETS IN THE DATA ECONOMY



Combined SAM of **\$9.0 billion**⁽¹⁾
 Pro Forma 2019 Projected Revenues⁽²⁾



SEMICONDUCTOR EQUIPMENT
\$1.7 billion



Etch, Deposition, Thermal, Ion Implant, Epi, ECD, Inspection & Metrology, Semi ATE, Advanced Packaging



INDUSTRIAL & MEDICAL
\$3.7 billion



Medical, Life Sciences, Analytical Instruments, Test & Measurement, Material Processing, Thermal Processing, Motion Control, Robotics, Horticulture



DATA CENTER COMPUTING
\$1.9 billion



Hyperscale, Data Center, Cloud & Edge Computing, Enterprise Server & Storage Systems



TELECOM & NETWORKING
\$1.7 billion



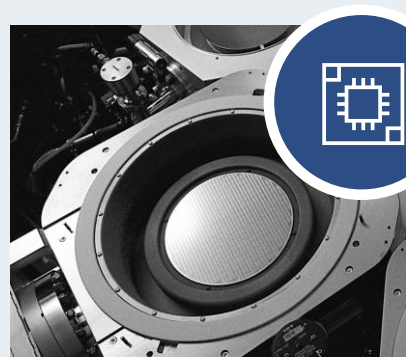
Base Stations, Tower Radio, 4G LTE & 5G Cellular Infrastructure, Enterprise Networking, Wireless & Wireline Communication

(1) Source: IHS Markit Power Supply Market Report, August 2019 and AE estimates; note: Semiconductor Equipment SAM is based on mid-cycle WFE, other markets are based on 2019 estimates
 (2) Pro Forma 2019 revenues based on the mid-point of Q4'19 guidance

4IR DRIVES GROWTH ACROSS OUR 4 VERTICALS

DATA ECONOMY:

Data,
Connectivity,
Digitization,
Smart Everything



SEMICONDUCTOR EQUIPMENT

- Increased device complexity
- New materials and processes enable scaling
- 3D architecture and new memory devices
- Power enables process technology



INDUSTRIAL & MEDICAL

- Industry 4.0 and IIoT
- Connected devices, big data analytics, human machine interfacing
- Demand for zero unscheduled failure in critical applications
- Increased precision and power controls



DATA CENTER COMPUTING

- Acceleration of data generation and use
- Evolution of hyperscale
- Growing cloud adoption across enterprise IT
- Increased workload driven by AI & ML
- Power cost and efficiency increasingly important



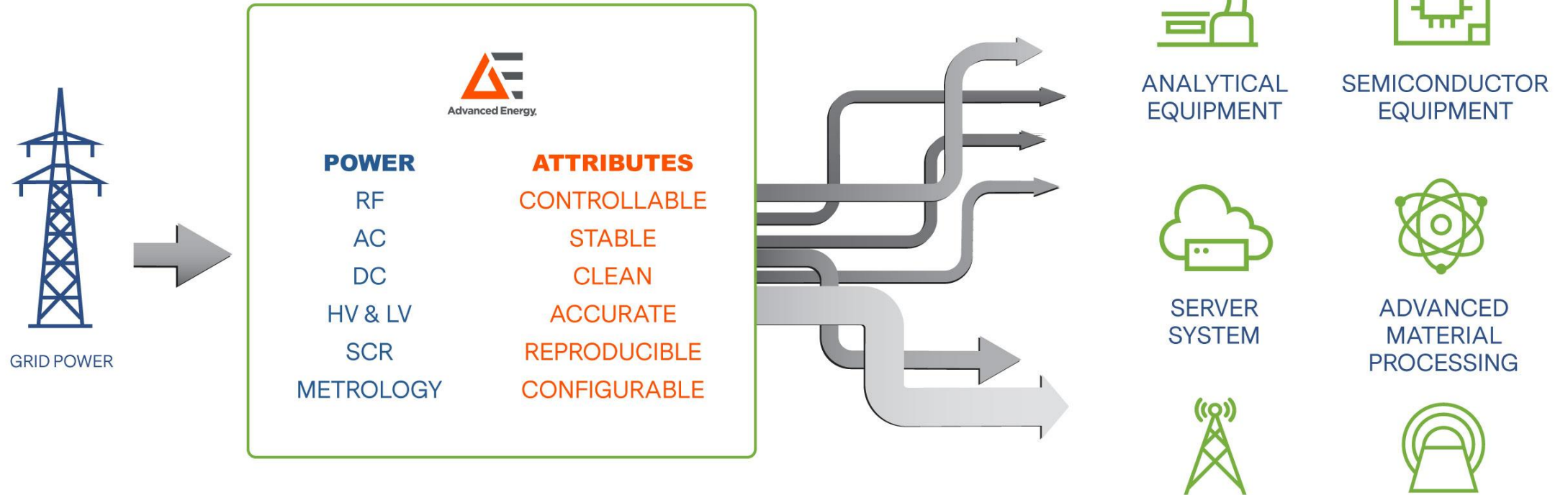
TELECOM & NETWORKING

- 5G delivering up to 100X faster speed than 4G/LTE
- Connectivity as a key enabler for autonomous things
- Massively connected IoT devices and network
- Increased complexity and power density

ORGANIZED TO PURSUE OPPORTUNITIES CREATED BY THE 4TH INDUSTRIAL REVOLUTION (4IR)

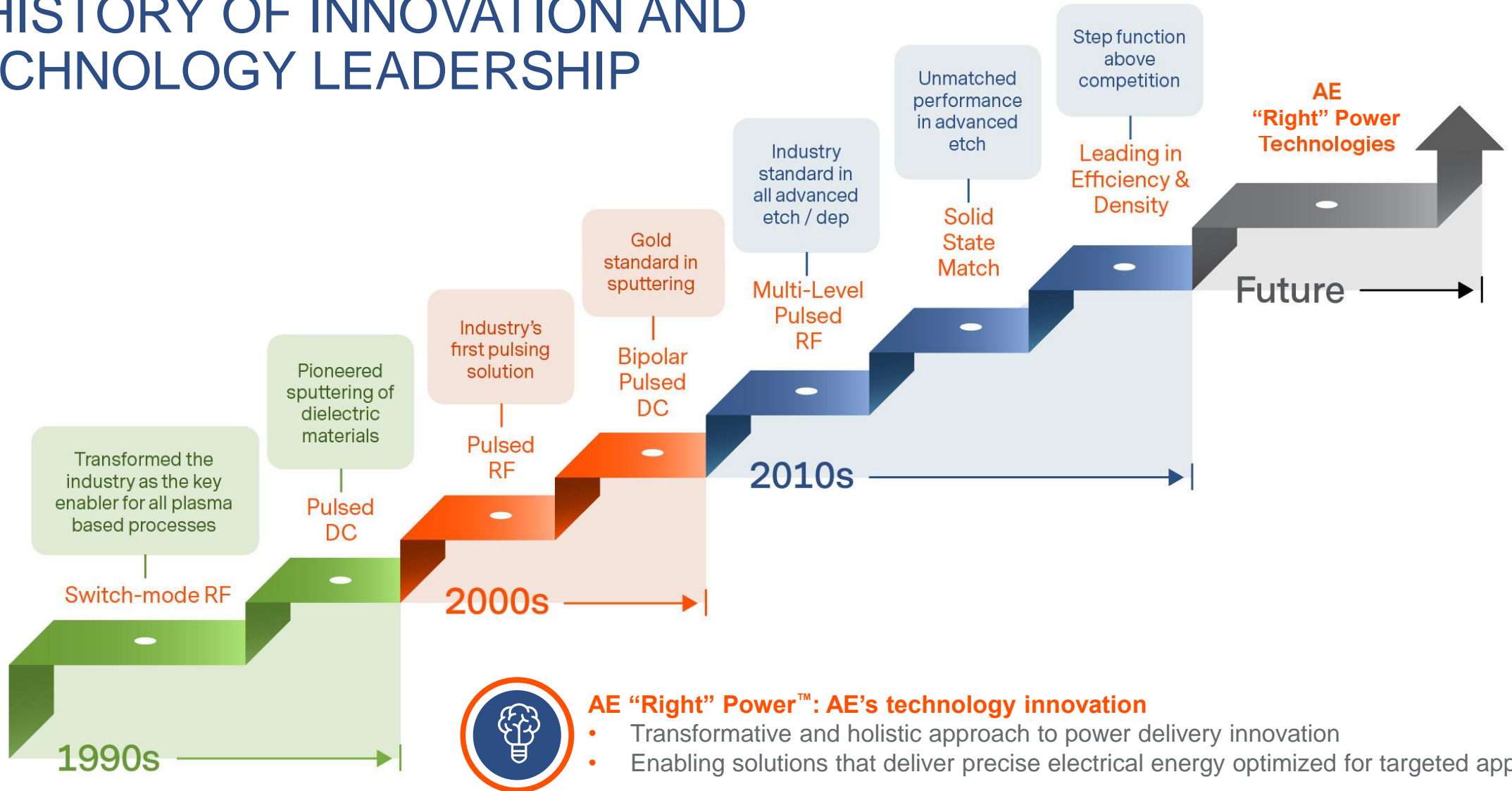


WE ARE THE PURE PLAY POWER LEADER



Leader in precision power conversion and control with wide range of technologies, products and applications

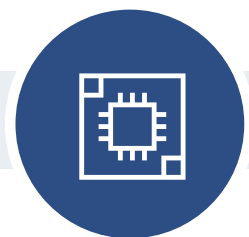
A HISTORY OF INNOVATION AND TECHNOLOGY LEADERSHIP



AE "Right" Power™: AE's technology innovation

- Transformative and holistic approach to power delivery innovation
- Enabling solutions that deliver precise electrical energy optimized for targeted applications

LEADING MARKET POSITIONS ACROSS OUR VERTICALS



SEMICONDUCTOR EQUIPMENT

SAM = \$1.7 billion

Top 5 Players⁽¹⁾:

-  **Advanced Energy**

- Daihen Corp

- MKS Instruments

- Comet Group


- TRUMPF Hüttinger



INDUSTRIAL & MEDICAL

SAM = \$3.7 billion

Top 5 Players⁽¹⁾:

-  TDK-Lambda

- Advanced Energy**

- MEAN WELL

- Delta Electronics


- Cosel



DATA CENTER COMPUTING

SAM = \$1.9 billion

Top 5 Players⁽¹⁾:

-  Delta Electronics

- Advanced Energy**

- Lite-On Technology

- Vicor Corp


- Acbel Polytech



TELECOM & NETWORKING

SAM = \$1.7 billion

Top 5 Players⁽¹⁾:

-  Delta Electronics

- Advanced Energy**

- Murata Manufacturing

- Lite-On Technology

- ABB



A FULL RANGE OF PRODUCTS

Advanced Power Products

Deliver precise power, control and measurement of processes



RF: Leading RF plasma control for the most advanced processing



DC: Innovative DC products enable complex semiconductor and advanced materials processes



RPS: Capable of extremely low power plasma processes



High Voltage System: Ion implantation, electron beam inspection and wafer clamping



Photonics: Best-in-class measurement of critical thermal processes



SCR Power Controller: Enables precise and reliable power control for demanding thermal processes

Embedded Power Products

Provide stable and efficient power for mission critical applications



Power System: Customized system solutions with integrated software



Power Shelves: Industry leading efficiency and density solution for data center power



AC-DC: Highly reliability, high efficiency low voltage power supplies



Configurable: Modular and flexible for maximum customization

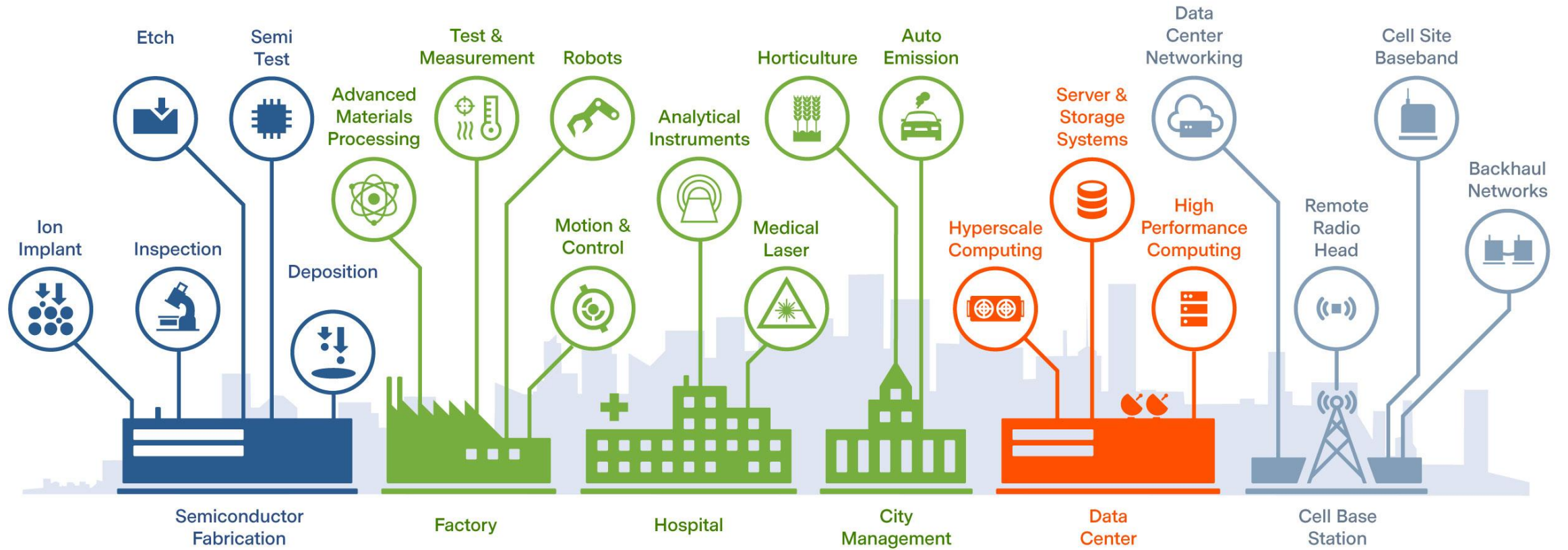


DC-DC: Wide range of board-mounted solutions covering industry standard form factors



HVDC: High-voltage DC for mission-critical applications in standard and custom form factors

REACHING MANY APPLICATIONS



TARGETED GROWTH STRATEGY



GROW SHARE ACROSS MISSION CRITICAL, PRECISION POWER VERTICALS

- Expand content in semiconductor
- Expand in hyperscale data centers
- Capitalize on 5G migration
- Broaden industrial and medical footprint



INVEST IN **INNOVATION** AND TECHNOLOGY LEADERSHIP

- Expand RF leadership
- “Right” Power innovation
- Extend leadership in power efficiency and density
- Drive Industry 4.0 adoption



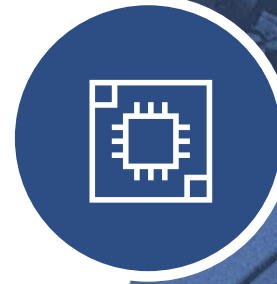
LEVERAGE STRONG FINANCIALS AND INCREASED SCALE TO CAPITALIZE ON **NEW OPPORTUNITIES**

- Cross selling
- New market verticals
- New joint product offerings
- Continue to pursue inorganic growth targets

SEMICONDUCTOR EQUIPMENT

- Process power (RF) is the next litho – leverage leadership
- Customized power delivery as a competitive advantage
- Broad portfolio of offerings for plasma process and beyond
- New products drive SAM expansion
- A \$1.7 billion SAM⁽¹⁾
- Growth target applications:

- Advanced etch
- Remote plasma source (RPS)
- New thin films deposition (PVD, CVD, ALD)
- Electrostatic chuck
- Semiconductor ATE





INDUSTRIAL & MEDICAL

- Advanced materials processing
- Intelligent and connected power (PowerInsight™)
- New power solutions for medical applications
- A \$3.7 billion SAM⁽¹⁾
- Growth target applications:
 - Advanced materials processing (PVD, CVD)
 - Medical diagnostic & treatment (RF Ablation)
 - Test and measurement
 - Motion and control
 - Robotics

(1) Source: IHS Markit Power Supply Market Report, August 2019 and AE estimates, based on 2019 data

DATA CENTER COMPUTING



- Hyperscale data center growth opportunities
- Growing power consumption in new applications such as AI
- Need for high efficiency and density: AE's leadership
- A \$1.9 billion SAM⁽¹⁾
- Growth target applications:
 - Hyperscale rack and shelf power
 - Edge data centers
 - ODM server and storage applications
 - High performance computing
 - Next-generation server and storage systems



TELECOM & NETWORKING

- 5G enables new opportunities in multiple markets
- Strategic relationships at telecom and networking OEMs
- Upgrades to backhaul and enterprise networks
- A \$1.7 billion SAM⁽¹⁾
- Growth target applications:
 - 5G cellular base station
 - Backhaul networks
 - Enterprise networking
 - Data center networking
 - Broadband infrastructure

(1) Source: IHS Markit Power Supply Market Report, August 2019 and AE estimates, based on 2019 data

STRATEGIC INITIATIVE: EARNINGS GROWTH VISION



AE'S EVOLUTION INTO A DIVERSIFIED POWER TECHNOLOGY LEADER

Deployed \$568M adding >\$750M of pro forma revenue⁽¹⁾

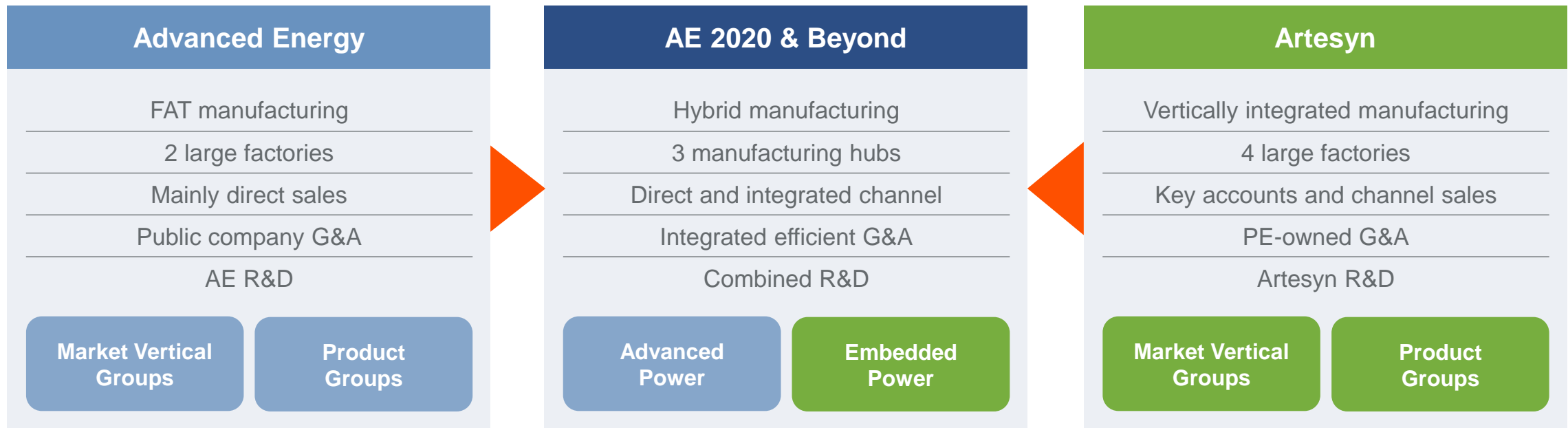
- Expanded our SAM by >4X
- A repeatable model in the large and fragmented power conversion market
- Artesyn integration – executing our synergies targets

NG EPS accretion targets⁽²⁾
 18-24 months: >\$0.80
 Long-term: >\$1.50

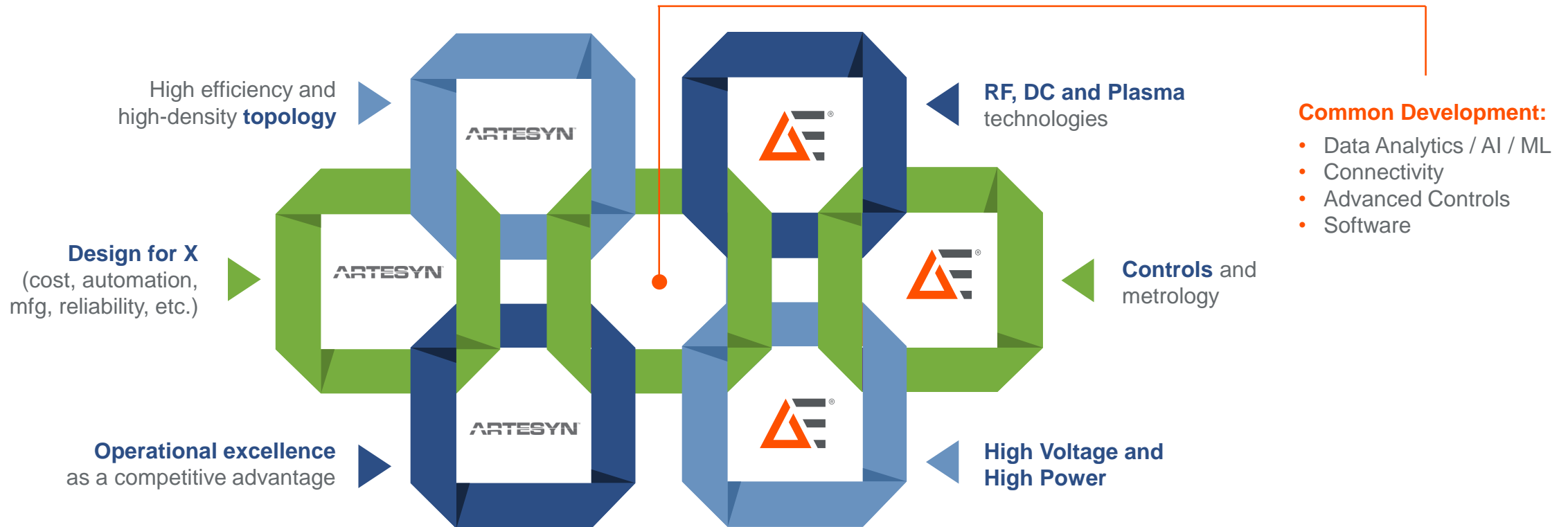


STRATEGIC INITIATIVE: INTEGRATED COMPANY

- Integrated functional organization for efficiency speed and accelerated innovation
- Footprint reduction and sites consolidation
- Increase revenue per employee and per square foot
- Hybrid manufacturing model with vertical integration as core competency
- Synergies through integrated supply chains



COMPLEMENTARY CORE COMPETENCIES FOR NEW PRODUCTS



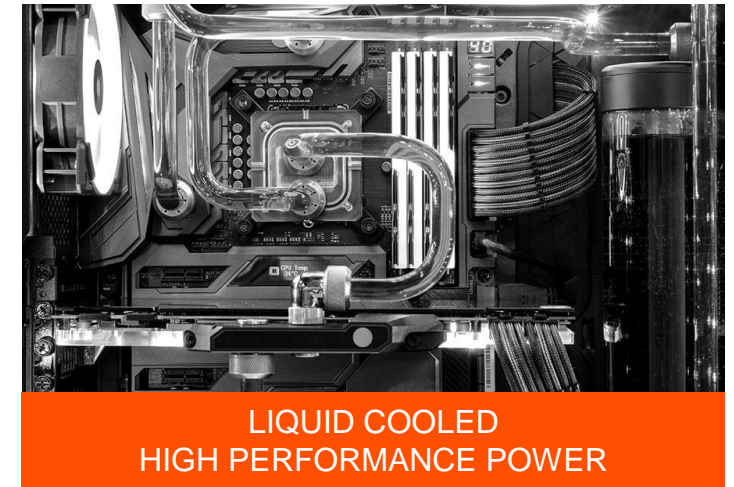
REVENUE SYNERGY OPPORTUNITIES



- \$170 million WFE auxiliary power market⁽¹⁾
- Leverage AE's global semiconductor sales channels
- Integrated solutions (HV + LV)
- In-sourcing



- \$600 million medical RF system SAM⁽²⁾
- Applications across RF ablation, cosmetic and orthopedic RF



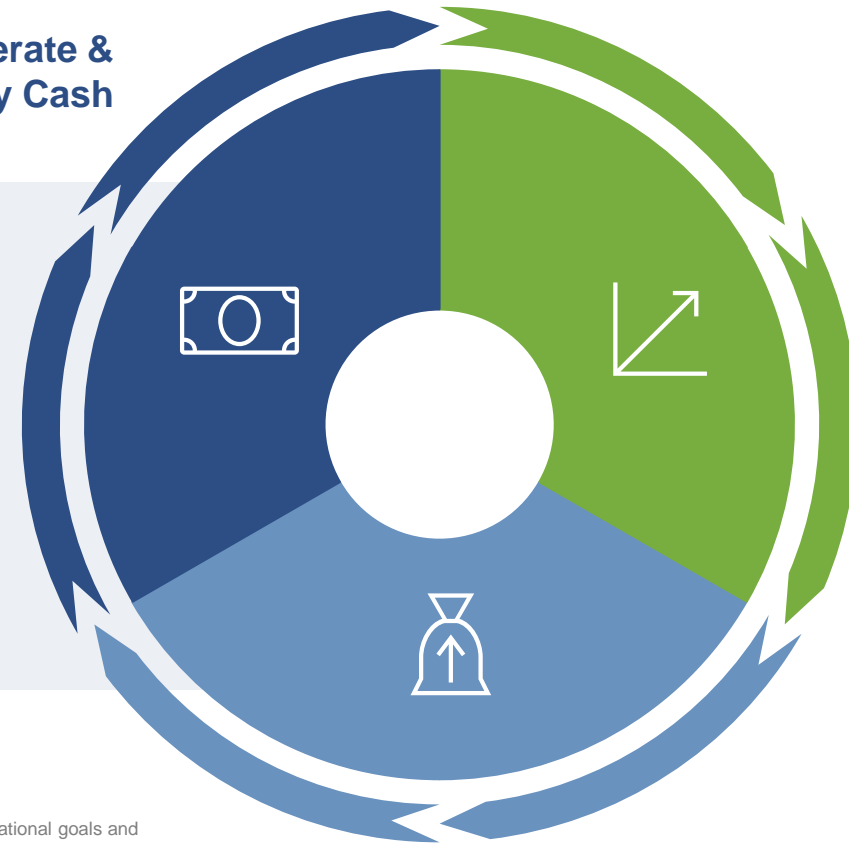
- \$100 million high performance power SAM⁽¹⁾
- Increasingly workloads drive cooling demands

LONG-TERM ASPIRATIONAL GOALS

Aspirational Goals⁽¹⁾ :

- Revenue: **> \$1.5B**
- Non-GAAP EPS⁽²⁾ : **> \$6.50**
- ROIC⁽³⁾ : **> 23%**

Generate &
Deploy Cash



Grow &
Diversify

Drive Strong
Profitability

(1) Please note that hypothetical scenarios regarding revenue growth, EBITDA, EPS, (GAAP or non-GAAP), ROIC, cash generation, acquisitions, aspirational goals and targets and similar statements illustrate various possible outcomes of our different strategies if they are successful. These hypothetical scenarios and illustrations should not be treated as forecasts or projections or financial guidance. We cannot assure you that we will be able to accomplish any of these goals, metrics or opportunities at any point in the future (if at all), all of which are subject to significant risks and uncertainties. Long-term targets generally reflect a 3-4 year time frame, depending on the timing of the semi recovery.

(2) Refer to the non-GAAP reconciliation for additional detail.

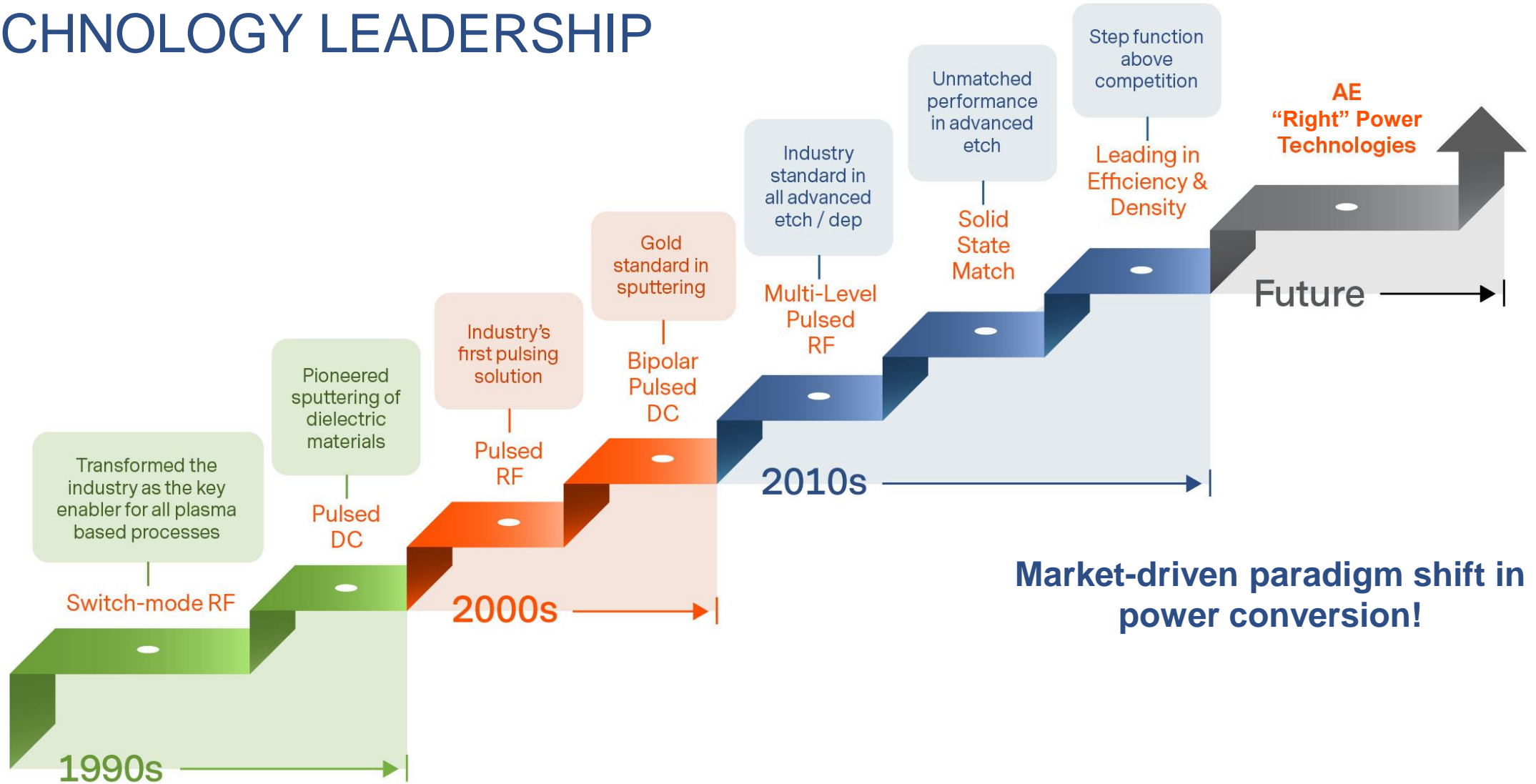
(3) ROIC calculated as Non-GAAP Operating Income After Tax divided by Invested Capital, which is defined as Total Assets less Cash, Payables, Accrued Expenses

A collage of images including a person in a lab coat and mask, a microchip, and communication towers, set against a geometric background of blue and green shapes.

Technology Leadership Through Innovation

ISABEL YANG | DECEMBER 16, 2019

A HISTORY OF INNOVATION AND TECHNOLOGY LEADERSHIP



Market-driven paradigm shift in power conversion!

FROM JUST MORE POWER TO “RIGHT” POWER: CHANGING THE GAME

An analogy:
Which power delivery
architecture results in
faster acceleration?



588HP, 0-60mph in
2.4 sec

VS



760HP, 0-60mph in
3.3 sec



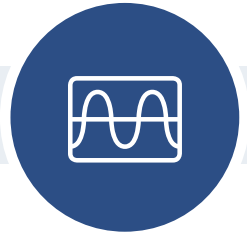
Increasing power alone
does not solve the next-
generation challenges



AE “Right” Power: AE’s technology innovation

- Transformative and holistic approach to power delivery innovation
- Enabling solutions that deliver precise electrical energy optimized for targeted applications

INNOVATION DRIVES NEW ADVANCED POWER SOLUTIONS



RF Power Delivery

Industry-leading control systems

- Ultra-fast tuning while pulsing
- RF measurement and control
- Distributed RF architecture
- Dual and triple frequency control



Remote Plasma Source

Most robust chamber architecture

- High level of sustained dissociation
- Longest chamber life with advanced materials
- Industry-leading total cost of ownership



Beyond RF Power

Ground-breaking technologies for atomic level process control

- Ion energy control (yield)
- Power for ULE plasma deposition
- HV power for thin film processing
- LE power for isotropic deposition



PowerInsight

IIoT, AI/ML, big data analytics

- Predictive analytics
- Self diagnostics & calibration
- Fault detection classification
- Embedded passive data collection for failure analysis

EMBEDDED POWER TECHNOLOGY LEADERSHIP



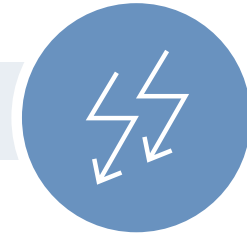
Industry-leading Power Conversion Efficiency

- Multi phase high efficiency topologies
- GaN and SiC devices
- New digital control schemes



Configurable Power Supplies

- Platforms capable of 1,000s of configurations
- Enable maximum flexibility
- Expanded connectivity



Power Density Leadership

- 4X power density increase in 10 years
- Integrated magnetics
- Advanced thermal modelling



Ruggedized for Harsh Environments

- High reliability in demanding outdoor applications
- Extreme temperature range
- Lightning/surge protection

ACCELERATING INNOVATION



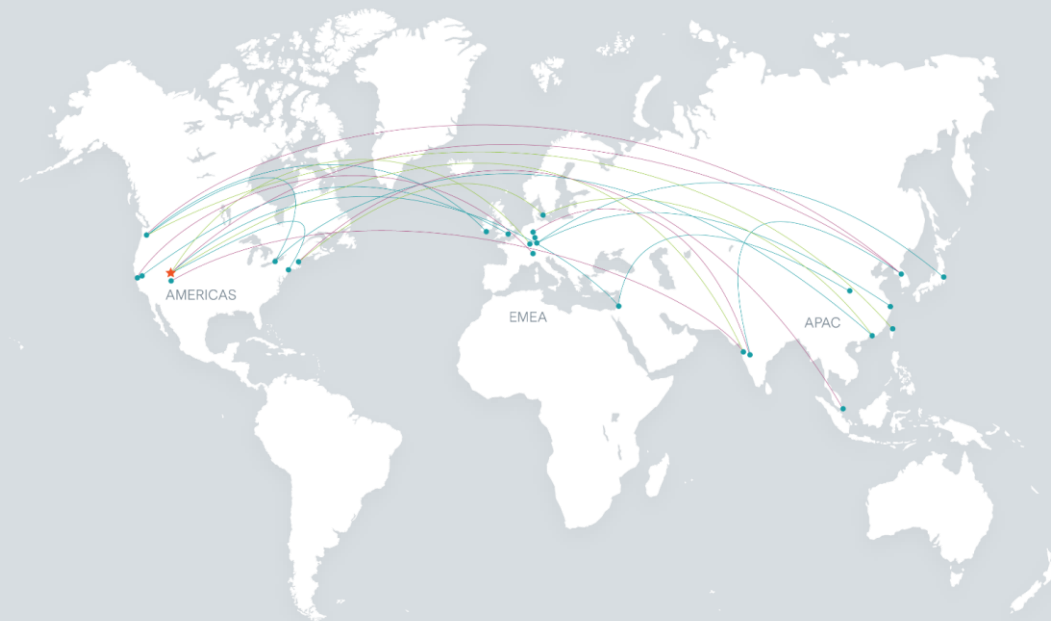
Academic and Commercial Partnerships



- Leverage global and local research funding
- Collaborating with start-ups
- Attract and develop scientific talents
- IP protection enabling freedom of action



13 Global Design Centers



OUTCOME OF INNOVATION

POWERINSIGHT™


by Advanced Energy

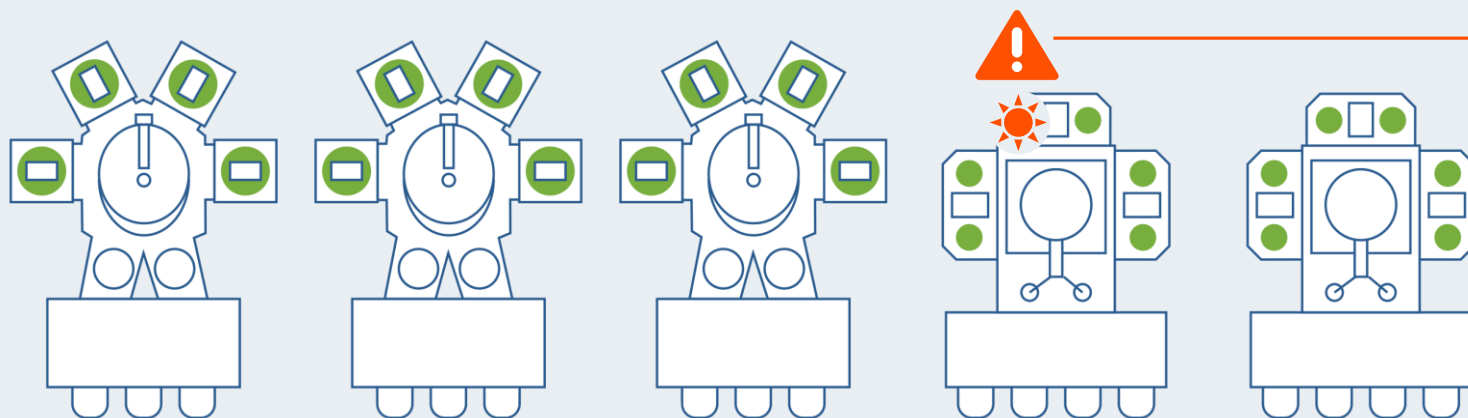
Bringing Actionable Intelligence and Insights to
Critical Power Delivery Systems

POWERINSIGHT: INDUSTRY-FIRST TECHNOLOGY TO ENABLE 4IR

SMART FACTORY with OEM Equipment (Smart Hubs)

 AE Sub-Systems (Smart Nodes)

 Detection in Sub-System



PowerInsight:

- Anomaly detection
- Predictive analytics
- Real-time diagnostics



Enriched comprehensive power delivery data



Advanced Analytics

- Machine learning
- Modern data science



Actionable insights

- Enhances FDC
- Predictive maintenance to improve TCO
- Advanced diagnostics to improve yield

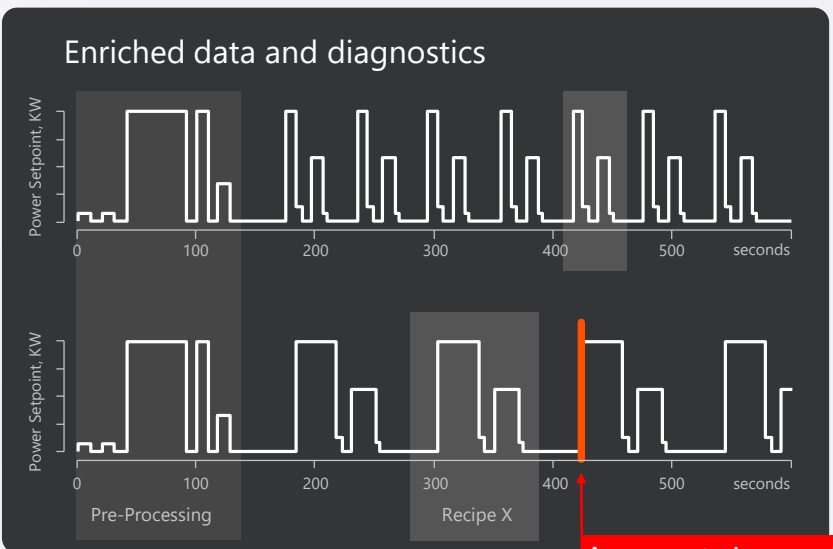
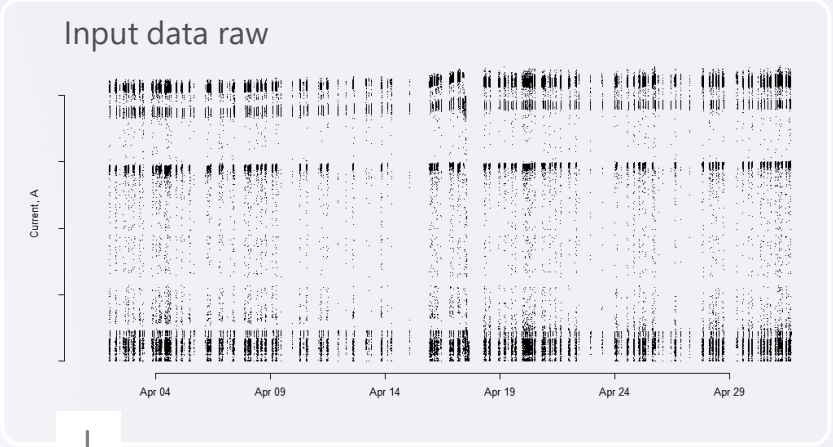
AE Power Source



AE Bias Source

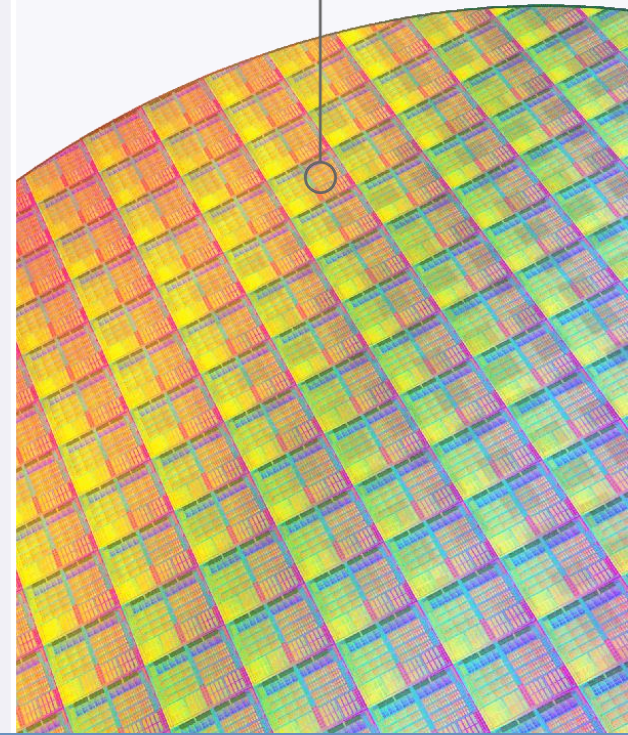
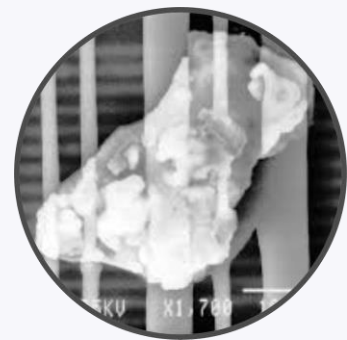


USE CASE 1: ARC DETECTION



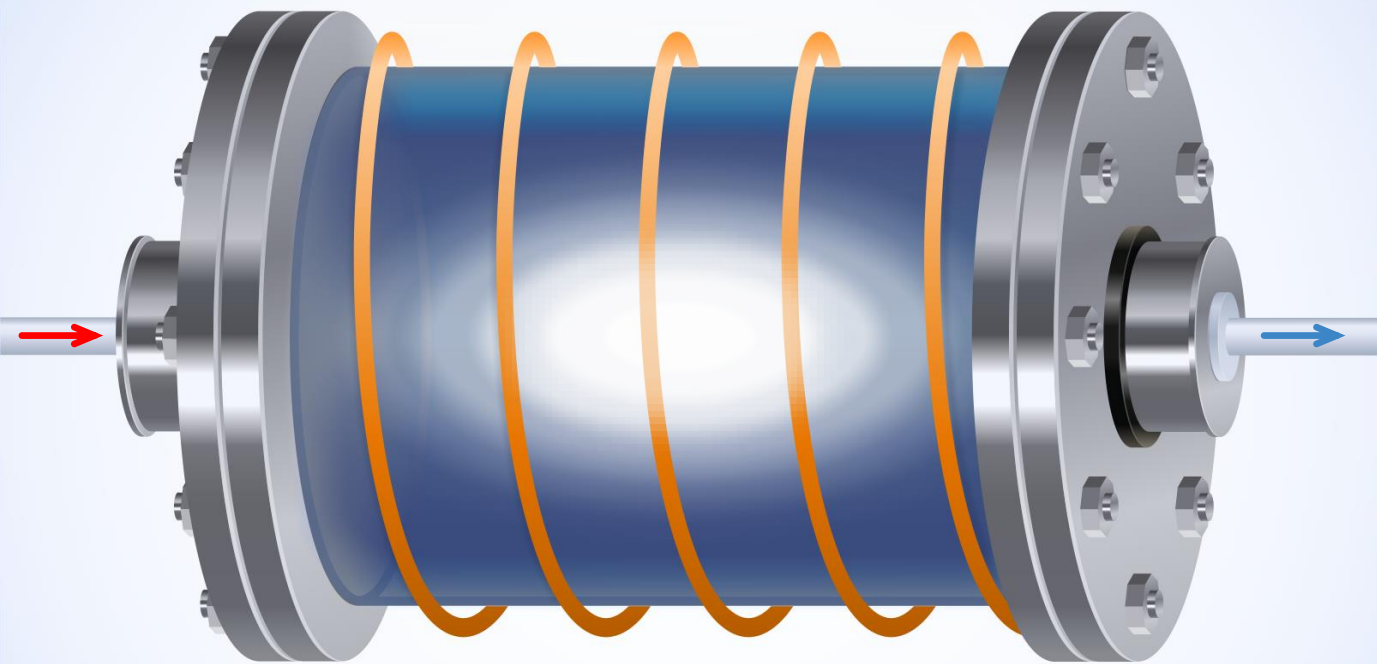
Arc event observed on 3rd wafer

Defects on wafer



Process anomaly detection to help improve yield!

USE CASE 2: RPS PREDICTIVE MAINTENANCE



→ Etch Effluent Gas In

Abated Gas Out →

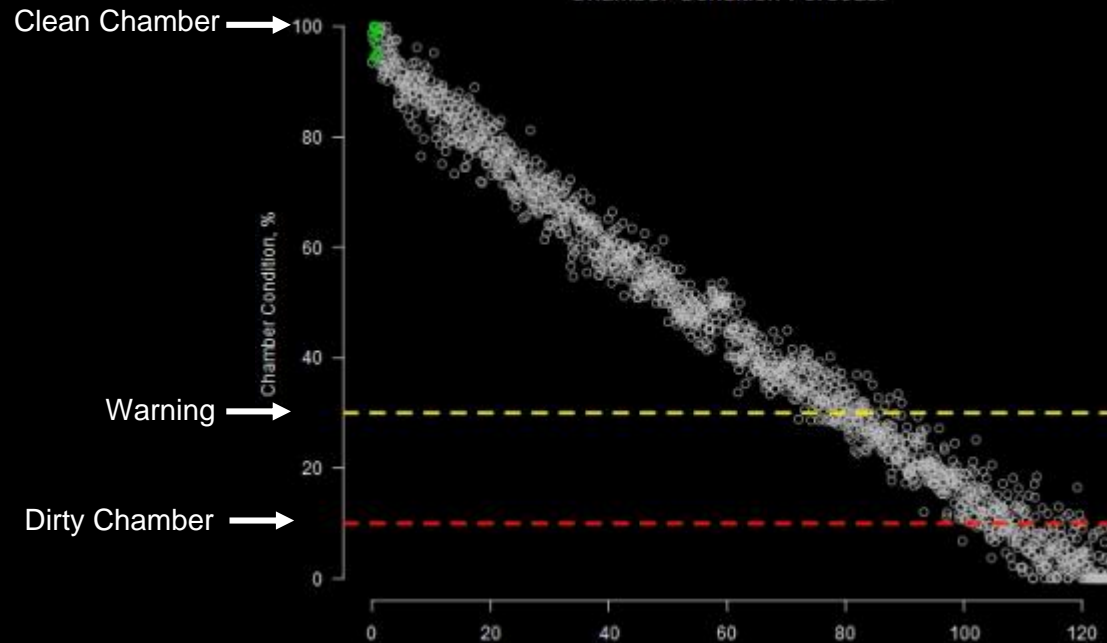
Predictive maintenance to improve TCO!



Chamber Condition Dashboard

| | |
|----------------------|----------------------|
| Chamber condition: | 99 % |
| Today's date: | 2018-08-21 18:13 UTC |
| Replacement date: | 2018-08-28 13:50 UTC |
| Time to replacement: | 6.818 days |
| Operating time | |
| Elapsed: | 1 hour(s) |
| Remaining: | 119 hour(s) |
| Total: | 120 hour(s) |
| Calendar | |
| Start date: | 2018-08-21 16:50 UTC |
| Today's date: | 2018-08-21 18:13 UTC |
| Elapsed time: | 1.375 hours |
| Unit: 053677 | |

Chamber Condition Forecast



POWERINSIGHT™ CREATES SIGNIFICANT VALUE



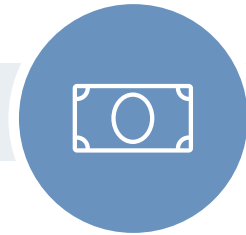
True Differentiation

- First solution for power delivery systems
- Enables machine learning based real-time controls



Customer Intimacy

- Customized for customer's processes
- Deep engagement with customer technology teams



Incremental Revenue

- Applicable to new products and installed base legacy
- Add potential recurring revenue



Enabling 4IR

- Leading the way in IIoT integration with customers smart system or smart hubs
- Enabling advanced features such as self-diagnostics and self-calibration

PowerInsight™ is a key element of AE “Right” Power

LEADING THROUGH INNOVATION


- AE has a rich history of **leading** the power conversion industry with ground-breaking innovation
- From conventional power conversion to “Right” Power, AE is **changing the game**
- AE innovation process is driving a solid **pipeline of innovation** and new technologies
- PowerInsight™ **enables 4IR** with big data analytics and actionable intelligence

A collage background featuring a person in a surgical mask and cap, a microchip, and two power transmission towers.

AE “Right” Power Leads Advanced Power Forward


PETER GILLESPIE | DECEMBER 16, 2019

AE POWER ENABLES THE DATA ECONOMY



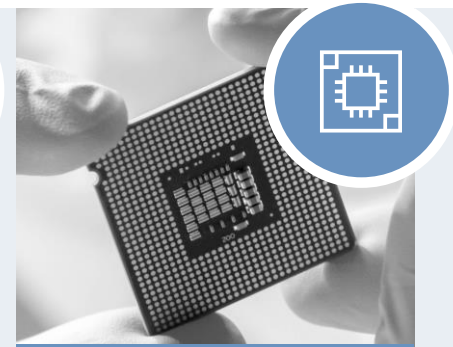
PROCESS POWER

Market Size: **\$1.7B**



SEMICONDUCTOR EQUIPMENT

Market Size: **\$50B**



SEMICONDUCTOR

Market Size: **\$500B**



ELECTRONICS

Market Size: **\$1.5T**

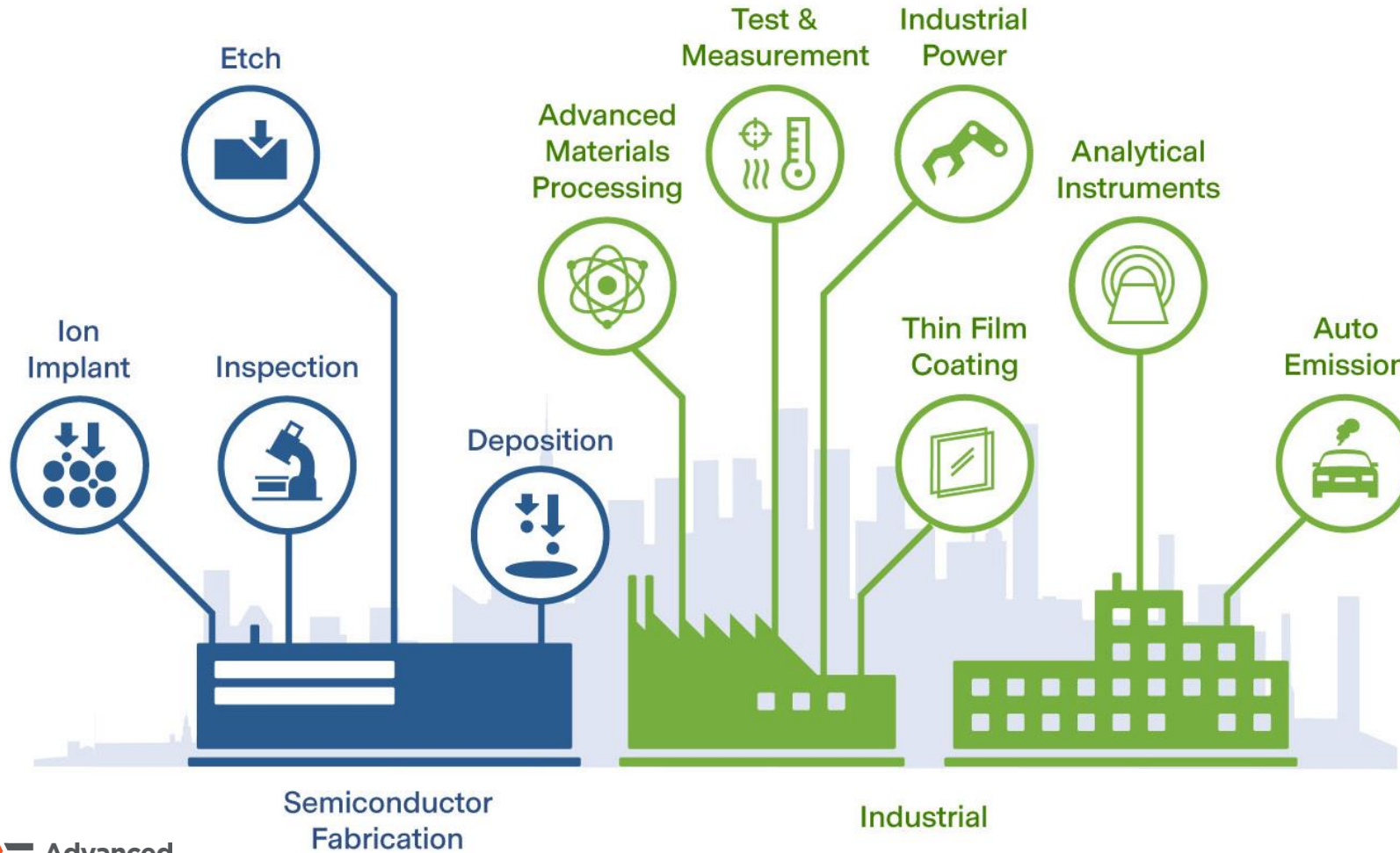


DATA ECONOMY







Market Size: **\$4.0T**



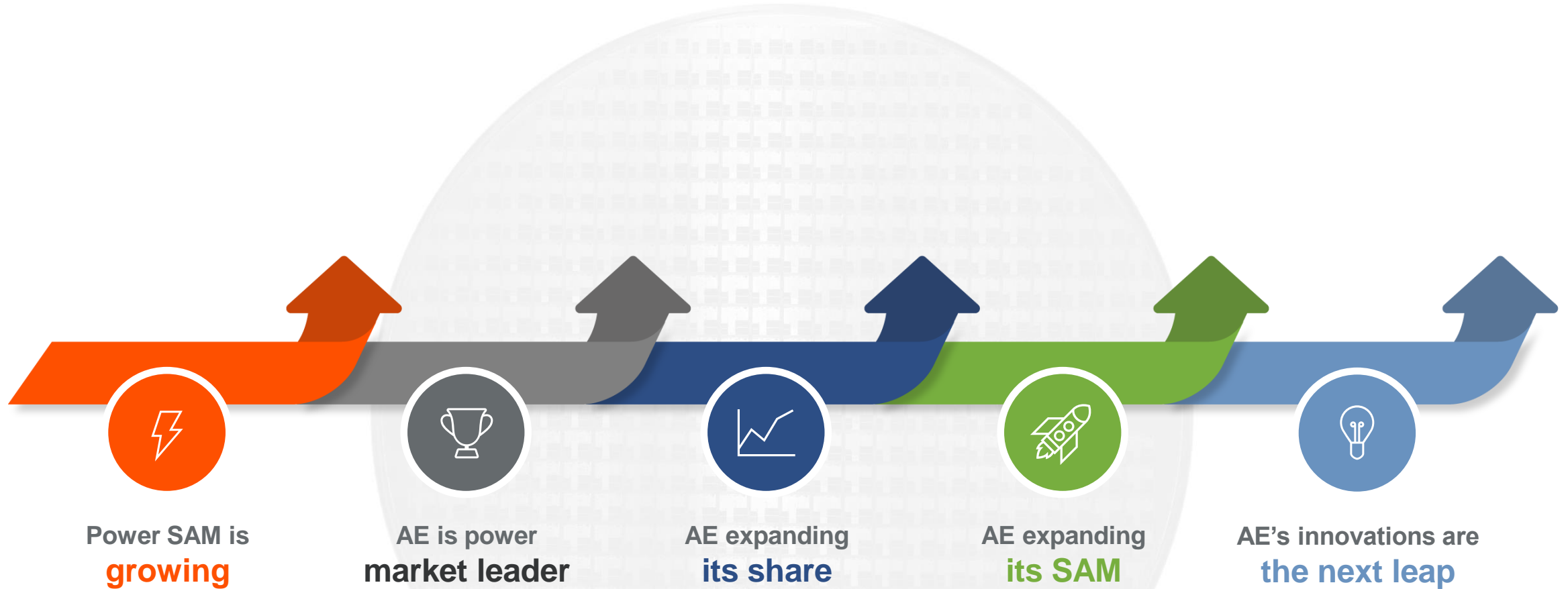
AE ADVANCED POWER PRODUCTS GO BEYOND SEMICONDUCTOR



ADVANCED POWER PRODUCTS

-  RF
-  DC
-  RPS
-  High Voltage System
-  Photonics
-  SCR Power Controller

AE SEMICONDUCTOR POWER



THE POWER MARKET LEADER

PURE-PLAY POWER TECHNOLOGY LEADER

Power innovator with industry-first technologies



- Switch mode
- Power/size/\$
- All digital
- Pulsing (DC & RF)
- Tune-while-pulsing
- **AE “Right” Power**

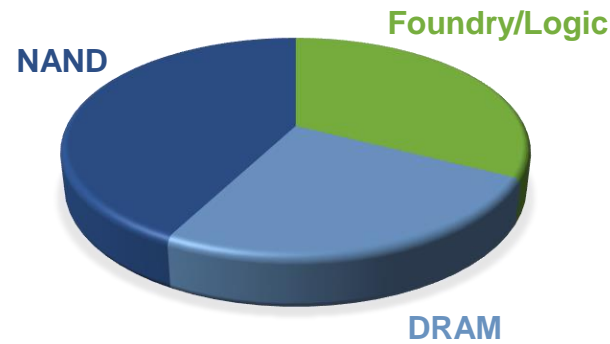
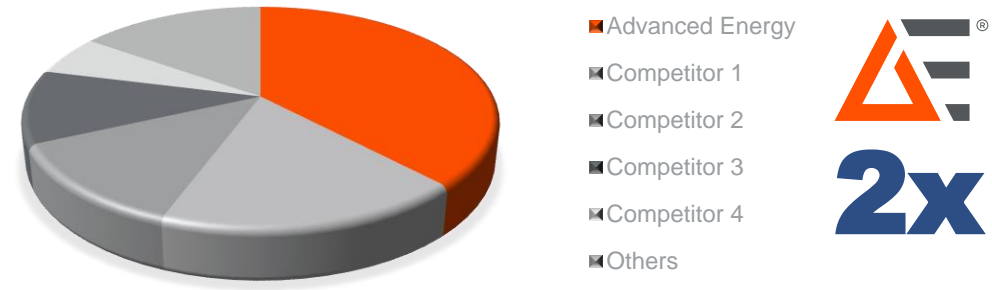
DEEP APPLICATIONS KNOWLEDGE

Customers rely on AE to solve toughest technical challenges

- | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Conductor & Dielectric Etch • Annealing & RTP • Ion Implantation • Electrochemical Deposition | <ul style="list-style-type: none"> • Plasma Enhanced CVD • Plasma Enhanced ALD • Ionized PVD • Epitaxial Deposition | <ul style="list-style-type: none"> • Electrostatic Chuck • Inspection & Metrology • Abatement • Thermal Measurement |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|

MARKET SHARE LEADER

AE’s market share = 2X next competitor⁽¹⁾



BROAD OPPORTUNITIES ACROSS ALL DEVICE TYPES⁽²⁾

Balanced footprint of power products across device types

AE “RIGHT” POWER TAKES CENTER STAGE



Industry is Changing

- Semiconductor applications increasing, content growing
- Stakes are high
- Development cycles are shorter
- Increasing complexity drives diversity of process tool requirements

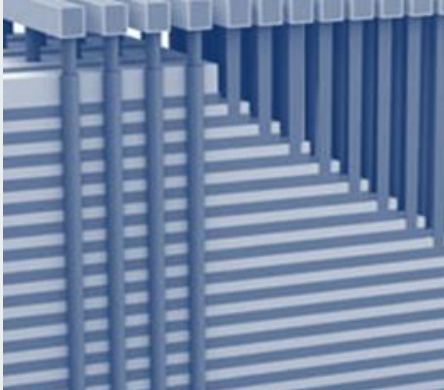
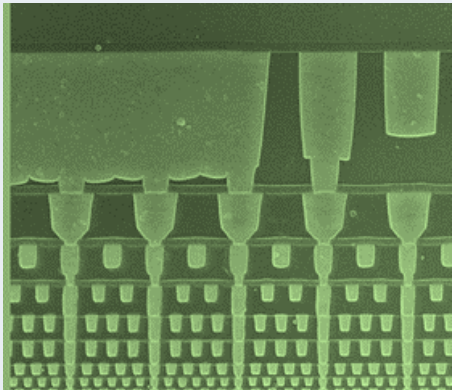
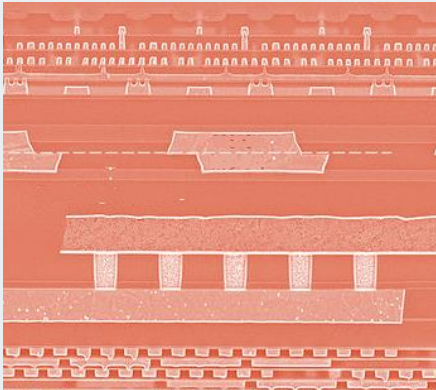
Semiconductor Process Power is Changing

- Process power no longer one-size-fits-all
- Power becoming the new enabler
- Power content per tool increasing

Advanced Energy Powers Ahead

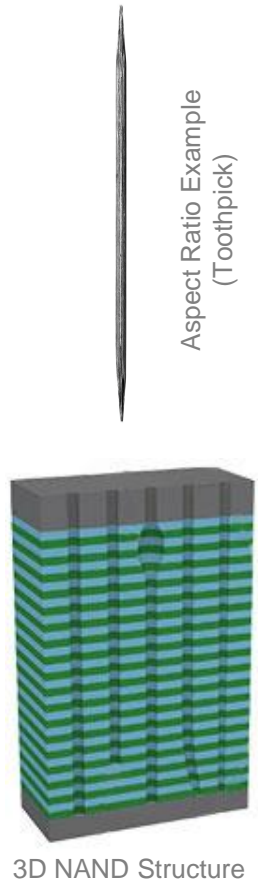
- AE investing to win – and winning to invest

POWER AS THE NEXT ENABLER – THE “NEW LITHOGRAPHY”

| | | | |
|-----------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| |  |  |  |
| Devices | MEMORY | FOUNDRY LOGIC | ADVANCED PACKAGING |
| Challenges | <ul style="list-style-type: none"> • Smaller & deeper holes • 3D stacking | <ul style="list-style-type: none"> • 3D processing • Atomic-scale features | <ul style="list-style-type: none"> • Chiplets • Multi-chip packaging |
| Process Requirements | “Dig deep; flat layers” | “Straight lines; complex shapes” | “High selectivity; low stress” |

AE “Right” Power - Making New Profile Possible

POWER LEADING NODE SOLUTIONS



| Challenges | Power Trends | AE “Right” Power |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>“Dig deep” >70:1 aspect ratios</p> | <p>Etch</p> <ul style="list-style-type: none"> • Tune-while-pulsing • Higher ion energy | <ul style="list-style-type: none"> • Integrated power topology • Power metrology • Control algorithms • Connectivity • Advanced control & pulsing |
| <p>“Flat layers” Layer uniformity in thick stack</p> | | |
| <p>“Straight lines” Sidewalls and holes</p> | <p>Deposition</p> <ul style="list-style-type: none"> • Higher frequency • Shorter processes | <p>Beyond RF</p> <ul style="list-style-type: none"> • Mono-energetic control • Tunable energy profile • Novel energy control • Novel wave shaping |
| <p>“Complex shapes” 3D transistors <10nm</p> | | |
| <p>“High selectivity” Etch only what you want</p> | <p>Fragile films</p> <ul style="list-style-type: none"> • Low power accuracy • Lower frequencies | |
| <p>“Low stress” Flat vs. potato chips</p> | | |

AE First with Solutions for Power – First to Power Solutions

TARGETED GROWTH STRATEGY



GROW SHARE ACROSS MISSION CRITICAL, PRECISION POWER VERTICALS

- Win new etch and dep processes
- Grow share in RF match
- Expand power content



INVEST IN **INNOVATION** AND TECHNOLOGY LEADERSHIP

- Extend RF technology lead
- Innovate with AE “Right” Power
- Lead beyond RF power

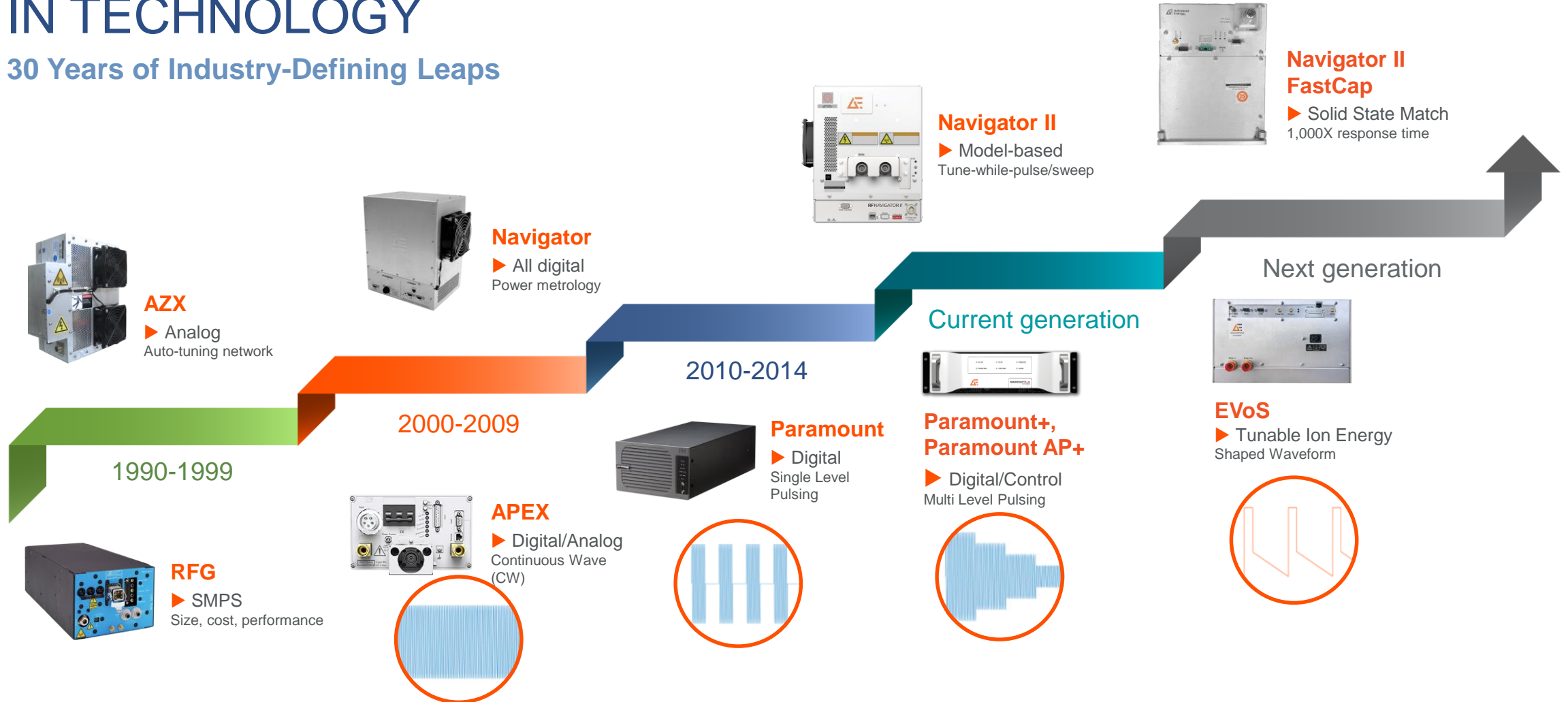


LEVERAGE STRONG FINANCIALS AND INCREASED SCALE TO CAPITALIZE ON **NEW OPPORTUNITIES**

- Remote plasma source chamber clean
- Grow acquired products position
- First in new technology nodes

POWERING STEP CHANGES IN TECHNOLOGY

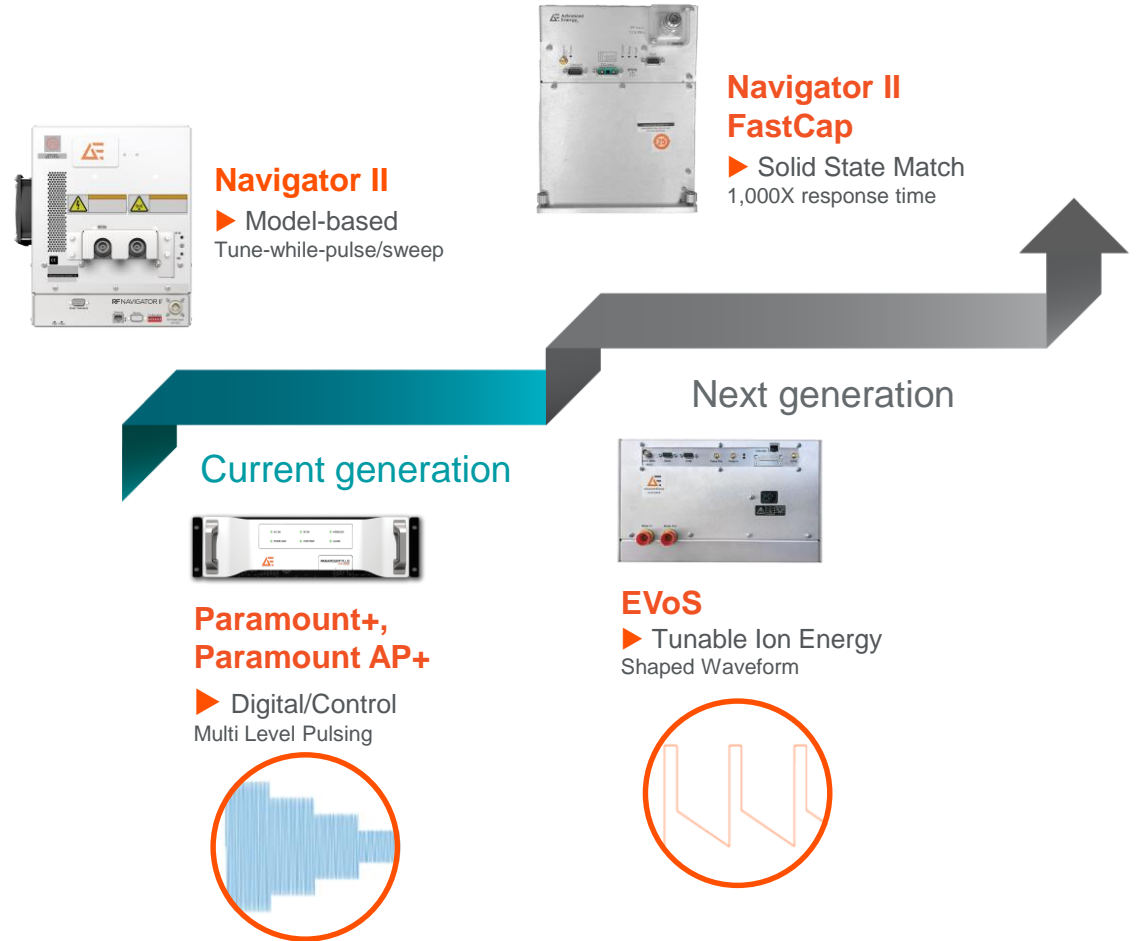
30 Years of Industry-Defining Leaps



POWERING STEP CHANGES IN TECHNOLOGY

30 Years of Industry-Defining Leaps

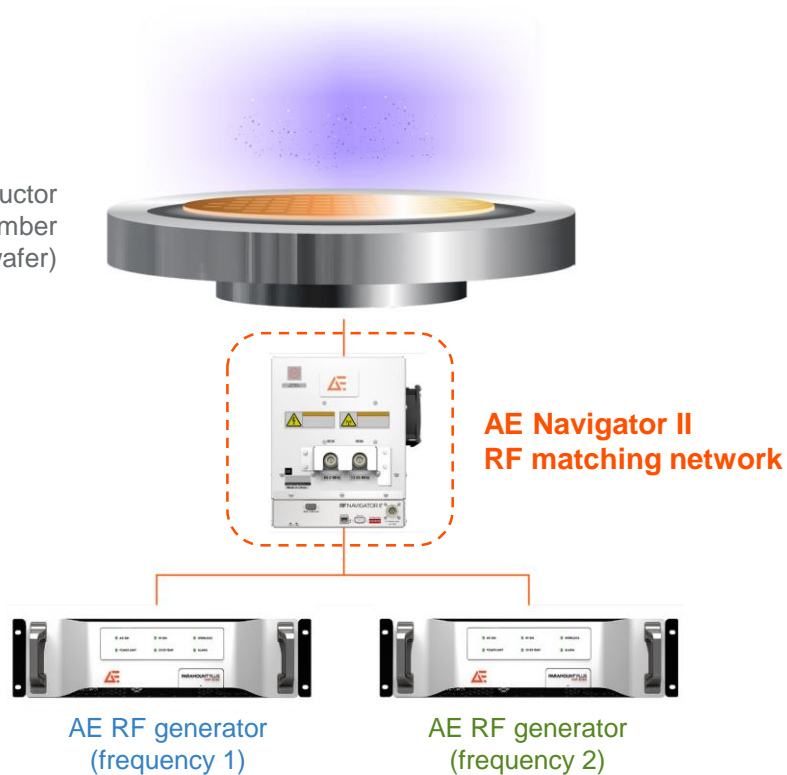
- **1st** with switch mode
- **1st** in power/size/\$
- **1st** with all digital
- **1st** with pulsing (DC & RF)
- **1st** with tune-while-pulsing
- **1st** with AE "Right" Power



**AE "Right" Power is more than RF power
Changes the rules of semiconductor processing**

SETTING THE STANDARD FOR ADVANCED RF MATCHING

Semiconductor process chamber
(i.e., etching a wafer)



RF match is fast-growing product category

- **Multi-frequency** and advanced matching needed for <10 nm nodes
- **Matches SAM** growing at 15% CAGR ('14-'19) vs. Process Power of 10%⁽¹⁾

AE Navigator II leads in advanced matching network

- Tunes while pulsing – **super fast** sub-microsecond regulation
- **Ahead** with unique output measurement & control (**process parameter**)

What it means for AE

- More multi-frequency applications → **more AE Navigator II** matches
- Ready for next – AE Navigator II FastCap near-instantaneous – **fastest tuning**

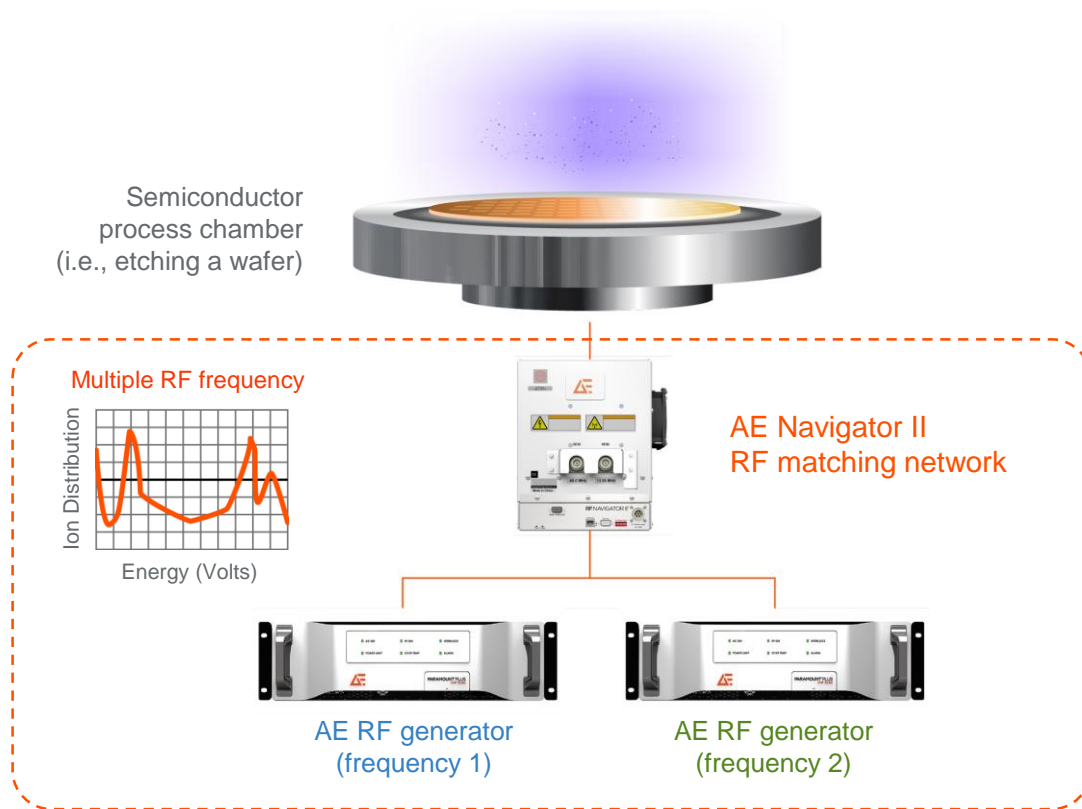


AE matching differentiation:

- **AE match measurement and control – power meets process**
- **AE patents, deep experience, trusted technology**

(1) Source: VLSI Research, Power and Reactive Gas Subsystems, 2019

AE INTEGRATED RF SYSTEMS – MORE THAN SUM OF PARTS



Challenges in advanced RF power systems

- **Latency:** process transitions shorter than tuning time
- **Interrupted plasma:** delays in tuning and response “wink-out” plasma

AE advantages

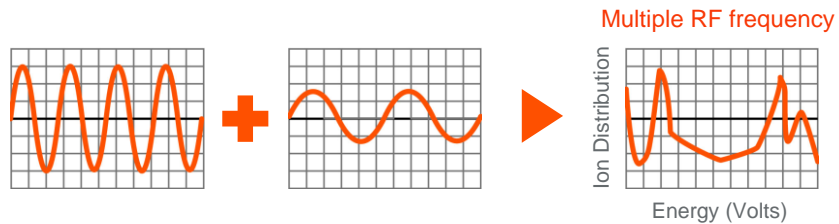
- **Leadership counts** – 60,000+ Paramount generators in the field. Paramount and Navigator II most successful RF combination in the industry.
- **Solving the toughest** – Paramount + Navigator II high-speed multi-level pulse control (watts to full power) maintains **plasma without latency**
 - Etch selectivity for smaller deeper holes and straight walls (i.e., Conductor Etch)
- **Faster response in smaller space at lower costs** with AE’s physical integration of AE generator and match (28,000+ shipped, with new generations to come)



AE integration & differentiation:

- AE RF system integration powers processes that RF “boxes” can’t
- AE integrated RF: topology + metrology + connectivity holistic solution

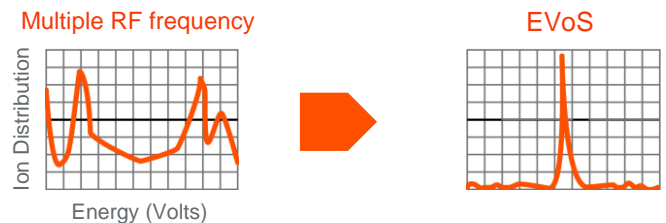
EVoS DELIVERS “BEYOND RF” POWER



Multiple frequencies to optimize ion distribution

Multiple RF Frequencies

- **Good:** delivers more useful power
- **Gap:** slow for deep holes and complex delivery



Multiple frequencies vs. mono-energetic EVoS

EVoS — AE innovation delivers game changing power

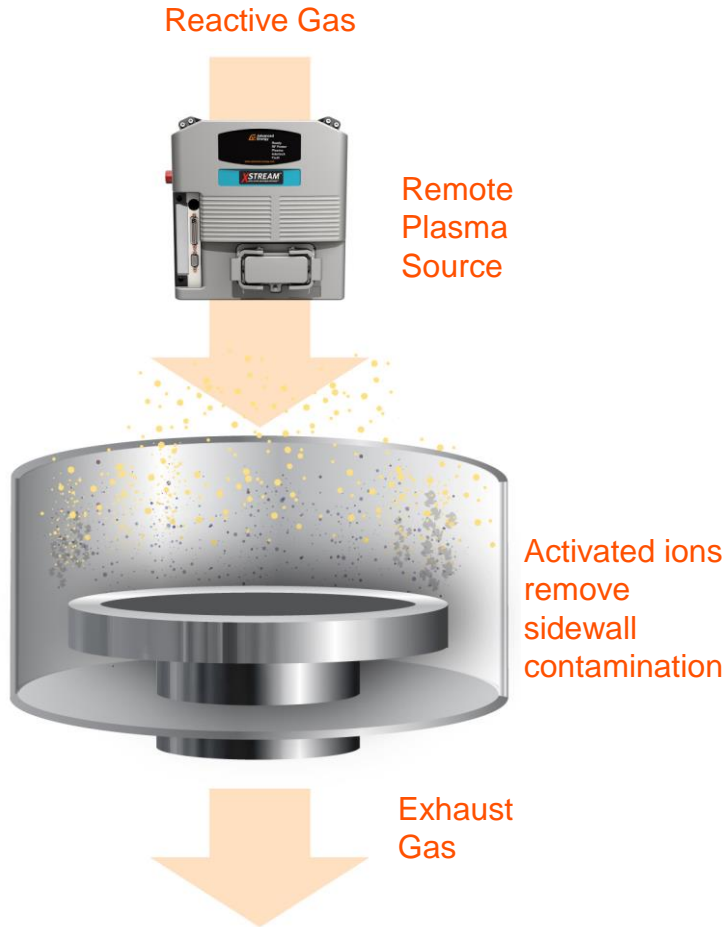
- **Leap:** the first direct ion energy “knob”
- **Great:** delivers the “right” power – only where it’s targeted
- **Results:** deeper, straighter holes, faster processes



AE integration & differentiation:

- Breakthrough tunable ion energy technology → beyond RF
- Patents granted and pending

NEW REMOTE PLASMA SOURCE EXPANDS SAM



Process Challenge

- Strike plasma every time
- High ion dissociation
- Short & consistent process time
- Cost effective solution

Market Challenge

- Performance, reliability and quality
- Incumbency - slow to react
- Customer support and engagement
- Scalability

AE Xstream and MAXStream

- Leading performance and ignition
- Longest chamber lifetime, quality & reliability
- Rapid (local) global customer support
- PowerInsight predictive maintenance

**New Market:
\$150M RPS
Chamber Clean
SAM**



AE “RIGHT” POWER: POWERING MORE OF THE PROCESS



Processes



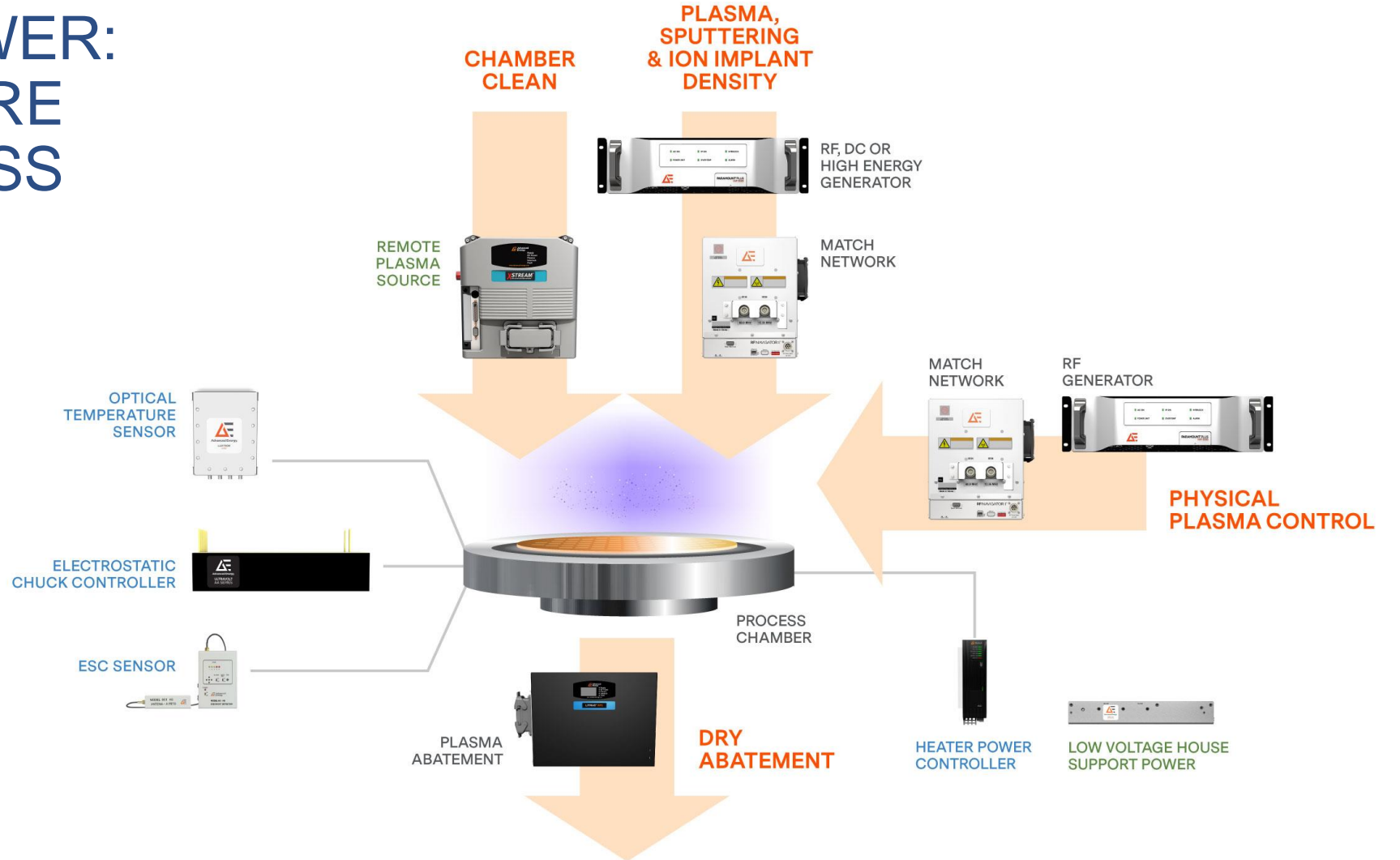
Core AE Innovation



Technologies acquired in last 5 years



New SAM expansion



AE “Right” Power Delivers Broader Integrated Solutions ... and a \$1.7B SAM

LEADING IN PROCESS POWER



Power SAM is **growing**

- Electronics growth and increasing power content
- SAM grew at 10% CAGR ('14-'19), above WFE⁽¹⁾

AE is the power **market leader**

- Wins in Etch and key target applications
- Addressing most demanding applications

AE is expanding **its share**

- Wins with matching networks, multi-frequency RF
- FastCap & EVoS lead AE "Right" Power into future

AE is expanding **its SAM**

- MAXStream adds new SAM of >\$150 million
- Last five years' acquisitions add SAM of >\$450 million

AE's innovations are **the next leap**

- AE "Right" Power changes the game for power "beyond RF"
- New opportunities for significant share gain

The background is a collage of images: a person in a surgical cap and mask, a microchip, and two communication towers. The collage is overlaid with a blue and white geometric pattern of overlapping triangles and lines. A green and orange decorative bar is at the top right, and another is at the bottom left.

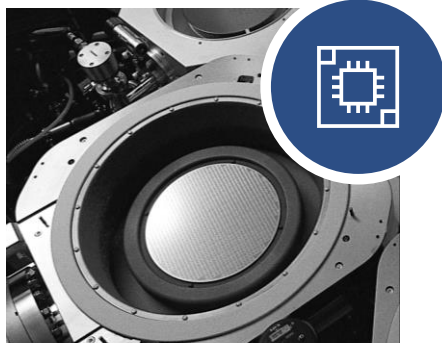
Embedded Power Expanded Platform for Growth

DANA HUTH | DECEMBER 16, 2019

EMBEDDED POWER EXPANDED PLATFORM FOR GROWTH

- Embedded Power expands AE's reach
- Applications and associated products
- Highly differentiated with 50+ years of leadership
- Longstanding customer relationships
- Strong markets with favorable growth trends
- Targeted strategies to drive performance

EXPANDING OVERALL ADDRESSABLE MARKET



SEMICONDUCTOR
EQUIPMENT



INDUSTRIAL &
MEDICAL



TELECOM &
NETWORKING



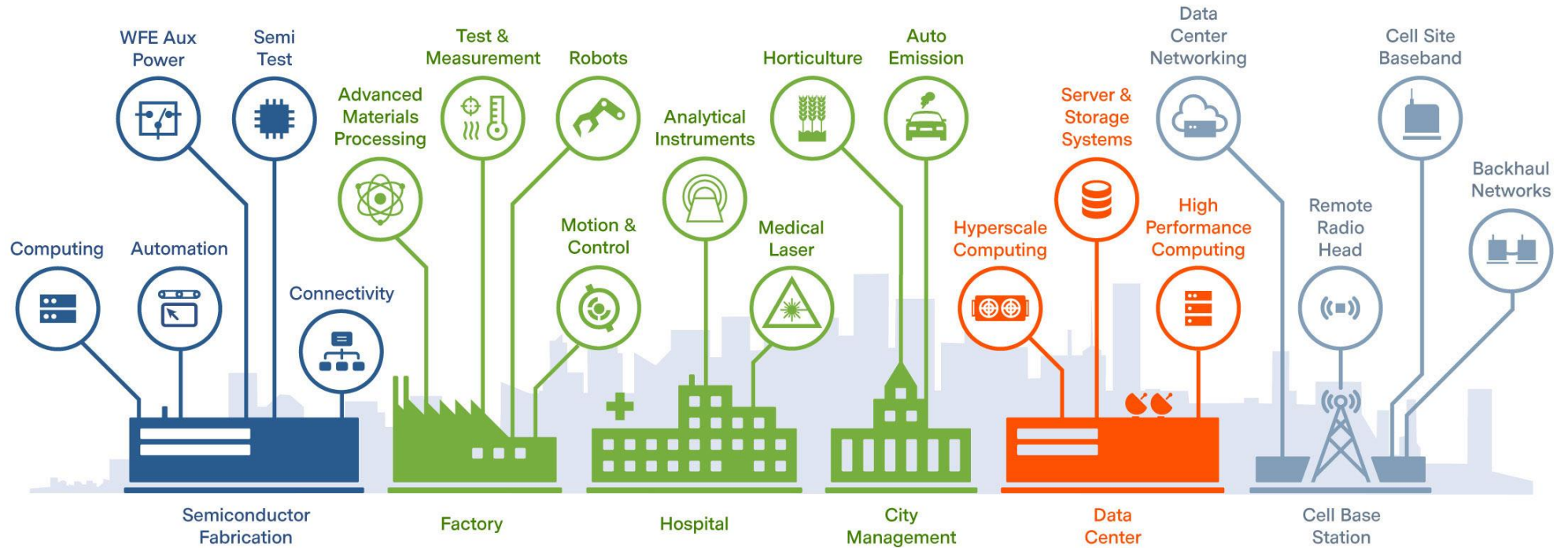
DATA CENTER
COMPUTING



EMBEDDED POWER APPLICATIONS AND PRODUCTS

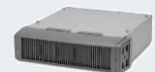
A broad portfolio reaching many applications across all verticals

APPLICATIONS



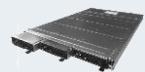
INDUSTRIES

EMBEDDED POWER PRODUCTS



Power Systems

Customized system solutions with integrated software



Power Shelves

Industry leading efficiency and density solution for data center power



AC-DC

Highly reliability, high efficiency low voltage power supplies



Configurable

Modular and flexible for maximum customization



DC-DC

Wide range of board-mounted solutions covering industry standard form factors



HVDC

High-voltage DC for mission-critical applications in standard and custom form factors

50 YEARS OF LEADERSHIP IN EMBEDDED POWER CONVERSION SOLUTIONS

- One of the **largest embedded power conversion suppliers** in the world
- **Trusted advisor & preferred supplier** to top technology customers
- Strong technical capabilities with **>700 engineers and a 300+ patent portfolio** covering circuit design, magnetics, packaging and assembly
- Strong brand recognized for **innovation and reliability**
- **Operational excellence** built on flexible best cost manufacturing footprint and established Asia supply chain

**AE's Leading
Market Position
Among Top
Competitors**

Delta Electronics

Advanced Energy

TDK-Lambda

Lite-On Technology

MEAN WELL

Embedded Power historical brand portfolio



HUAWEI
Power Business



ASTEC



NORTEL
Power Business



ARTESYN™



ERICSSON
Power Business



ULTRAVOLT.



WORLD CLASS CUSTOMER ENGAGEMENT

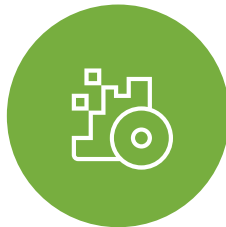


- 20+ year average relationship with top customers
- 7 design centers focused on engineered solutions
- Extensive portfolio of standard products leveraging Tier 1 Investments
- Strong indirect channel complements global direct sales team
- Regionally-based field applications engineers support customers locally – a trusted advisor

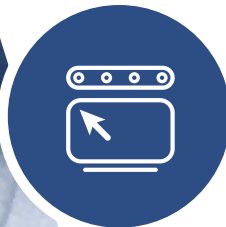
“DESIGN FOR X” AS A KEY DIFFERENTIATOR



Design for common platforms to drive reuse and configurability, to **maximize engineering ROI**



Design for rapid modification through **common firmware**



Design for **automation** to drive quality & optimize cost



Design for magnetics integration to **increase density**

TARGETED GROWTH STRATEGY



GROW SHARE ACROSS MISSION-CRITICAL, PRECISION POWER VERTICALS

- Expand in hyperscale data center
- Capitalize on 5G migration
- Broaden industrial and medical footprint



INVEST IN **INNOVATION** AND TECHNOLOGY LEADERSHIP

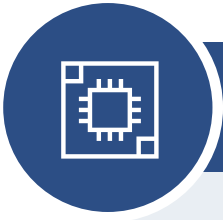
- Deliver solutions with industry-leading efficiency
- Extend power density technology leadership
- Drive Industry 4.0 adoption



LEVERAGE STRONG FINANCIALS AND INCREASED SCALE TO CAPITALIZE ON **NEW OPPORTUNITIES**

- Expand standard products portfolio to serve Industry 4.0 applications
- Build upon strong position in Semiconductor Equipment to drive cross selling

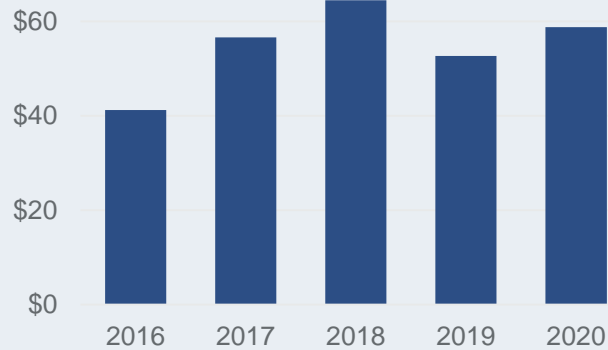
SEMICONDUCTOR EQUIPMENT: DRIVE REVENUE SYNERGIES WITH CORE AE



FAVORABLE MARKET GROWTH TREND

Semi Equipment Market⁽¹⁾

(\$ in billions)



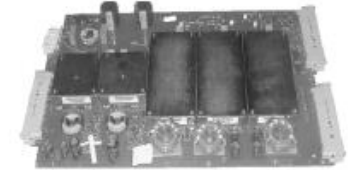
- Growing semiconductor content
- New device architecture and materials drive new WFE
- New applications such as 5G drive growth in semi test

GROWTH STRATEGY

- Cross sell into \$170 million WFE auxiliary power market
- Leverage position in ATE to penetrate advanced packaging

KEY DIFFERENTIATORS

- Proven quality and reliability for a “copy exactly” environment
- Strong design capabilities and local field application engineering teams
- Deep customer intimacy



(2)

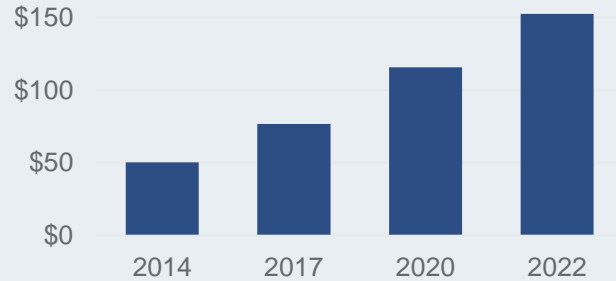
INDUSTRIAL & MEDICAL: POWERING 4IR & GROWTH IN MEDICAL



FAVORABLE MARKET GROWTH TREND

Industry 4.0 End Market

(\$ in billions)



- Industry 4.0 related investments expected to grow at a 15%+ CAGR⁽¹⁾
- Explosive growth in autonomous and collaborative robots at 50%+ CAGR⁽¹⁾
- Increased use of power in diagnostic and therapeutic applications

GROWTH STRATEGY

- Expand standard product portfolio to serve Industry 4.0 applications
- Cross sell data center products into industrial edge applications
- Broaden product portfolio and expand channel in medical

KEY DIFFERENTIATORS

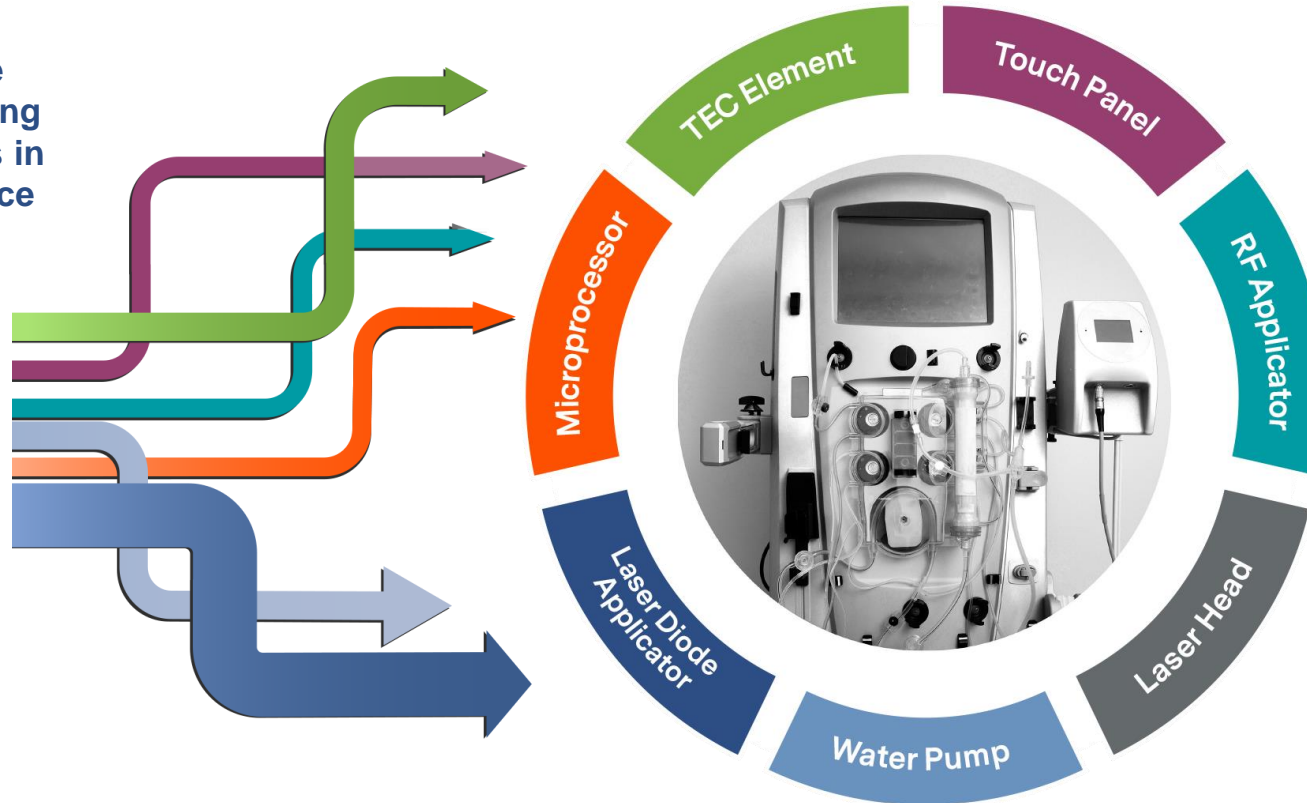
- Industry-leading portfolio of configurable power platforms
- Growing software capability for monitoring and control



(2)

MOST ADVANCED CONFIGURABLE POWER SUPPLY

Configurable module powering all components in a medical device



Market Challenges

- Multi-purpose platform for broad set of applications
- Flexible and field configurable or upgradable
- Rapid evolution of designs and delivery
- Connectivity & data

Our Solutions

- Flexible platforms enabling quick hardware changes with field programmable firmware
- Highly configurable with wide range of power, voltage, signal and output on a single box
- 1,000s of configurations delivered in record design cycle time
- Digital control and connectivity functions

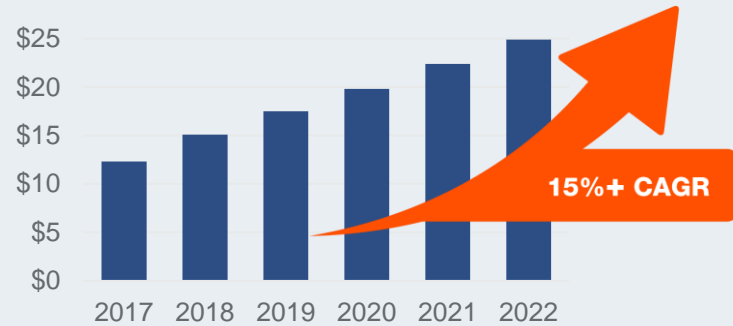
DATA CENTER COMPUTING: FOCUS ON HYPERSCALE



FAVORABLE MARKET GROWTH TREND

Hyperscale infrastructure end market⁽¹⁾

(\$ in billions)



- Hyperscale growing at 15% CAGR⁽¹⁾
- Increasing data center traffic and IoT trends drive edge investment
- Demand driven by Artificial Intelligence and Machine Learning

GROWTH STRATEGY

- Launch market-leading efficiency products
- Accelerate time-to-market with standard data center power supplies
- Expand customer base to original design manufacturers

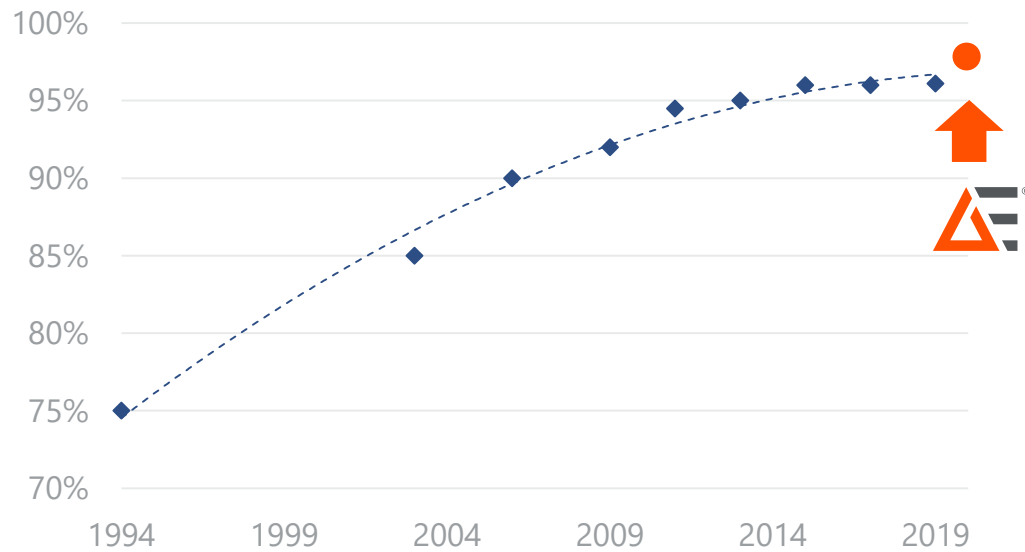
KEY DIFFERENTIATORS

- Industry-leading efficiency and density
- Trusted brand with 1M+ units shipped
- Strong reputation with deep engineering relationships
- Significant design wins at majority of Tier 1 hyperscalers



TECHNOLOGY LEADERSHIP: 98% EFFICIENCY

POWER SUPPLY EFFICIENCY



Market Challenges

- Hyperscale mega data centers consume vast amounts of power
- Electrical energy & cooling dominate data center operating costs

NO. OF COMPANIES ABLE TO DELIVER

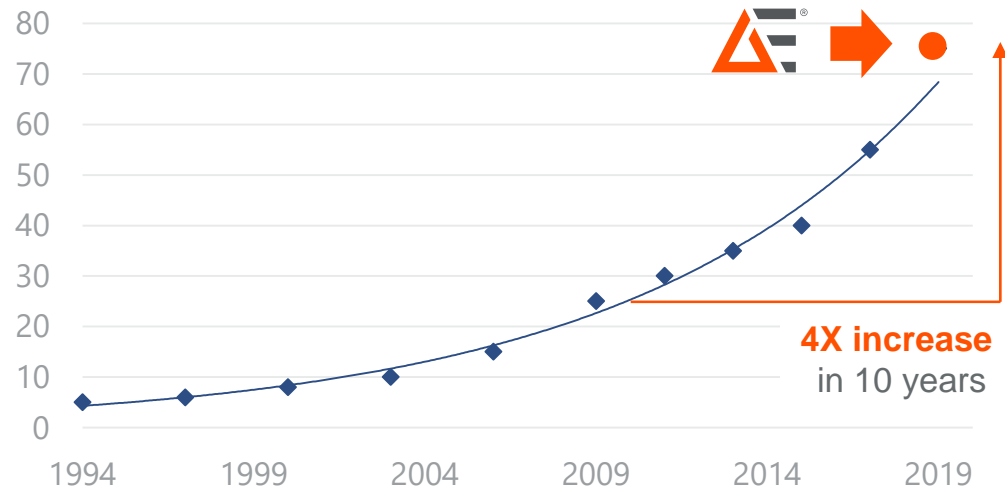
| Naming | 80+ Platinum | 80+ Titanium | Next gen |
|-----------------------------|------------------|-----------------|----------------------------------------------|
| Efficiency (50% load) | 94% | 96% | 98% |
| Number of leading suppliers | 15+ AE | ~7 AE | 2 AE |
| | | | High technical challenges reduce competition |

Our Solutions

- Portfolio of products with 96% and above efficiency
- Demonstrated 98% efficiency
- Incorporated new semiconductor devices - GaN and SiC

TECHNOLOGY LEADERSHIP: POWER DENSITY

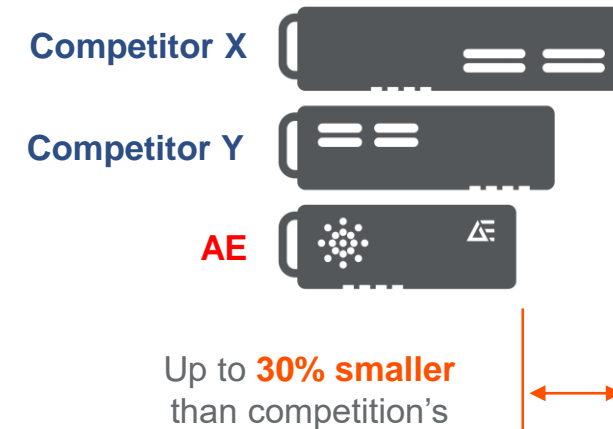
POWER SUPPLY DENSITY (W/IN³)



Market Challenges

- Shrinking form factor requirements across all verticals
- Power levels increasing across most verticals
- Reduce cooling available for power supplies

SERVER FRONT-END DENSITY LEADERSHIP



Our Solutions

- Shipping 75 watts / cubic inch
- Integrated magnetic and semiconductor structures
- Advanced thermal modelling to optimize cooling

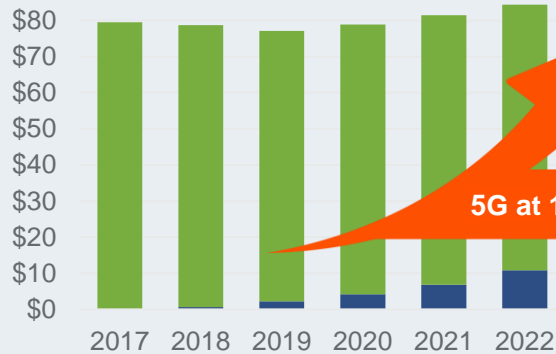
TELECOM & NETWORKING: TARGET 5G INFRASTRUCTURE



FAVORABLE MARKET GROWTH TREND

Wireless infrastructure spend⁽¹⁾

(\$ in billions)



- Growth returning to wireless infrastructure with 5G launch
- Increased capacity demand driven by expanding use cases

GROWTH STRATEGY

- Ramp current programs with key Tier 1 networking customers
- Win new designs in 5G radio power for both macro cell and small cell

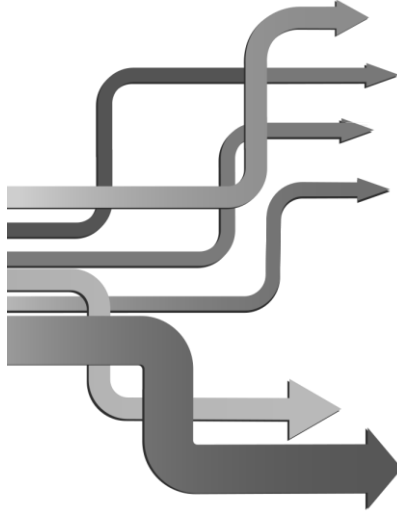
KEY DIFFERENTIATORS

- Leading reputation in high density, rugged power supplies for outdoor radio applications
- Deep application knowledge and 20+ years of customer intimacy
- Secured significant 5G design wins across all leading base station OEMs



HIGH RELIABILITY IN THE HARSHTEST OF ENVIRONMENTS

Powering many of
the largest
wireless networks
across the world



Market Challenges

- Operate in extreme temperatures (-40 to 130 °F)
- Waterproof, pollution / chemical resistant
- Survive lightning surges, unstable power
- Lightweight

Our Solutions

- Dense, rugged outdoor radio power supplies
- Planar magnetics for dense / thin form factors
- Fan-less conduction cooling
- Advanced surge suppression



EMBEDDED POWER EXPANDED PLATFORM FOR GROWTH

- Leading supplier of highly-engineered embedded power supplies
- Multiple strong growth markets offer many opportunities for profitable growth
- Industry-leading technologies and innovation differentiate AE Embedded Power from competition
- Deep customer relationships and strong channel provide additional opportunities for growth and cross selling

A collage of images including a person in a surgical mask and cap, a microchip, and two communication towers, set against a geometric background of blue and white triangles.

Operational Excellence Through Integration

NEIL D. BRINKER | DECEMBER 16, 2019

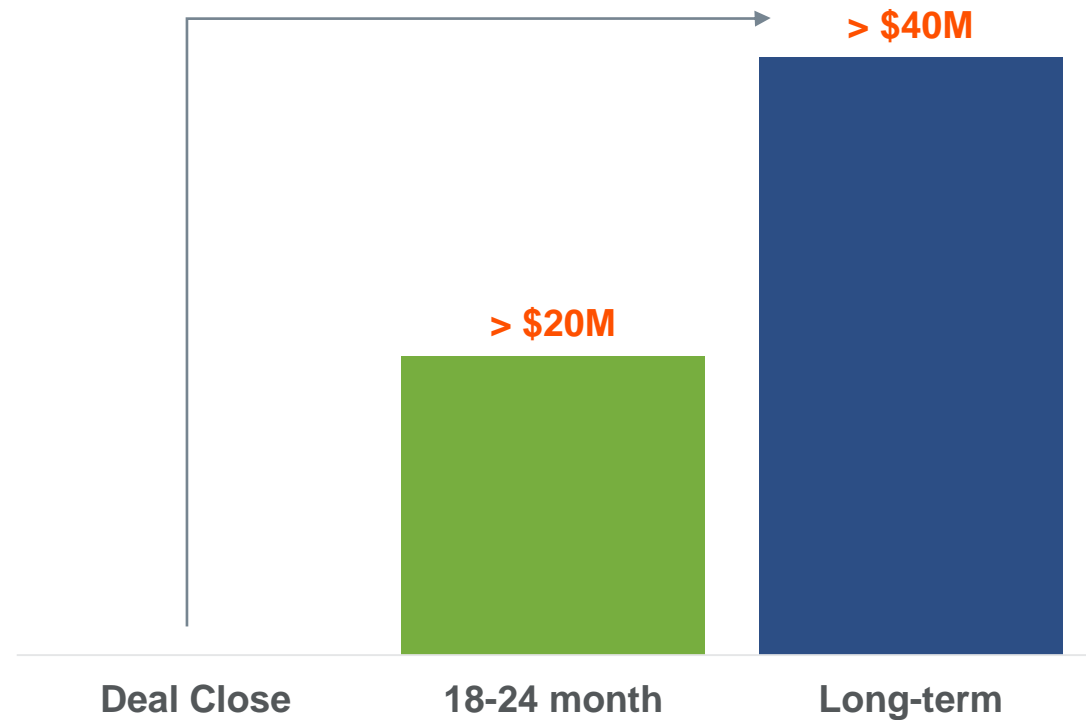
FOCUS ON FUNCTIONAL INTEGRATION AND SCALABLE PROCESSES

- AE operating model
- Optimizing global footprint
- Operational and service excellence
- Integrated R&D
- Supply chain consolidation
- Distribution and channel alignment

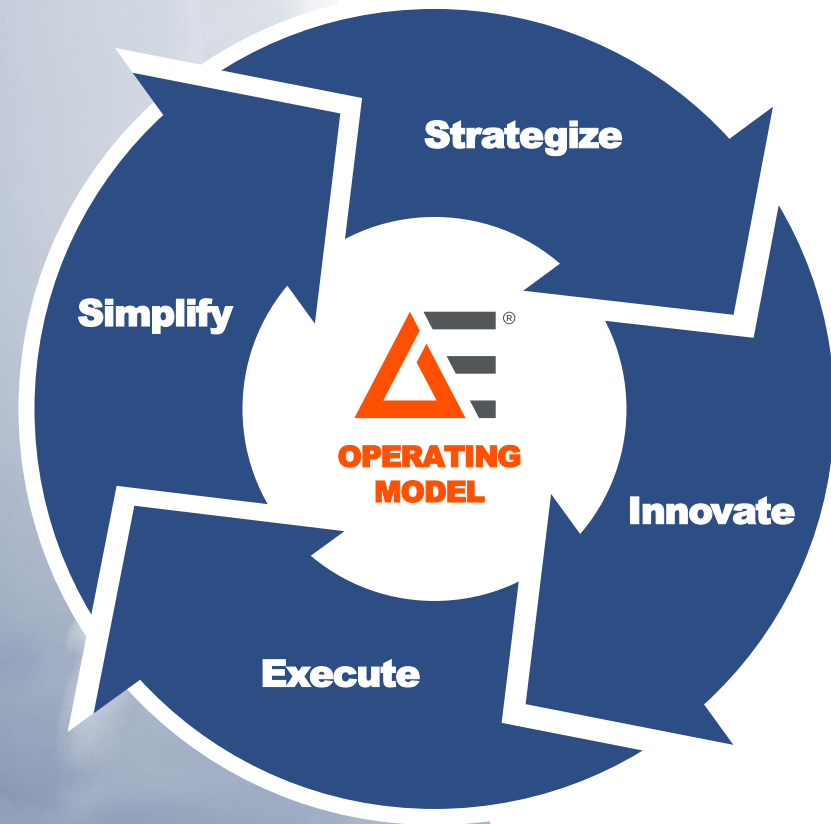


Competitive Advantage
Now and in the Future

Expected Annualized Synergies



OUR OPERATING MODEL PROVIDES STRUCTURE FOR GROWTH



- Deploy best practices and procedures across the enterprise and new acquisitions
- Proven methodology for integrating companies with tangible results
- Establish a common business language across a diverse enterprise
- Scalable structure that supports growth in volume and mix



Standardized, Scalable
Proven Results



Presence in
AMERICAS



in **EMEA**



in **APAC**

▲
Increasing
global
presence

Decreasing
manufacturing
site expense

▼

OPTIMIZING OUR GLOBAL FOOTPRINT

- From 6 to 3 manufacturing hubs by 2022
- Optimizing and investing around manufacturing capabilities
 - Creating Centers of Excellence across AE
 - Foundation of vertical integration
- Expanded global presence
 - Allows flexibility to manufacture across multiple regions
 - Improves efficiencies through combined core competencies



Operational Excellence as a
Competitive Advantage



OPERATIONAL EXCELLENCE THROUGH VERTICAL INTEGRATION

- Customers' evolving needs demand **new manufacturing models** to better react to changes
- Vertical integration improves **response to customer demands** even through changes in volume and mix
- Engineering and operations proximity to manufacturing **accelerates time-to-market** and reduces costs
- Vertical integration and operational excellence enable **lower total cost**



Accelerating Time to Market
While Optimizing Costs

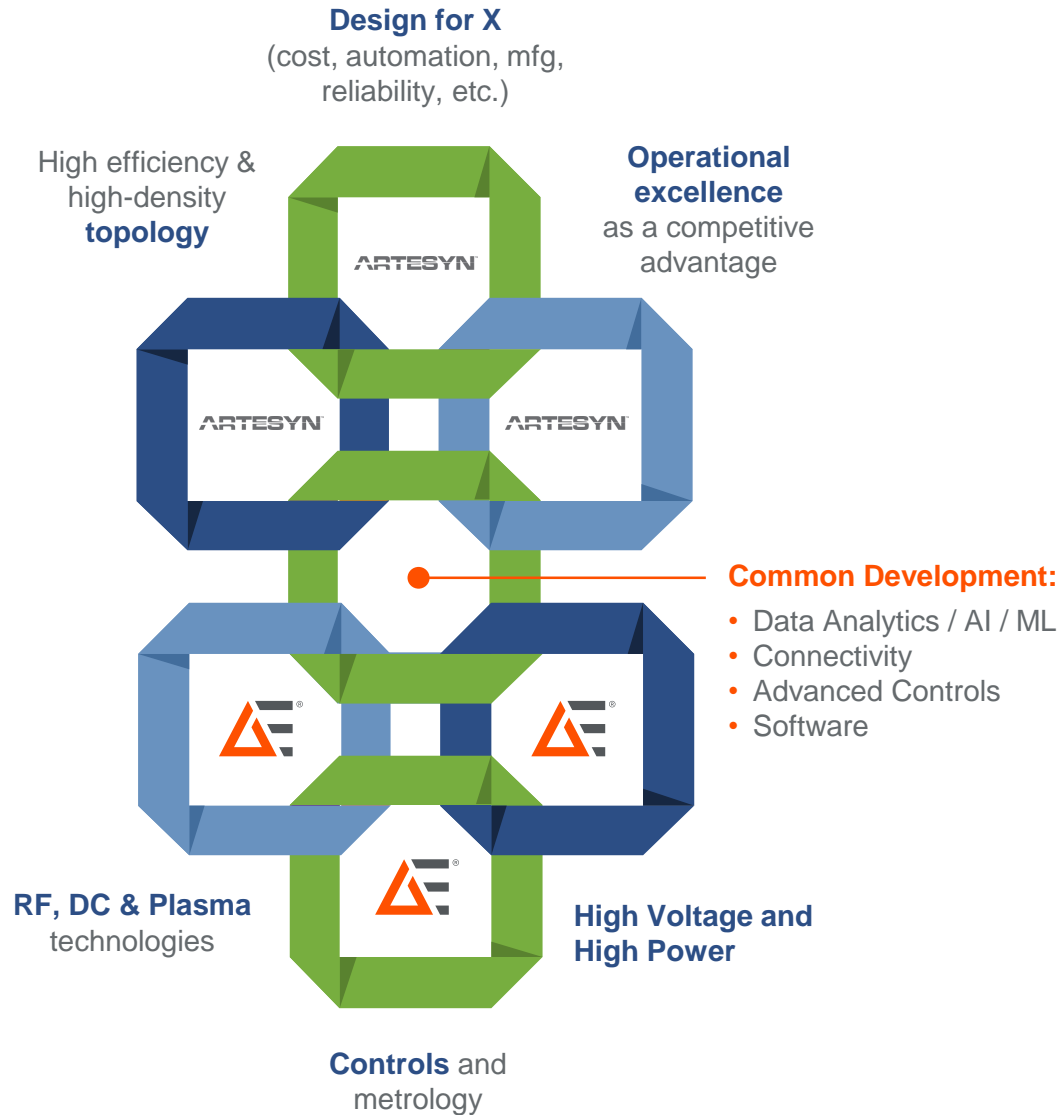
WORLD-CLASS GLOBAL SERVICE SOLUTIONS

LEVERAGING GLOBAL SERVICE FOOTPRINT TO EXPANDED CUSTOMER BASE, FROM ADVANCED POWER TO EMBEDDED POWER PRODUCT PORTFOLIO

- Provide innovative custom service solutions to maximize customer uptime and performance throughout the product
 - High quality repair to optimize total cost of ownership
 - Support options for every stage of product life cycle
 - Customized solutions to meet changing market needs
 - Newly-launched PowerInsight™ platform transforms data into actionable intelligence
- Expand customer base through global service footprint and field service capability with 10 service centers in 8 countries
- Growing installed base and share gains enable sustained revenue growth CAGR of >10%



Product Life Cycle Support
for our Customers

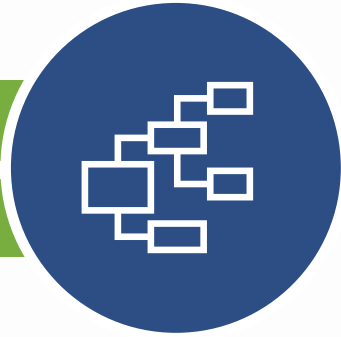


INTEGRATED R&D ACCELERATES NEW PRODUCT INTRODUCTION

- Leverage combined R&D as a platform to deploy new technology and solutions
 - 1,600+ total technical staff
 - 600+ combined patent portfolio*
- Use global NPI teams to deliver solutions faster
 - Standardized product development process aligns the organization
- Deliver solutions that enable the customer to win through DfX
 - Design for Cost
 - Design for Reliability
 - Design for Manufacturability
 - Design for Service
 - Design for EXCELLENCE



Driving the organization
Toward 4IR



SUPPLY CHAIN CONSOLIDATION INCREASES COST COMPETITIVENESS

- Greater supply chain influence and access through doubling spend
- Supply chain consolidation
 - Align common device suppliers and common distributors
 - Supplier rationalization: 80% of spend with top 50
 - Strategic partnerships for preferred access to new technologies
- Strategic sourcing and make/buy decisions in process, expected savings of \$7 million



Leverage Size of AE to Improve **COGS**



DISTRIBUTION AND CHANNEL ALIGNMENT INCREASES CUSTOMER ENGAGEMENT

SCALE GLOBAL DISTRIBUTION CHANNEL TO BROADEN OUR REACH

- Scale design-in opportunities with 150,000+ OEM customers and over 2 million target design engineers through online distribution worldwide
- Increase Sales and Field Application Engineer coverage globally by 3X using the certified teams at our reps and distributors globally
- Next day availability for engineering samples globally from our four online distribution partners



Improved Access for our Customers

FUNCTIONAL INTEGRATION AND OPERATIONAL EXCELLENCE PROVIDE COMPETITIVE ADVANTAGE



BUILDING UPON A STRONG FOUNDATION; SCALING FOR GROWTH

- AE operating model
- Optimizing global footprint
- Operational and service excellence
- Integrated R&D
- Supply chain consolidation
- Distribution and channel alignment



Investing for the Future

A collage of images including a person in a surgical mask and cap, a microchip, and two telecommunications towers, set against a geometric background of blue and white triangles.

Driving Value Creation

PAUL OLDHAM | DECEMBER 16, 2019

DRIVING VALUE CREATION

PLATFORM FOR EARNINGS GROWTH & TOP TIER ROIC

- Acquired Artesyn Embedded Power
- Expanded addressable market
- Increased diversification
- Immediately accretive
- Synergies & scale drive accelerated earnings growth
- Lean operations enable top quartile return on invested capital
- Cash flow & balance sheet enable future acquisitions



Top-Quartile Diversified Technology Results

STRENGTHENED COMPANY THROUGH SEMI DOWNTURN

- Remained profitable and operating cash flow positive in every quarter
- Invested for growth in R&D and factory capability
- Integrated prior acquisitions
- Streamlined SG&A and operating footprint
- Positioned for growth as markets recover



Resilient Financial Model

BUILDING UPON A STRONG FOUNDATION

- Leader in power for Semi Equipment
- Demonstrated ability to profitably expand into new industrial markets
- Best in class financial model
- Strong cash flow generation
- Deployed cash for shareholder return and growth

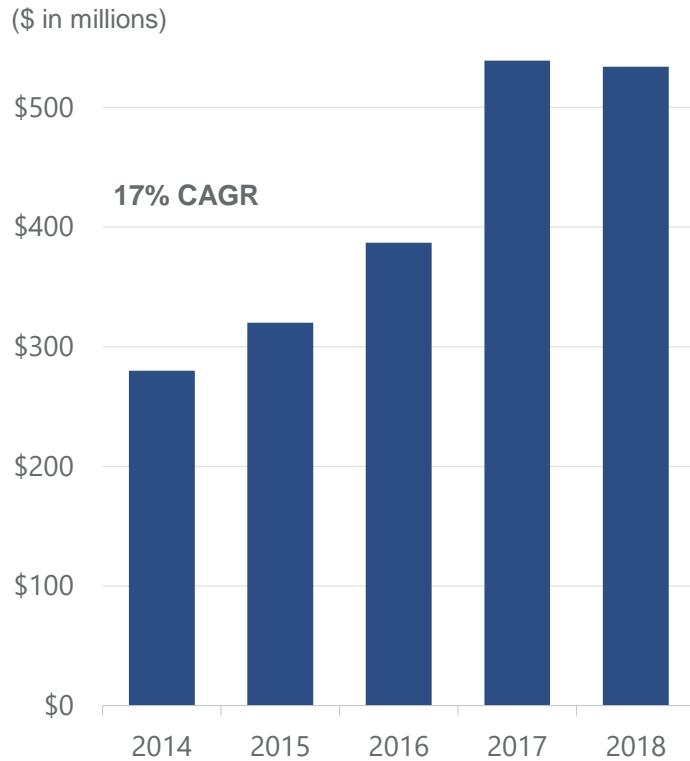


Proven Team and Strategy

GREW REVENUE FASTER THAN THE MARKET

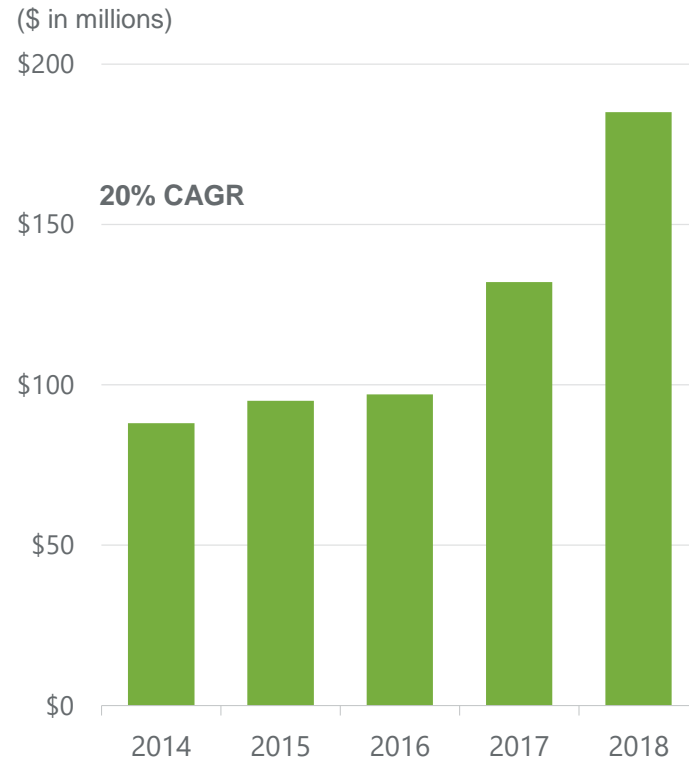
GROW SEMI EQUIPMENT⁽¹⁾

Grew revenue faster than WFE



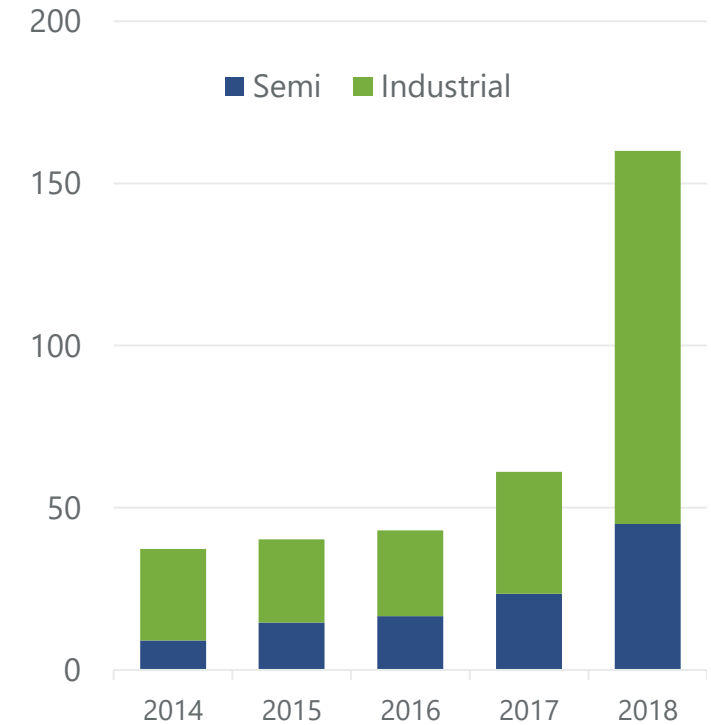
EXPAND INDUSTRIAL⁽²⁾

Growth exceeded our target model



INORGANIC GROWTH

Added \$160 million of revenue

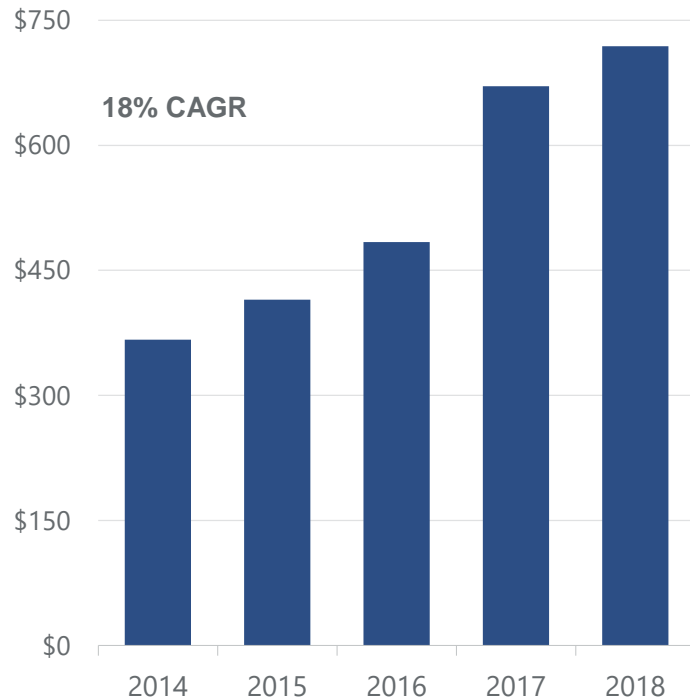


DELIVERED TOP TIER FINANCIAL RESULTS

REVENUE

Faster than market growth

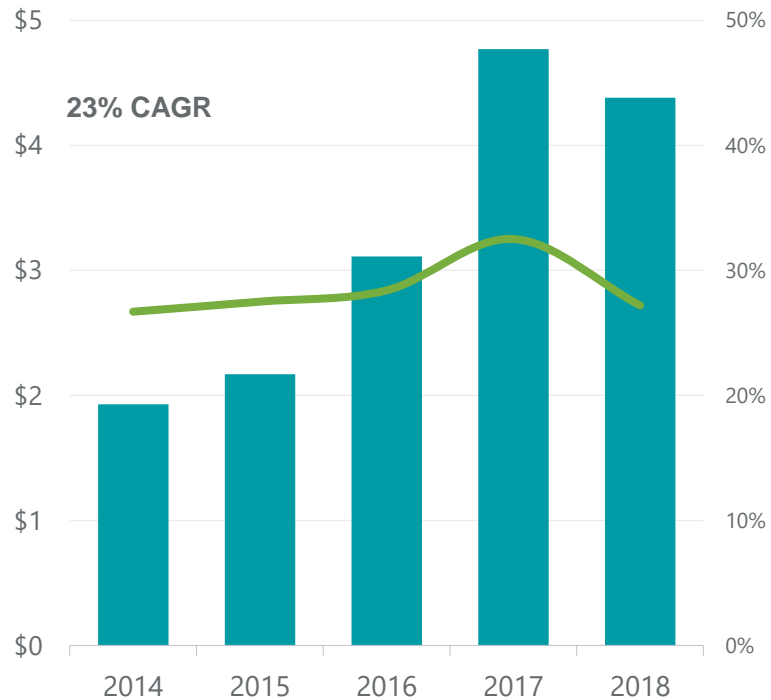
(\$ in millions)



NG EPS & OPERATING MARGINS⁽¹⁾

Industry-leading profitability

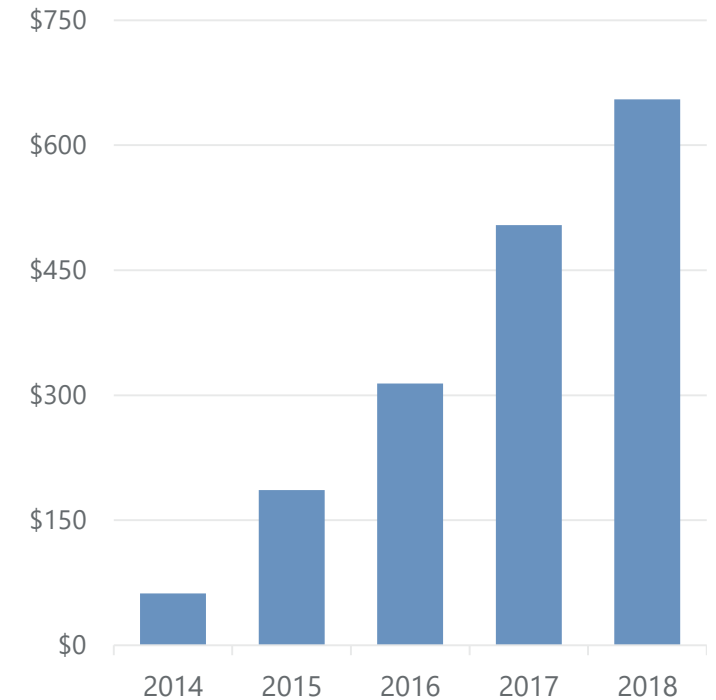
(\$ per share)



CUMULATIVE OPERATING CF

Strong cash generation

(\$ in millions)



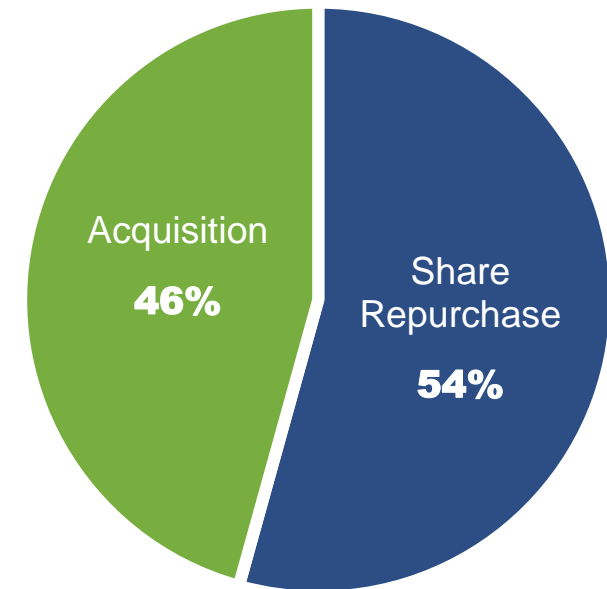
Exceeded Three Year Aspirational Goals

(1) non-GAAP measures exclude the impact of non-cash related charges such as stock-based compensation and amortization of intangible assets, as well as discontinued operations, and non-recurring items such as acquisition-related costs and restructuring expenses. 2014 data excludes the divestiture of solar inverter business

DEPLOYED CASH FOR INORGANIC GROWTH & SHAREHOLDER RETURN

2014 to 2018 CAPITAL ALLOCATION

- Deployed \$168 million for ~\$160 million in annualized revenue
- Repurchased 5.2 million shares for \$200 million at an average cost of \$38.17 per share



Retained strong balance sheet
to enable transformative acquisition

DRIVING VALUE CREATION

BUILDING UPON A STRONG FOUNDATION

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- Demonstrated ability to profitably expand into new industrial markets
- Best in class financial model
- Strong cash flow generation
- Deployed cash for shareholder return and growth



Proven Team and Strategy

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PLATFORM FOR EARNINGS GROWTH & TOP TIER ROIC

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- Immediately accretive
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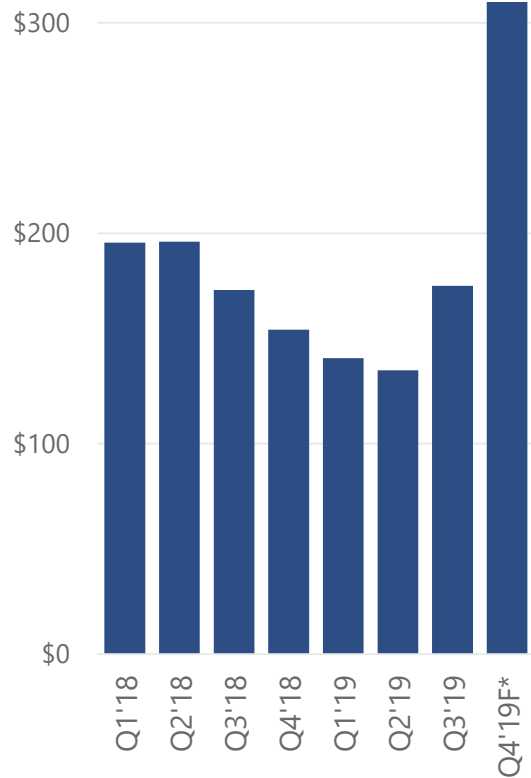


Top-Quartile Diversified Technology Results

RESILIENT FINANCIAL MODEL THROUGH DOWNTURN

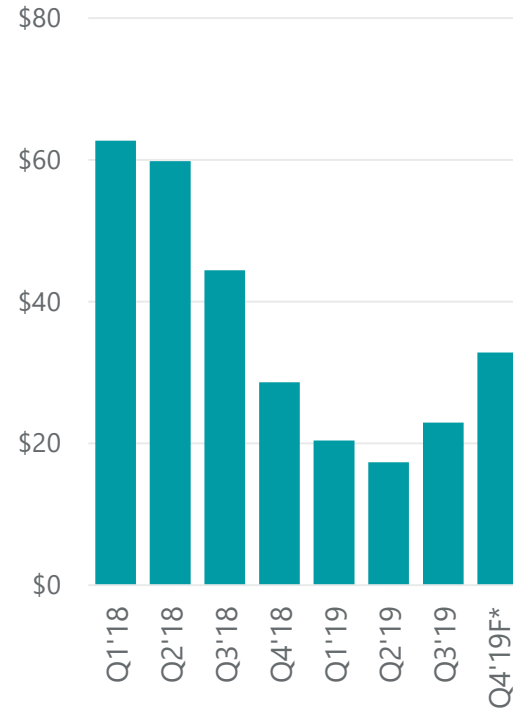
REVENUE

(\$ in millions)



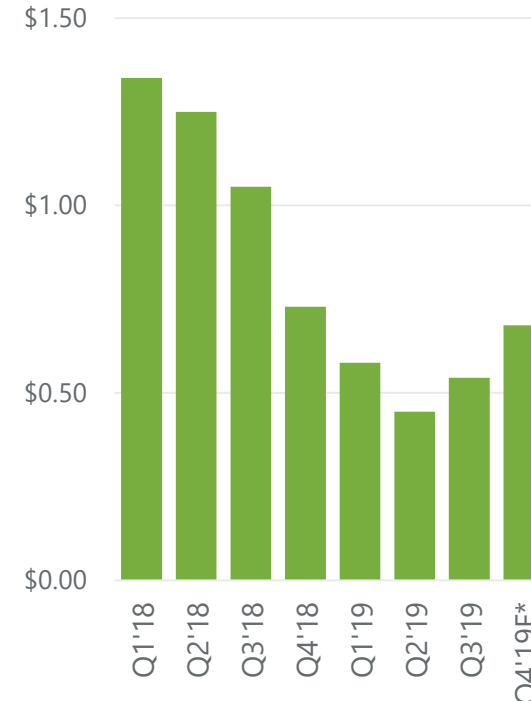
NON-GAAP OP INCOME

(\$ in millions)



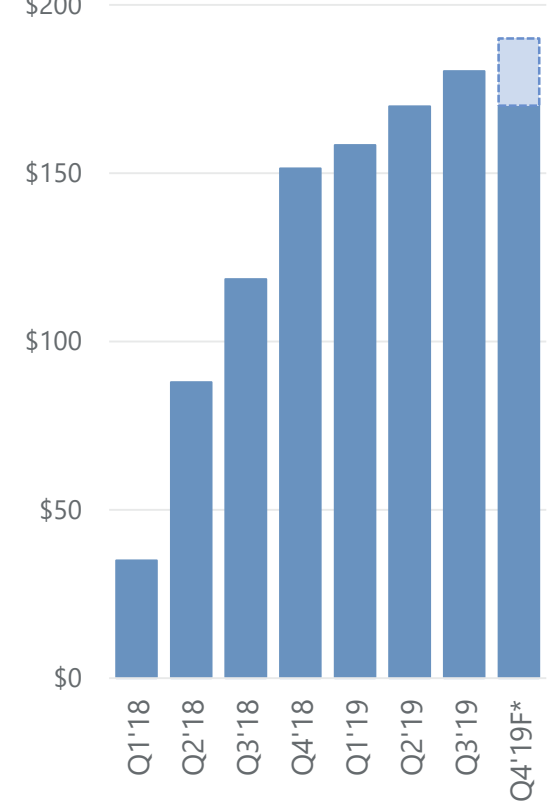
NON-GAAP EPS

(\$ per share)



CUMULATIVE CF

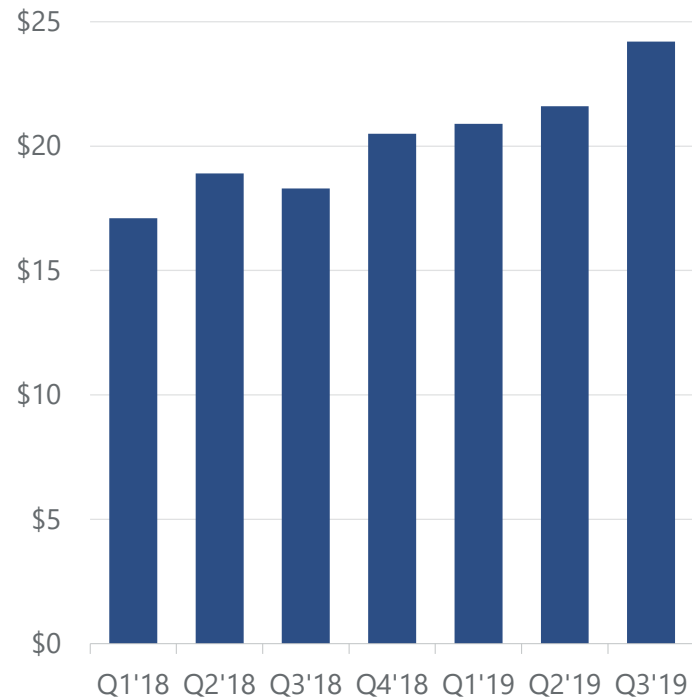
(\$ in millions)
\$200



INCREASED R&D INVESTMENTS WHILE OPTIMIZING COSTS

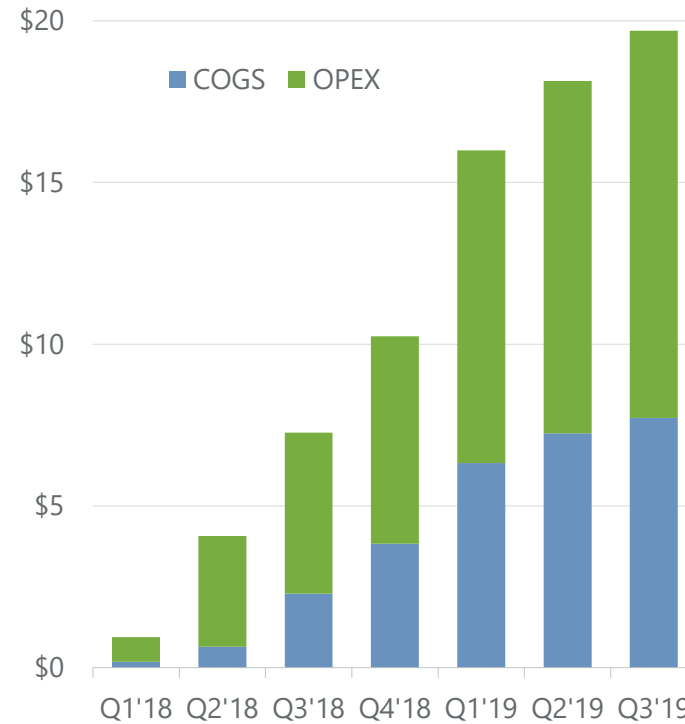
NON-GAAP R&D EXPENSES

(\$ in millions)



CUMULATIVE COST SAVINGS

(\$ in millions)



- **Increased** R&D organically **8%**
- **Increased** capital investment **7%** to fund dual factory strategy

- **Reduced** annualized SG&A **12%***
- **Reduced** total headcount **8%***
- **Closed** or reduced **three sites**
- **Reduced** square footage **10%***

DRIVING VALUE CREATION

BUILDING UPON A STRONG FOUNDATION

- Leader in power for Semi Equipment
- Demonstrated ability to profitably expand into new industrial markets
- Best in class financial model
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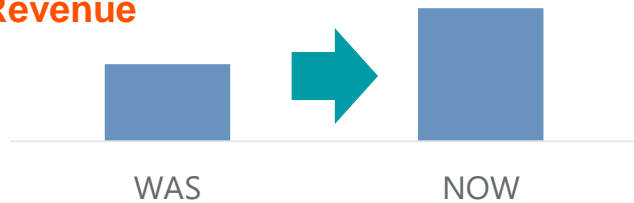


Top-Quartile Diversified Technology Results

ARTESYN WAS A HIGHLY STRATEGIC AND TRANSFORMATIVE ACQUISITION

GLOBAL PLATFORM

Revenue



GLOBAL PRESENCE ACROSS TECHNOLOGIES AND MARKETS

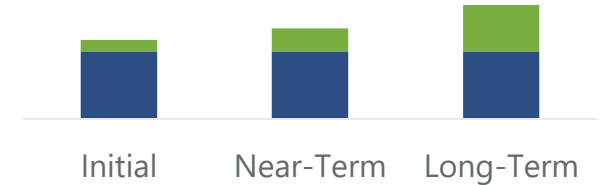
STRATEGIC FIT



HIGHLY COMPLEMENTARY AND SHARED CORE COMPETENCIES

ACCELERATED NG EPS GROWTH

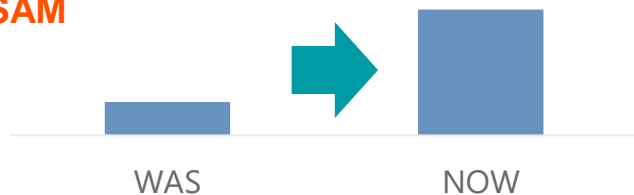
EPS Accretion⁽¹⁾



DRIVEN BY SYNERGIES OF >\$20M NEAR-TERM AND >\$40M LONG-TERM

EXPAND SAM BY ALMOST 4X

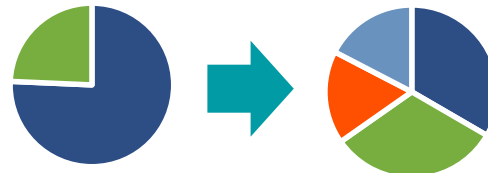
SAM



ADDING NEW VERTICALS AND CROSS SELLING OPPORTUNITIES

BROADENS AND DIVERSIFIES

Mix



MULTIPLE, STABLE GROWTH VERTICALS AND CUSTOMERS

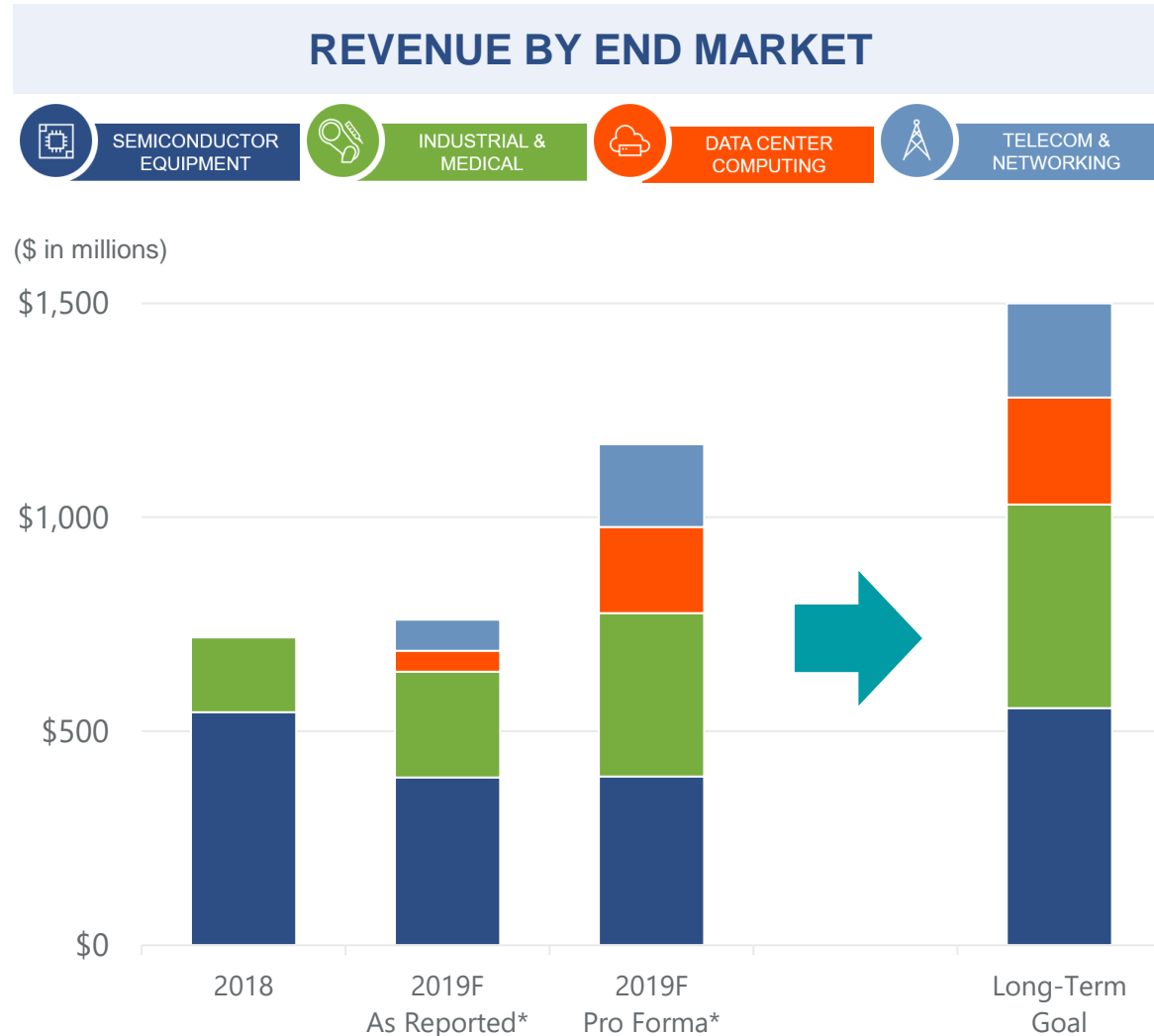
ATTRACTIVE DEAL ECONOMICS

Synergy-Adjusted EBITDA Multiple⁽²⁾

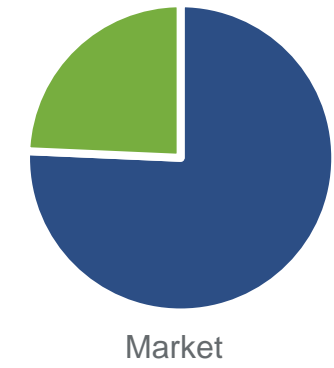


WITH MEANINGFUL OPPORTUNITY FOR MARGIN EXPANSION

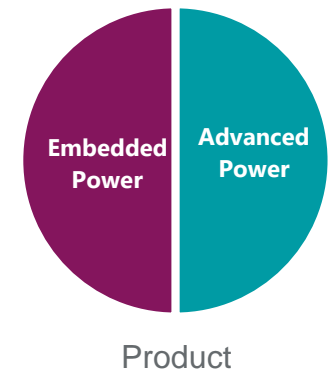
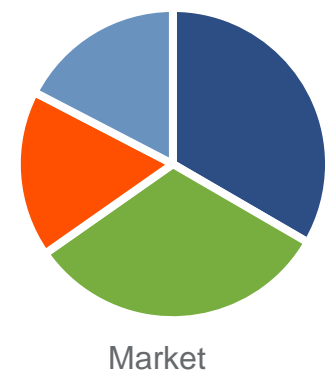
A DIVERSIFIED REVENUE BASE



2018

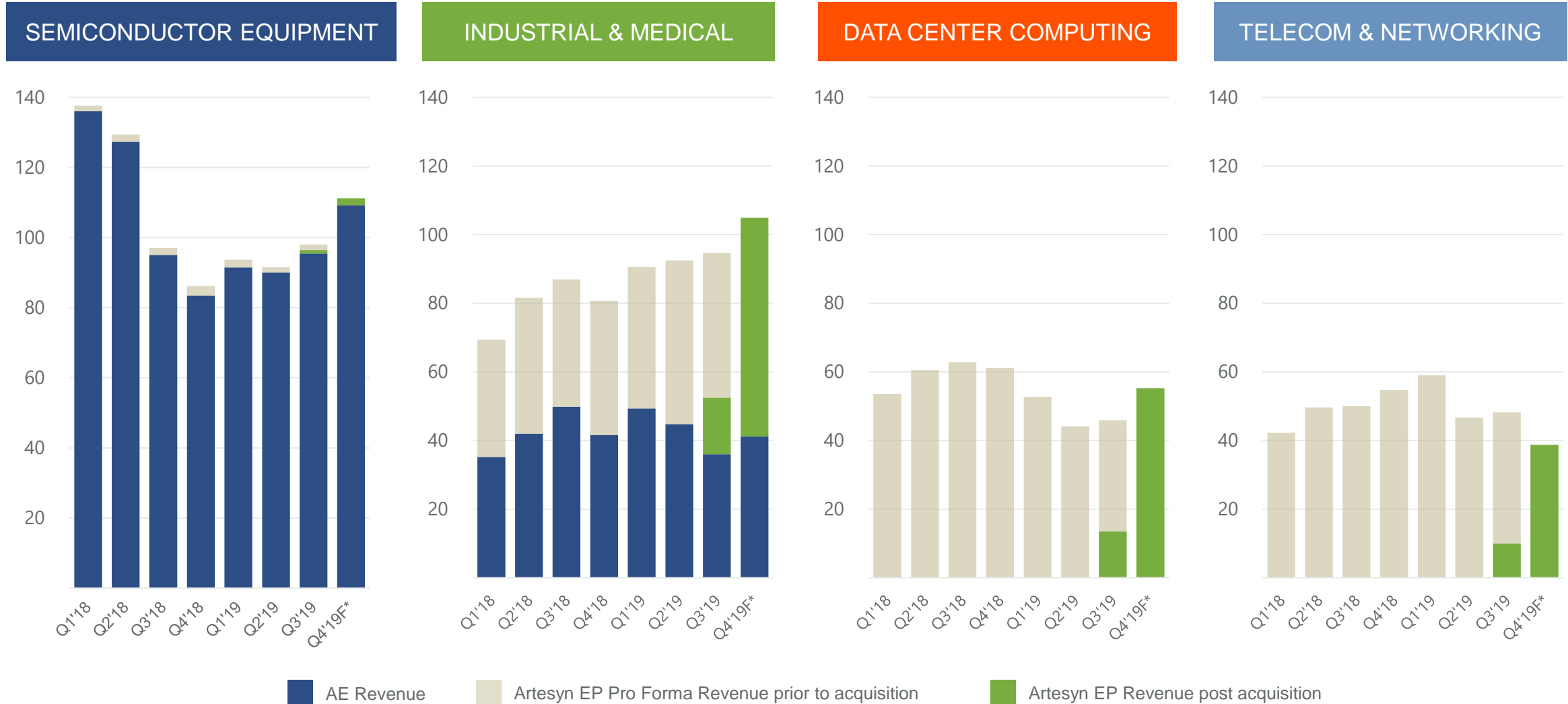


LONG-TERM GOAL

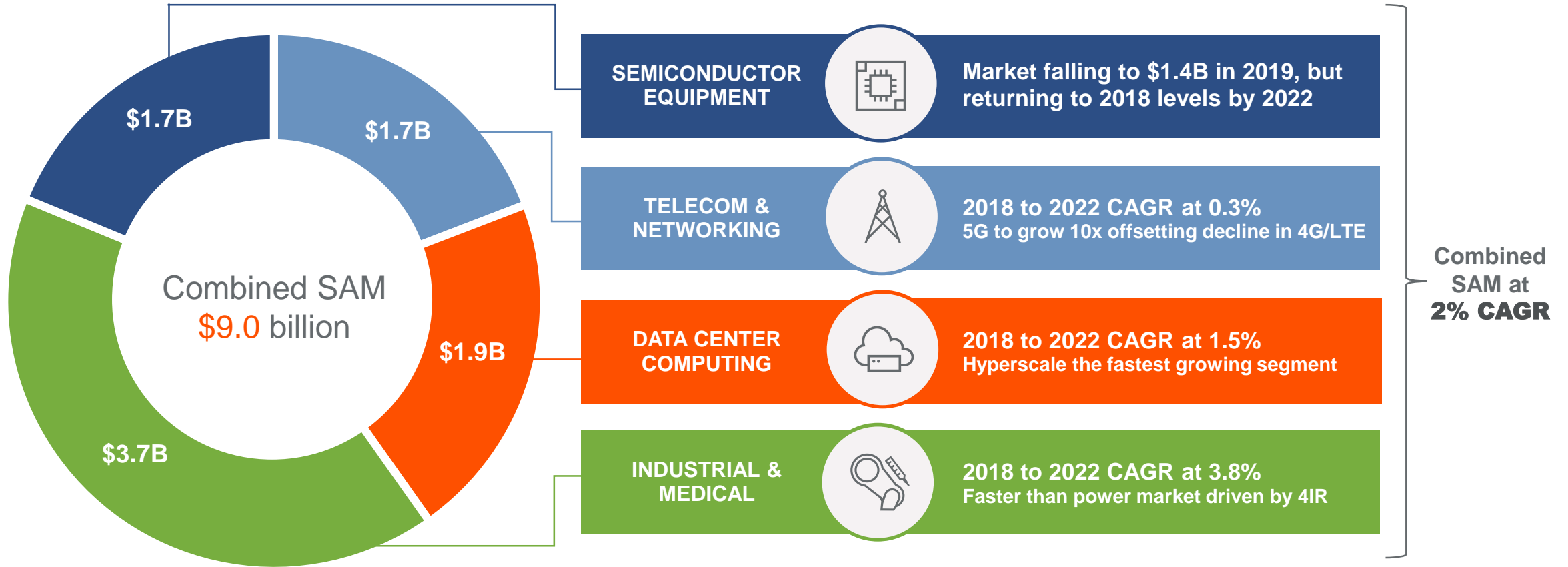


*Note: Q4'19F data is based on mid points of guidance provided during the Q4'19 earnings call. Q4 revenue figures by market are general estimates. Pro forma figures assume the combination of AE and Artesyn for the full 2019 year; however please note that AE acquired Artesyn in September 2019.

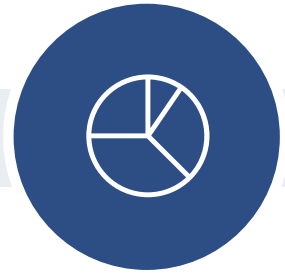
REVENUE IMPROVING IN ALL MAJOR MARKETS



LONG-TERM MARKET GROWTH TRENDS



TARGETED GROWTH STRATEGY DRIVES STRONG FINANCIAL PERFORMANCE



GROW SHARE ACROSS MISSION CRITICAL, PRECISION POWER VERTICALS

- Drive market share gains with well-defined targets
- Each point of share gain translates to \$90M of new revenue
- Target \$50-\$100M of incremental revenue by growing share



INVEST IN **INNOVATION** AND TECHNOLOGY LEADERSHIP

- Positions AE for leadership across all verticals
- Delivers new innovations to win next generation opportunities
- Adds \$25-\$75M in incremental revenue



LEVERAGE STRONG FINANCIALS AND INCREASED SCALE TO CAPITALIZE ON **NEW OPPORTUNITIES**

- Expand SAM by \$0.7B with new products and cross selling
- Leverage market positions and scale to grow
- Capture \$25-\$75M in incremental revenue

SYNERGIES DRIVEN BY FUNCTIONAL INTEGRATION



Well-defined actions to achieve long-term cost synergies of >\$40 million and to capture revenue growth opportunities

SYNERGY & SCALE ENABLE ACCELERATED EARNINGS GROWTH



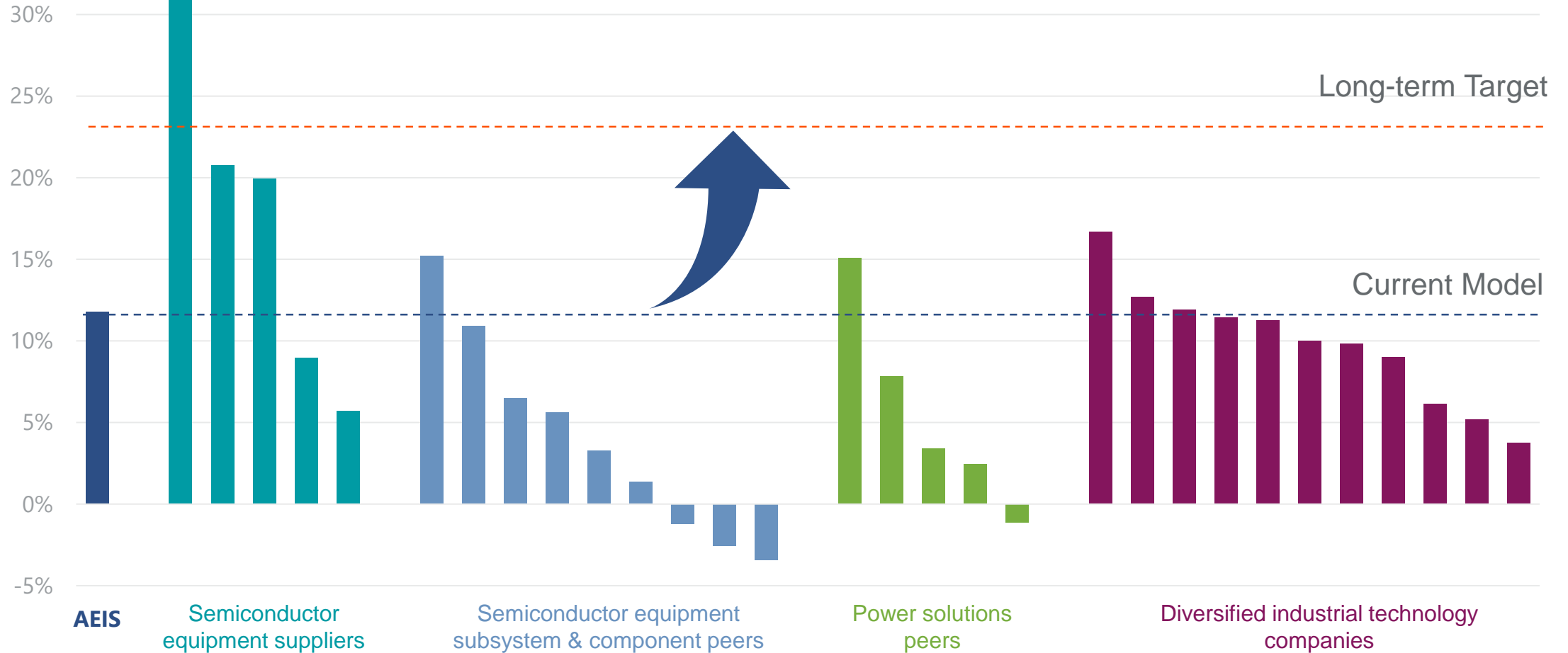
A clear path to accelerate earnings from current levels

TARGET OPERATING MODEL YIELDS TOP TIER PERFORMANCE

| | BEFORE SYNERGIES Q4'19 Annualized ⁽²⁾ | SYNERGIES FULLY REALIZED | | |
|-------------------------------------|--------------------------------------------------------|--------------------------|------------|------------------|
| | | 1.3B Model | 1.4B Model | Long-term Target |
| Revenue (\$M) | \$1,240 | \$1,300 | \$1,400 | \$1,500 |
| NG Gross Margins ⁽¹⁾ | 34-36% | 36-37% | 38-39% | 40-41% |
| NG Operating Margins ⁽¹⁾ | 9-12% | 14-15% | 17-18% | 19-21% |
| Cash Flow (\$M) | \$80 | \$140 | \$160 | \$180 |
| Non-GAAP EPS | \$2.72 | \$3.75 | \$5.00 | \$6.50 |
| ROIC | 12% | 15% | 19% | 23% |

LEAN OPERATIONS ENABLE TOP QUARTILE ROIC

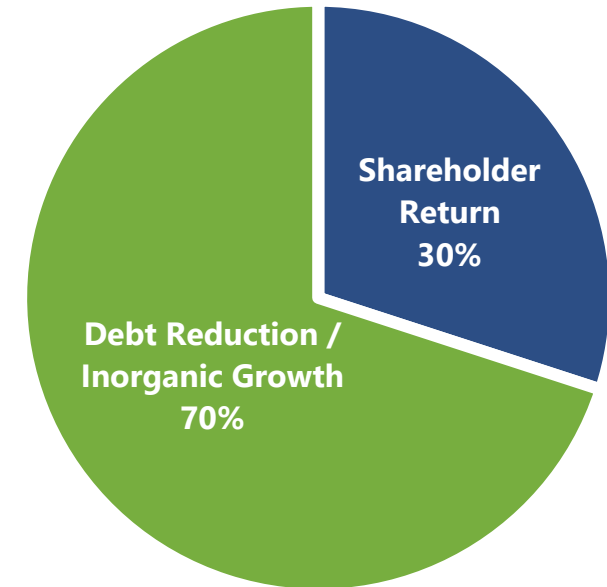
COMPARISON OF ROIC BETWEEN AEIS AND PUBLICALLY-TRADED PEERS
BASED ON TRAILING FOUR QUARTER RESULTS



CAPITAL ALLOCATION AND BALANCE SHEET

NEAR-TERM CAPITAL ALLOCATION PLAN

- Execute on Artesyn integration
- Focus on debt reduction
 - Drive target gross debt to 1.0-1.5x
 - Achieve in 12-18 months
- Maintain opportunistic share repurchase to offset dilution over time

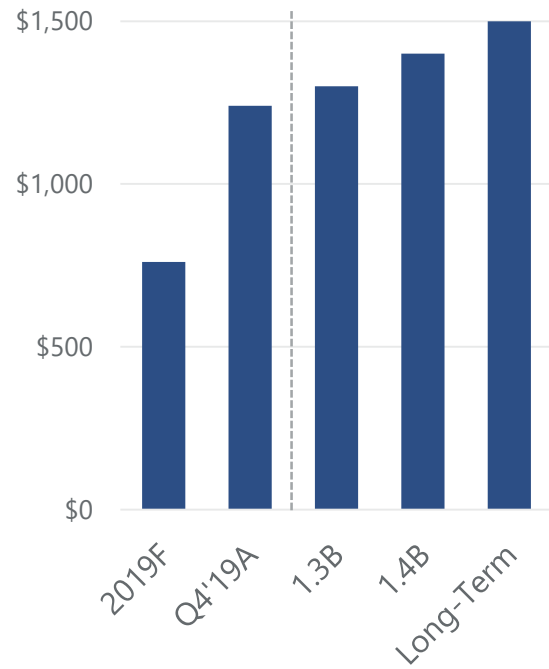


Position balance sheet to support continued inorganic growth

ACCELERATING FINANCIAL PERFORMANCE

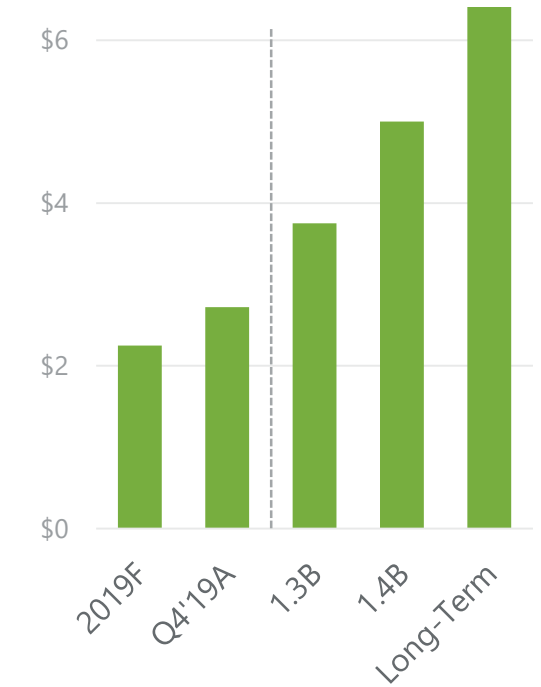
REVENUE

(\$ in millions)

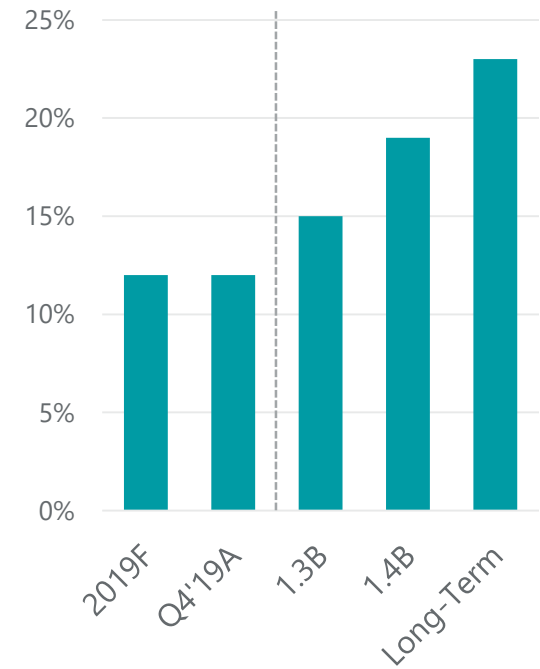


NON-GAAP EPS

(\$ per share)

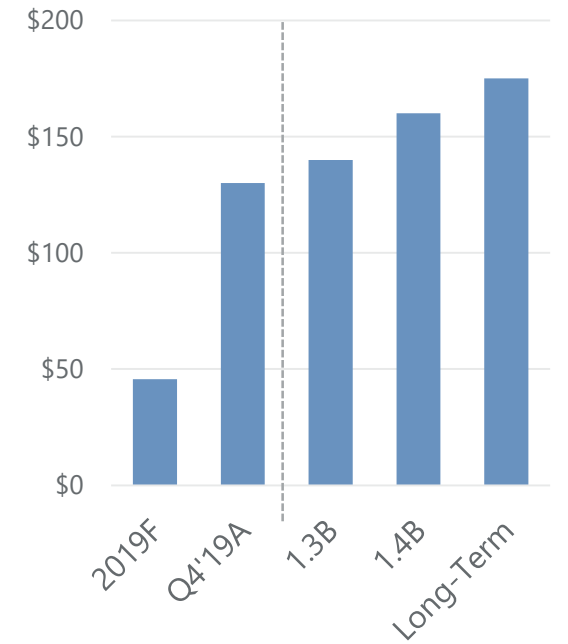


ROIC⁽¹⁾



OPERATING CASH FLOW⁽²⁾

(\$ in millions)



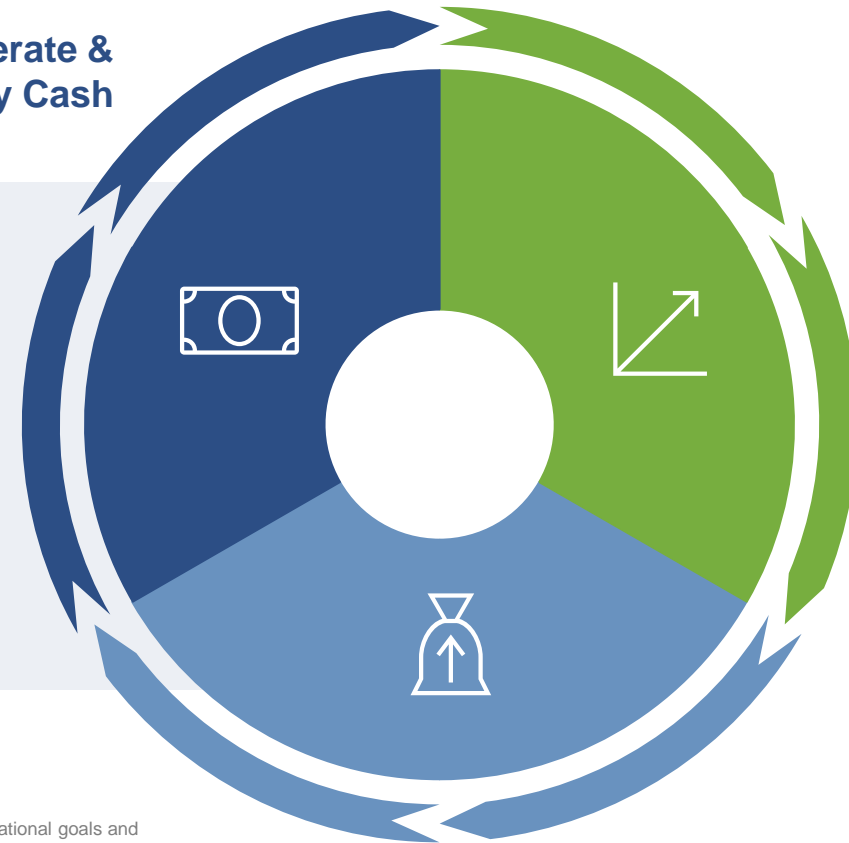
New financial model with strong focus on earnings growth and ROIC

LONG-TERM ASPIRATIONAL GOALS

Aspirational Goals⁽¹⁾ :

- Revenue: **> \$1.5B**
- Non-GAAP EPS⁽²⁾ : **> \$6.50**
- ROIC⁽³⁾ : **> 23%**

Generate &
Deploy Cash



Grow &
Diversify

Drive Strong
Profitability

(1) Please note that hypothetical scenarios regarding revenue growth, EBITDA, EPS, (GAAP or non-GAAP), ROIC, cash generation, acquisitions, aspirational goals and targets and similar statements illustrate various possible outcomes of our different strategies if they are successful. These hypothetical scenarios and illustrations should not be treated as forecasts or projections or financial guidance. We cannot assure you that we will be able to accomplish any of these goals, metrics or opportunities at any point in the future (if at all), all of which are subject to significant risks and uncertainties. Long-term targets generally reflect a 3-4 year time frame, depending on the timing of the semi recovery.

(2) Refer to the non-GAAP reconciliation for additional detail.

(3) ROIC calculated as Non-GAAP Operating Income After Tax divided by Invested Capital, which is defined as Total Assets less Cash, Payables, Accrued Expenses

POWERING THE 4TH INDUSTRIAL REVOLUTION

- Delivering on our strategic plans over the last 5 years
- Leading in precision power conversion, measurement and control
- Growing share and content across our markets
- Expanding market presence through inorganic investments
- Accelerating earnings growth and Return on Invested Capital



Yuval Wasserman
President and
Chief Executive Officer



Isabel Yang
Senior Vice President
and Chief Technology Officer



Peter Gillespie
Vice President,
Semiconductor Solutions



Dana Huth
Chief Revenue Officer,
Embedded Power



Neil Brinker
Executive Vice President
and Chief Operating Officer



Paul Oldham
Executive Vice President
and Chief Financial Officer



Q&A SESSION

NON-GAAP MEASURES

- Advanced Energy's non-GAAP measures exclude the impact of non-cash related charges such as stock-based compensation and amortization of intangible assets, as well as discontinued operations, minority interest, and non-recurring items such as acquisition-related costs and restructuring expenses. The non-GAAP measures are not in accordance with, or an alternative for, similar measures calculated under generally accepted accounting principles and may be different from non-GAAP measures used by other companies. In addition, these non-GAAP measures are not based on any comprehensive set of accounting rules or principles. Advanced Energy believes that these non-GAAP measures provide useful information to management and investors to evaluate business performance without the impacts of certain non-cash charges and other charges which are not part of the company's usual operations. The company uses these non-GAAP measures to assess performance against business objectives, make business decisions, develop budgets, forecast future periods, assess trends and evaluate financial impacts of various scenarios. In addition, management's incentive plans include these non-GAAP measures as criteria for achievements. Additionally, the company believes that these non-GAAP measures, in combination with its financial results calculated in accordance with GAAP, provide investors with additional perspective. While some of the excluded items may be incurred and reflected in the company's GAAP financial results in the foreseeable future, the company believes that the items excluded from certain non-GAAP measures do not accurately reflect the underlying performance of its continuing operations for the period in which they are incurred. The use of non-GAAP measures has limitations in that such measures do not reflect all of the amounts associated with the company's results of operations as determined in accordance with GAAP, and these measures should only be used to evaluate the company's results of operations in conjunction with the corresponding GAAP measures. Please refer to the Form 8-K regarding this presentation furnished today to the Securities and Exchange Commission.

NON-GAAP RECONCILIATION

| | Twelve months ended December 31, | | | |
|-----------------------------------------------|----------------------------------|-----------------|-----------------|-----------------|
| | 2015 | 2016 | 2017 | 2018 |
| Revenue | \$ 414.8 | \$ 483.7 | \$ 671.0 | \$ 718.9 |
| GAAP Operating Income | \$ 106.7 | \$ 126.9 | \$ 200.8 | \$ 171.6 |
| Add back: | | | | |
| Restructuring Charges | 0.2 | - | - | 4.2 |
| Acquisition-related Costs | - | - | 0.2 | 2.3 |
| Stock-based Compensation | 2.8 | 6.3 | 12.5 | 9.7 |
| Amortization of Intangible Assets | 4.4 | 4.2 | 4.4 | 5.8 |
| Facility Transition and Relocation Costs | - | - | - | 1.8 |
| Non-GAAP Operating Income | \$ 114.0 | \$ 137.4 | \$ 217.8 | \$ 195.4 |
| <i>Non-GAAP Operating Margin % of Revenue</i> | <i>27.5%</i> | <i>28.4%</i> | <i>32.5%</i> | <i>27.2%</i> |

| | Twelve months ended December 31, | | | |
|--------------------------------------------------------------------------------|----------------------------------|----------------|----------------|----------------|
| | 2015 | 2016 | 2017 | 2018 |
| GAAP Income from Continuing Operations | \$ 83.5 | \$ 116.9 | \$ 136.1 | \$ 147.1 |
| Add back: | | | | |
| Restructuring Charges | 0.2 | - | - | 4.2 |
| Acquisition-related Costs | - | - | 0.2 | 2.3 |
| Stock-based Compensation | 2.8 | 6.3 | 12.5 | 9.7 |
| Amortization of Intangible Assets | 4.4 | 4.2 | 4.4 | 5.8 |
| Loss on Foreign Exchange Hedge | - | - | 3.5 | - |
| Facility Transition and Relocation Costs | - | - | - | 1.8 |
| Incremental Expense Associated with Start-up of the Asia Regional Headquarters | - | - | 1.1 | - |
| Nonrecurring Tax (Benefit) Expense Associated with Inverter Business | - | - | (33.8) | - |
| Tax Cuts and Jobs Act Impact | - | - | 72.9 | 5.7 |
| Tax Effect of Non-GAAP Adjustments | (1.6) | (2.9) | (5.3) | (4.6) |
| Non-GAAP Net Income | \$ 89.3 | \$ 124.6 | \$ 191.5 | \$ 172.0 |
| Share Outstanding (Millions) | 41.1 | 40.0 | 40.2 | 39.4 |
| Non-GAAP EPS | \$ 2.17 | \$ 3.11 | \$ 4.77 | \$ 4.37 |

NON-GAAP RECONCILIATION

Reconciliation of Non-GAAP measure - operating expenses and operating income, excluding certain items

| | Three Months Ended | | | Nine Months Ended | |
|------------------------------------------------------------|--------------------|------------------|------------------|-------------------|-------------------|
| | September 30, | | June 30, | September 30, | |
| | 2019 | 2018 | 2019 | 2019 | 2018 |
| Gross profit from continuing operations, as reported | \$ 73,491 | \$ 85,539 | \$ 64,126 | \$ 203,357 | \$ 290,419 |
| Adjustments to gross profit: | | | | | |
| Stock-based compensation | 77 | 76 | 55 | 365 | 576 |
| Facility expansion and relocation costs | 1,342 | 725 | 150 | 1,662 | 974 |
| Acquisition-related costs | 1,506 | 158 | — | 1,506 | 158 |
| Non-GAAP gross profit | <u>76,416</u> | <u>86,498</u> | <u>64,331</u> | <u>206,890</u> | <u>292,127</u> |
| Operating expenses from continuing operations, as reported | 64,101 | 45,677 | 53,121 | 171,171 | 138,436 |
| Adjustments: | | | | | |
| Amortization of intangible assets | (3,002) | (1,437) | (1,874) | (6,849) | (3,958) |
| Stock-based compensation | (840) | (948) | (883) | (4,688) | (6,885) |
| Acquisition-related costs | (6,398) | (705) | (1,531) | (9,440) | (1,310) |
| Facility expansion and relocation costs | (223) | (29) | — | (297) | (518) |
| Restructuring charges | (152) | (403) | (1,795) | (3,620) | (403) |
| Non-GAAP operating expenses | <u>53,486</u> | <u>42,155</u> | <u>47,038</u> | <u>146,277</u> | <u>125,362</u> |
| Non-GAAP operating income | <u>\$ 22,930</u> | <u>\$ 44,343</u> | <u>\$ 17,293</u> | <u>\$ 60,613</u> | <u>\$ 166,765</u> |

Reconciliation of Non-GAAP measure - operating expenses and operating income, excluding certain items

| | Three Months Ended | | | Nine Months Ended | |
|------------------------------------------------------------|--------------------|---------------|---------------|-------------------|---------------|
| | September 30, | | June 30, | September 30, | |
| | 2019 | 2018 | 2019 | 2019 | 2018 |
| Gross profit from continuing operations, as reported | 42.0 % | 49.4 % | 47.6 % | 45.1 % | 51.4 % |
| Adjustments to gross profit: | | | | | |
| Stock-based compensation | — | — | — | 0.1 | 0.1 |
| Facility expansion and relocation costs | 0.8 | 0.5 | 0.1 | 0.4 | 0.2 |
| Acquisition-related costs | 0.8 | 0.1 | — | 0.3 | — |
| Non-GAAP gross profit | <u>43.6</u> | <u>50.0</u> | <u>47.7</u> | <u>45.9</u> | <u>51.7</u> |
| Operating expenses from continuing operations, as reported | 36.6 | 26.4 | 39.4 | 38.0 | 24.5 |
| Adjustments: | | | | | |
| Amortization of intangible assets | (1.7) | (0.8) | (1.4) | (1.5) | (0.7) |
| Stock-based compensation | (0.5) | (0.6) | (0.7) | (1.0) | (1.2) |
| Acquisition-related costs | (3.7) | (0.4) | (1.1) | (2.1) | (0.2) |
| Facility expansion and relocation costs | (0.1) | — | — | (0.1) | (0.1) |
| Restructuring charges | (0.1) | (0.2) | (1.3) | (0.8) | (0.1) |
| Non-GAAP operating expenses | <u>30.5</u> | <u>24.4</u> | <u>34.9</u> | <u>32.5</u> | <u>22.2</u> |
| Non-GAAP operating income | <u>13.1 %</u> | <u>25.6 %</u> | <u>12.8 %</u> | <u>13.4 %</u> | <u>29.5 %</u> |

Reconciliation of Non-GAAP measure - income excluding certain items

| | Three Months Ended | | | Nine Months Ended | |
|--------------------------------------------------------------------------------------|--------------------|------------------|------------------|-------------------|-------------------|
| | September 30, | | June 30, | September 30, | |
| | 2019 | 2018 | 2019 | 2019 | 2018 |
| Income from continuing operations, less noncontrolling interest, net of income taxes | \$ 7,246 | \$ 35,150 | \$ 23,362 | \$ 45,987 | \$ 127,845 |
| Adjustments: | | | | | |
| Amortization of intangible assets | 3,002 | 1,437 | 1,874 | 6,849 | 3,958 |
| Acquisition-related costs | 7,904 | 863 | 1,531 | 10,946 | 1,468 |
| Facility expansion and relocation costs | 1,565 | 754 | 150 | 1,959 | 1,492 |
| Restructuring charges | 152 | 403 | 1,795 | 3,620 | 403 |
| Tax Cuts and Jobs Act Impact | — | 2,398 | — | — | 4,251 |
| Central inverter services business sale | — | — | (14,804) | (14,804) | — |
| Acquisition transition services | (29) | — | — | (29) | — |
| Tax effect of Non-GAAP adjustments | 326 | (598) | 2,536 | 2,011 | (1,145) |
| Non-GAAP income, net of income taxes, excluding stock-based compensation | <u>20,166</u> | <u>40,407</u> | <u>16,444</u> | <u>56,539</u> | <u>138,272</u> |
| Stock-based compensation, net of taxes | <u>702</u> | <u>779</u> | <u>722</u> | <u>3,887</u> | <u>5,716</u> |
| Non-GAAP income, net of income taxes | <u>\$ 20,868</u> | <u>\$ 41,186</u> | <u>\$ 17,166</u> | <u>\$ 60,426</u> | <u>\$ 143,988</u> |

Reconciliation of Non-GAAP measure - per share earnings excluding certain items

| | Three Months Ended | | | Nine Months Ended | |
|--------------------------------------------------------------------|--------------------|----------------|----------------|-------------------|----------------|
| | September 30, | | June 30, | September 30, | |
| | 2019 | 2018 | 2019 | 2019 | 2018 |
| Diluted earnings per share from continuing operations, as reported | \$ 0.19 | \$ 0.90 | \$ 0.61 | \$ 1.20 | \$ 3.23 |
| Add back (subtract): | | | | | |
| per share impact of Non-GAAP adjustments, net of tax | 0.35 | 0.15 | (0.16) | 0.37 | 0.41 |
| Non-GAAP per share earnings | <u>\$ 0.54</u> | <u>\$ 1.05</u> | <u>\$ 0.45</u> | <u>\$ 1.57</u> | <u>\$ 3.64</u> |

RECONCILIATION OF Q4 2019 GUIDANCE

| | Low End | | High End |
|--------------------------------------------------------|---------------|---|---------------|
| Revenue | \$295M | - | \$325M |
| Reconciliation of non-GAAP** earnings per share | | | |
| GAAP earnings per share | \$0.19 | - | \$0.43 |
| Stock-based compensation | \$0.06 | - | \$0.05 |
| Amortization of intangible assets | \$0.14 | - | \$0.14 |
| Amortization of inventory step-up | \$0.10 | - | \$0.13 |
| Restructuring and other | \$0.11 | - | \$0.08 |
| Tax effects of excluded items | -\$0.04 | - | -\$0.03 |
| Non-GAAP** earnings per share | \$0.56 | - | \$0.80 |