

# ASCENT DMS

ADVANCED DUAL-MAGNETRON  
SPUTTERING ACCESSORIES



## Models

30, 40, and 60 kW units  
Configurable Up to 180 kW

## Input Power

85 to 264 VAC, single

## Output Voltage

Up to 1000 V

## Output Current

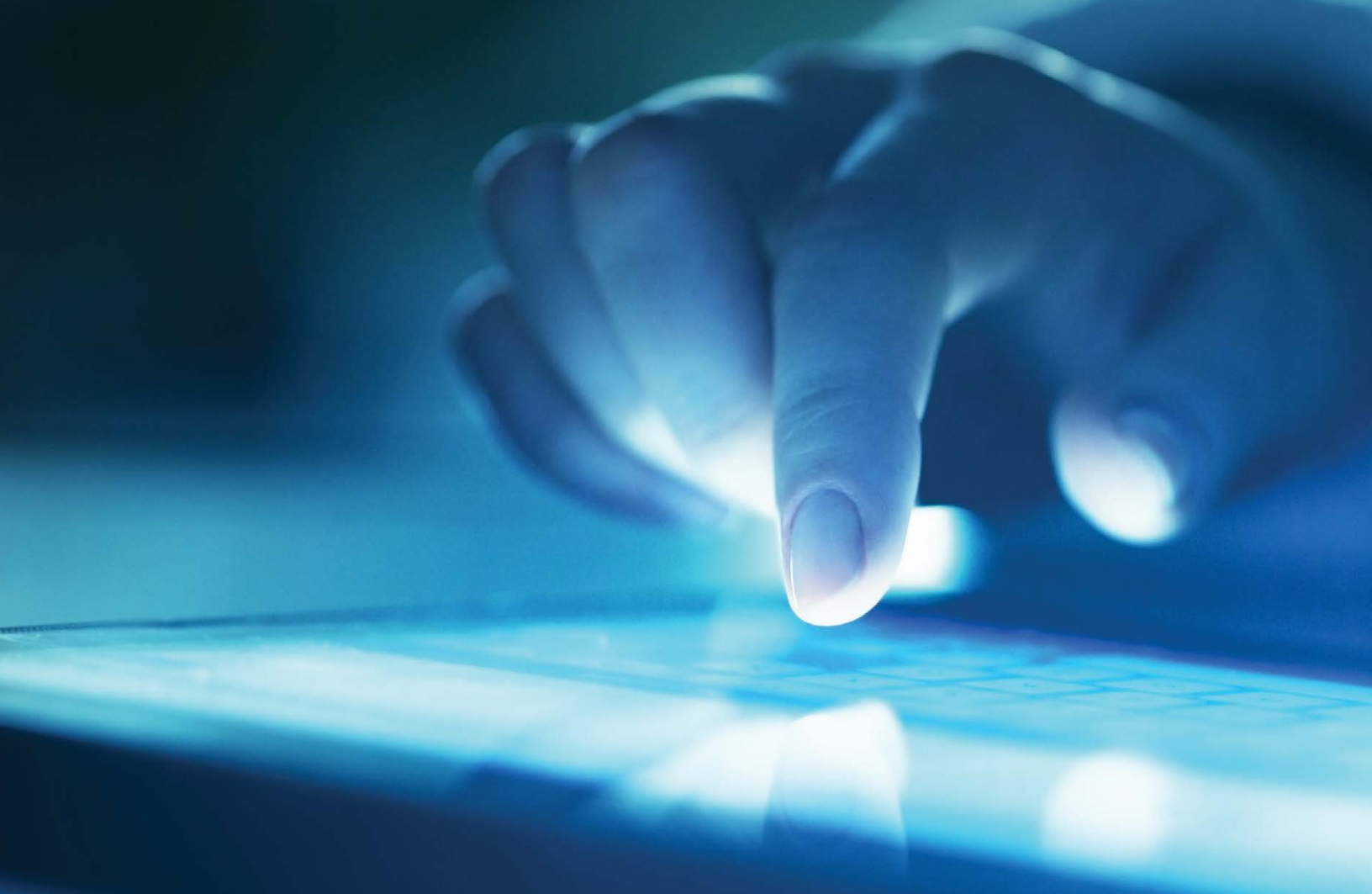
Up to 150 A

## **Facilitating Process Innovation for Tomorrow's Advanced Applications**

The Ascent® DMS series offers unprecedented power delivery ease and control for dual-magnetron sputtering, enabling precise tuning of film characteristics. With selectable frequency, regulation mode, and duty cycle, as well as low stored energy and simplified, modular system configuration, the Ascent DMS accessory distinguishes itself as truly next-generation technology. Cost-effective, scalable, and versatile, it minimizes complexity, increases quality, and boosts throughput to enable advanced process innovation.

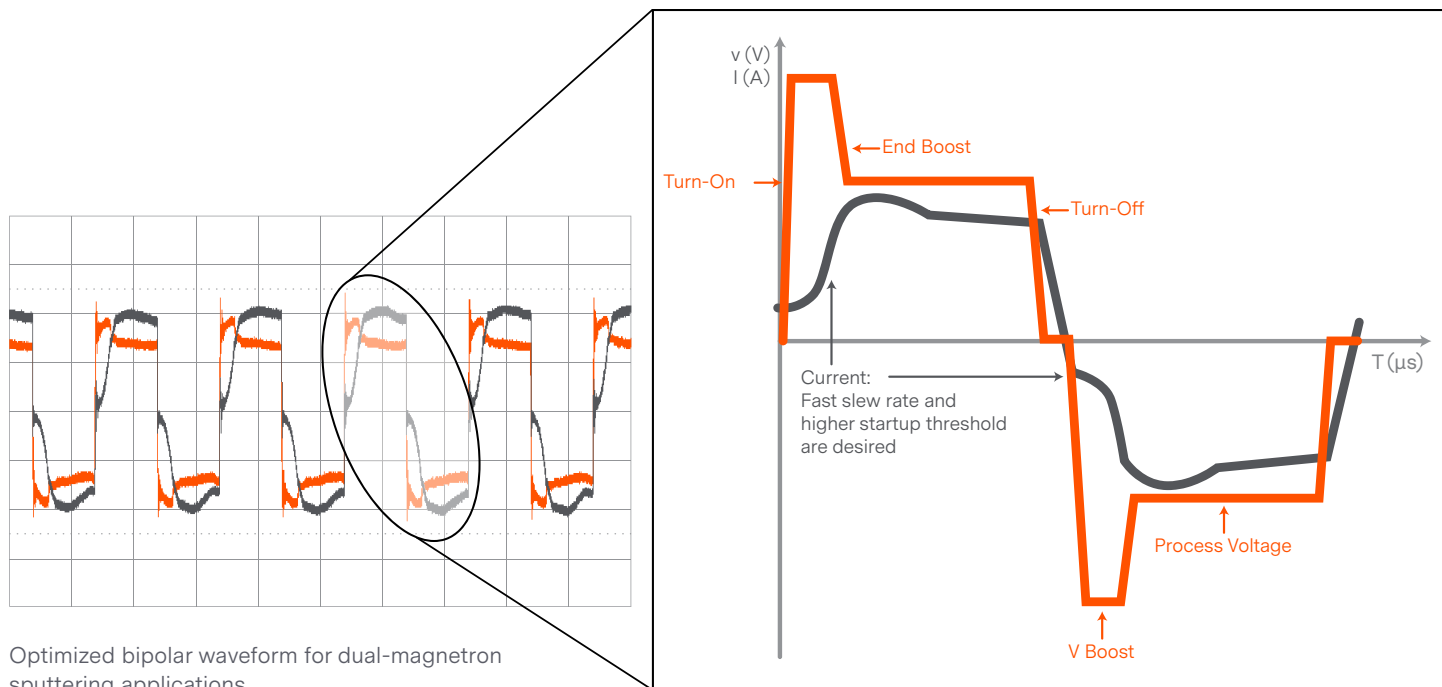






## Product Highlights

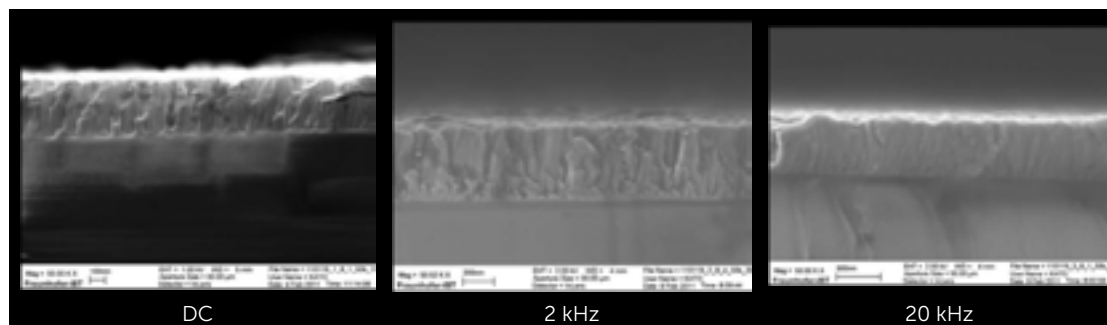
- For all dual-magnetron sputtering applications
- Increased film value: repeatable, customizable deposited films
- Lower cost of ownership and increased productivity
- Lower upfront costs
- Higher power levels with reduced arc damage
- Easy scalability, integration, and support
- Modular and scalable (30, 40, and 60 kW units configurable up to 180 kW)
- Selectable frequency (500 Hz to 50 kHz)
- Power, current, or voltage regulation
- Adjustable duty cycle — independent power ratio regulation for each magnetron
- Unipolar and bipolar operation
- Lowest arc energy possible from any industrial dual-magnetron sputtering supply
- CEX (phase synchronization)
- EU ROHS compliant



## Increased Film Value: Repeatable, Customizable Deposited Films

Create the ideal film density, uniformity, transmission, and resistivity for your application by selecting frequency (500 Hz to 50 kHz), regulation method (voltage, current, or power), and duty cycle (5 to 95%).

Fixed-frequency output stabilizes process conditions by eliminating resonant frequency changes, resulting in excellent repeatability. Low stored energy reduces arc-caused process contamination and film defects.



Precise tuning of film characteristics for advanced, narrow-margin applications

## Easy, Custom Installation Options

Modular and scalable, Ascent DMS accessories enable customized installations from 30 to 180 kW, and provide DC and AC output from the same industry-standard 19" rack.

## Lower Cost Ownership and Increased Productivity

The ability to individually control each magnetron increases target-erosion uniformity, while fixed-frequency output reduces arc energy and target nodule formation. These factors significantly reduce maintenance frequency and lengthen productive manufacturing time. They also decrease the cost of consumables by allowing target utilization of 85% or more.

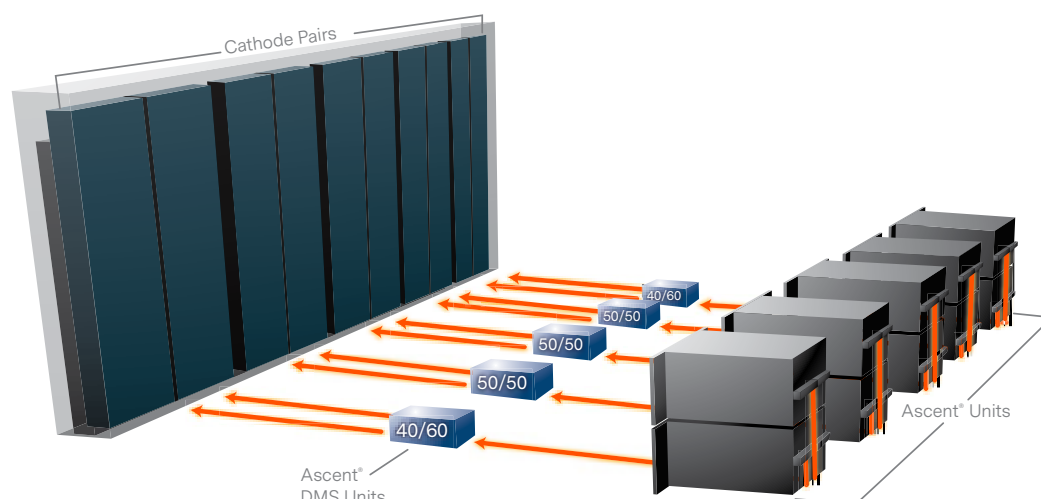
## Lower Upfront Costs

With the ability to control power proportionally to each cathode, Ascent DMS configurations eliminate the need to use multiple power supply types, replacing separate AC, DC, and pulsed-DC units. This significantly reduces equipment, inventory, and training costs, and eases maintenance and support.

## Higher Power Levels with Reduced Arc Damage

Low arc energy and excellent arc management enable Ascent DMS configurations to achieve higher power levels without compromising film or process quality. While AC designs typically store 6 mJ/kW, Ascent DMS units store less than 1.0 mJ/kW, enabling successful deposition of even the most arc-prone materials, such as AZO, IGZO, IZO, ITO, and SiO<sub>2</sub>.

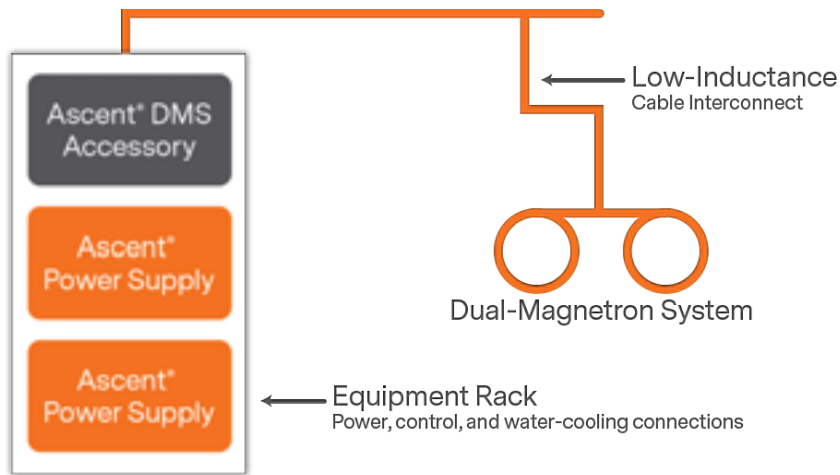
## Independent Power Regulation to Each Cathode



Ascent DMS units control the sputter rate of each cathode individually. This enables more uniform target wear and sputtering in multi-cathode, single chamber systems, compared to AC supplies with fixed 50/50 duty cycles.

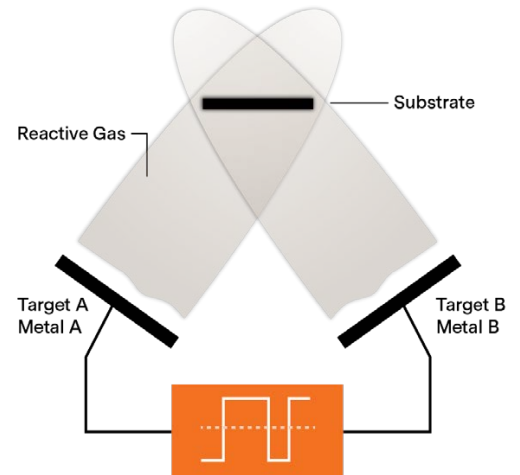
## Easy Scalability, Integration, and Support

Ascent DMS units are modular and scalable, delivering 30 to 180 kW in increments of 30, 40, and 60 kW. CEX (phase synch) technology easily synchronizes multi-cathode systems and allows cathodes to be placed closer together for better uniformity. This versatile series suits a mix of cathode types and allows co-sputtering of controlled mixtures of materials. Reduced configuration complexity also eases maintenance and support.

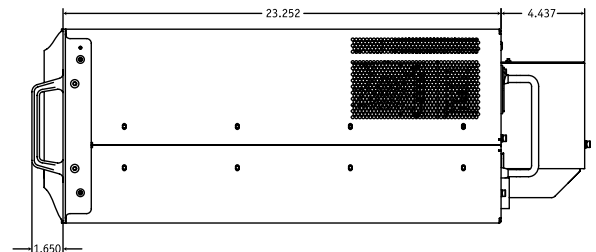
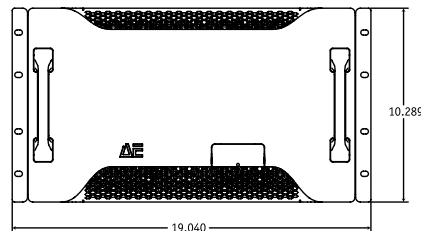
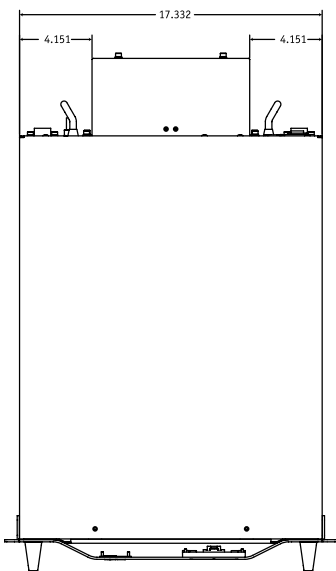


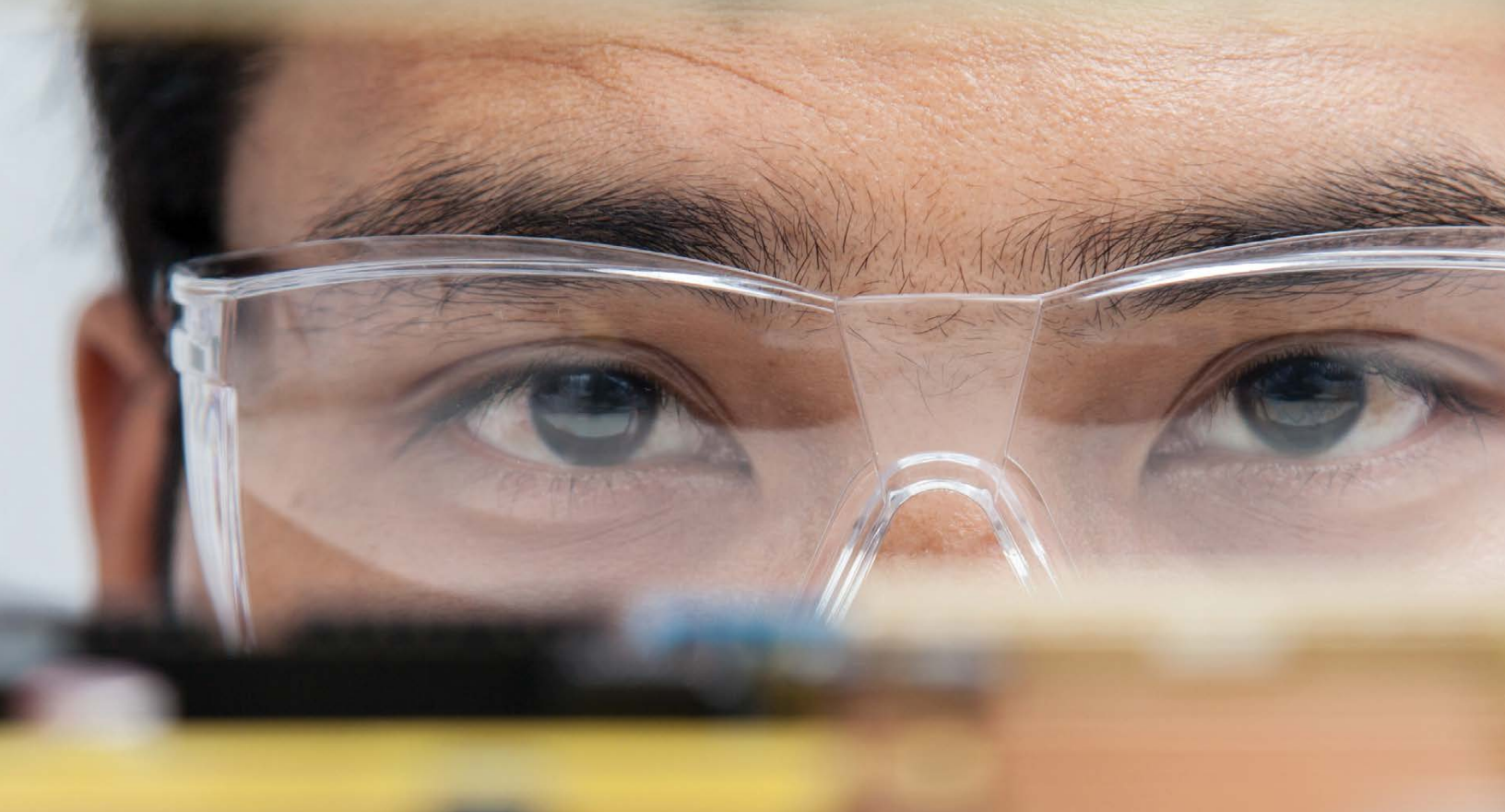
### Co-Sputtering

Co-sputtering: With the Ascent DMS Accessory, each magnetron receives the same power, eroding racetracks at the same rate.



## Mechanical Specifications





## Electrical Specifications

|                           | Ascent DMS 30 kW                                                                                                                              | Ascent DMS 40 kW | Ascent DMS 60 kW |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|
| Input Power <sup>1</sup>  | 85 to 264 VAC, single                                                                                                                         |                  |                  |
| Output Voltage            | Up to 1000 V                                                                                                                                  |                  |                  |
| Output Current            | Up to 150 A                                                                                                                                   |                  |                  |
| Min Output Current        | 1 A at 400 W                                                                                                                                  |                  | 2 A at 600 W     |
| I/O Communication         | Ethernet, EtherCAT®, Profibus®, RS-232/485, analog, Virtual Front Panel (VFP) software, remote control panel, and passive-display front panel |                  |                  |
| Weight                    | ~61.5 kg (136 lb)                                                                                                                             |                  |                  |
| Mounting                  | 4.26 cm (19"), rack mountable, 6U height                                                                                                      |                  |                  |
| Cooling Air Temperature   | 40°C (104°F) max                                                                                                                              |                  |                  |
| Cooling Water Temperature | 35°C (95°F) max                                                                                                                               |                  |                  |
| Compliance                | EU RoHS, CE, NRTL                                                                                                                             |                  |                  |

<sup>1</sup>Ascent power supply input power: 400, 440, or 480 VAC ±10%, 50/60 Hz



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## ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

AE's power solutions enable customer innovation in complex semiconductor and industrial thin film plasma manufacturing processes, demanding high and low voltage applications, and temperature-critical thermal processes.

With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

PRECISION | POWER | PERFORMANCE

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