



AE Product
& Services Portfolio

for Thin-Film Manufacturing

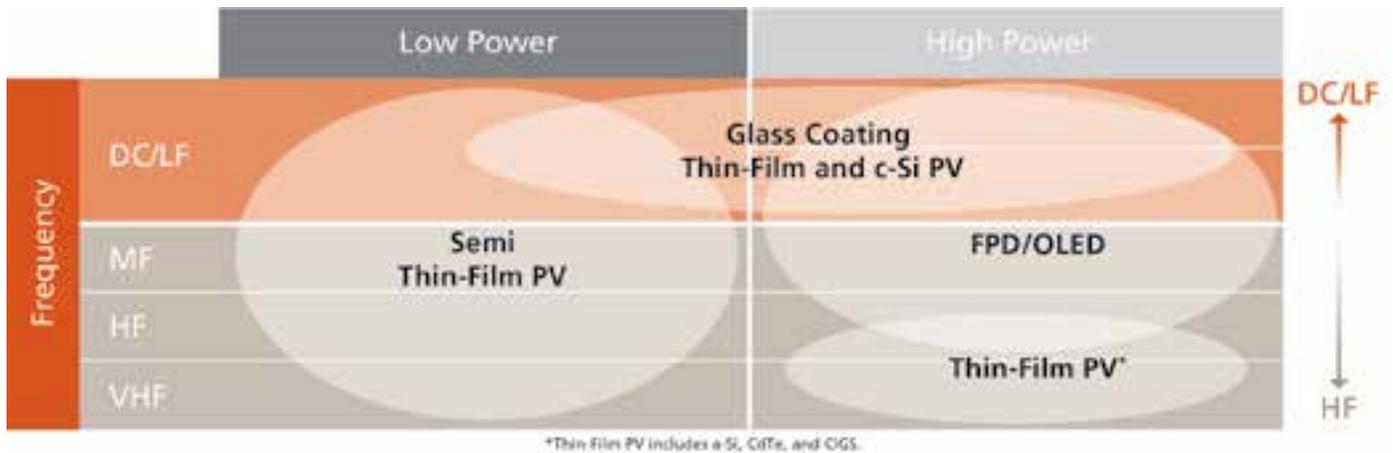
Advanced Energy provides high-value, reliable power conversion and controls as well as deep expertise, extraordinary service, and global presence. We build market-leading solutions and have broad intellectual property, both inside and outside of the power-conversion box.

We deliver:

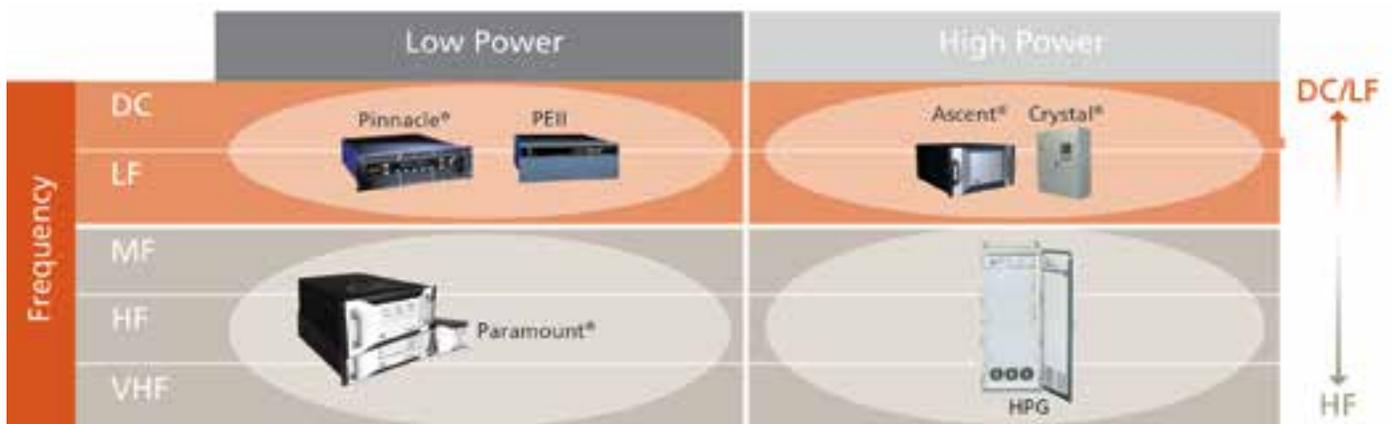
- Solutions that combine insight and innovation resulting from decades of power-conversion leadership
- A robust global infrastructure
- Comprehensive product and services offerings backed by world-class operational excellence

Our leading solutions and 32-year heritage in power conversion makes us much more than a parts vendor—we're a partner that solves manufacturing challenges to create an advantage for our customers.

Thin-Film Processes Require Diverse Power Technologies



AE's Broad Product Portfolio Meets Your Needs



AE Power Delivery Systems and Controls

Product		Power	Frequency/Wavelength	Application						
				Sputtering		Etch/Clean	CVD	Abatement	Other	
				Metal	Insulative					
Direct Current/Low Frequency	DC Suite: Ascent®, Pinnacle®, and Solvix Series	3 to 480 kW	—	X						X
	Pulsed-DC Suite: Pinnacle® Plus+ and Solvix Series	3 to 60 kW	5 to 350 kHz	X	X					X
	Solvix Arc Series	0 to 400 A	1 to 200 Hz (optional)	X	X					X
	Solvix Bias Series	3 to 30 kW	1 to 350 kHz (optional)	X	X					X
	PEII Series	5 to 10 kW	40 kHz	X	X	X	X			X
	Ascent DMS Accessory for Ascent AMS DC	30 to 180 kW	500 Hz to 50 kHz	X	X					X
	Crystal® Series	60 to 180 kW	Up to 100 kHz	X	X		X			X
Mid Frequency	Paramount® MF Series	2 to 8 kW	330 to 460 kHz			X	X			X
		5 kW	2 MHz			X	X			X
	PDX® Series	900 W to 8 kW	235 to 460 kHz			X	X			X
	Cesar® Series	300 W to 5 kW	400 kHz to 4 MHz			X	X			X
High Frequency	Paramount® HF Series	1.5 to 6 kW	13 MHz	X	X	X	X			X
	Apex® Series	1.5 to 10 kW	13 MHz			X	X			X
	Cesar® Series	300 W to 5 kW	13 to 40 MHz			X	X			X
	HPG™ Series	15 to 30 kW	3 to 13 MHz			X	X			X
Very High Frequency	Paramount® VHF	3 to 7 kW	27 to 60 MHz	X		X	X			X
	Ovation® Series	2.5 and 5 kW	60 MHz			X				X
	Cesar® Series	300 W to 4 kW	13 to 40 MHz			X				X
Matching Networks	Navigator® II Matching Networks	Up to 30 kW	Up to 60 MHz			X	X			
	Navigator® II FastCap™ Solid-State Matching Networks	Up to 1.5 kW	13 MHz			X	X			X
	Navigator® Matching Networks	1 to 50 kW	2 to 60 MHz			X	X			X
	Navio™ Matching Networks	1 to 5 kW	13 to 60 MHz				X			X
Source Technology	Litmas® RPS 1501 and 3001 Remote Plasma Sources	1.5 and 3 kW	1.7 to 3 MHz			X	X			X
	Litmas® RPS for Foreline Abatement	1.5 and 3 kW	1.7 to 3 MHz					X		X
Thermal Instrumentation	Sekidenko OR4000T Series Multi-Channel Pyrometers	—	200 to 2300 nm	X	X	X	X			X
	Sekidenko OR4000E Series with Active Emissivity Compensation	—	200 to 2300 nm	X	X	X	X			X
	Sekidenko OR400T Single-Channel Pyrometers	—	200 to 2300 nm	X	X	X	X			X
	Sekidenko OR400M Mid-IR Pyrometers	—	2300 to 5200 nm	X	X	X	X			X

Featured Products

DC Magnetron Sputtering Products

LARGEST INSTALL BASE AND BROADEST ARRAY OF DC PRODUCTS TO MEET THE MOST DEMANDING APPLICATIONS



Ascent® DC Power Systems

- Ensures maximum field reliability
- Effectively manages arcs for improved film quality, productivity, throughput, and yield
- Simplifies power supply integration in sputtering processes
- Reduces arc-caused contamination and damage

Next-Generation RF Power Solutions

DIGITAL ARCHITECTURE AND INDUSTRY-LEADING RF PLASMA CONTROL



Paramount® RF Power Systems

- Optimizes film uniformity and throughput with unprecedented power-delivery accuracy
- Enables faster, seamless process transitions
- Provides advanced pulsing and pulse synchronization
- Reduces RF delivery system complexity
- Reduces arc-caused contamination and damage



Navigator® II Digital Matching Networks

- Speeds matching response time
- Tightens process control
- Helps increase tool throughput and product yield
- Improves reliability and cost of ownership
- Introduces FastCap™ technology, for the fastest solid-state matching in the industry

High Quality

We drive quality in every aspect of our business.



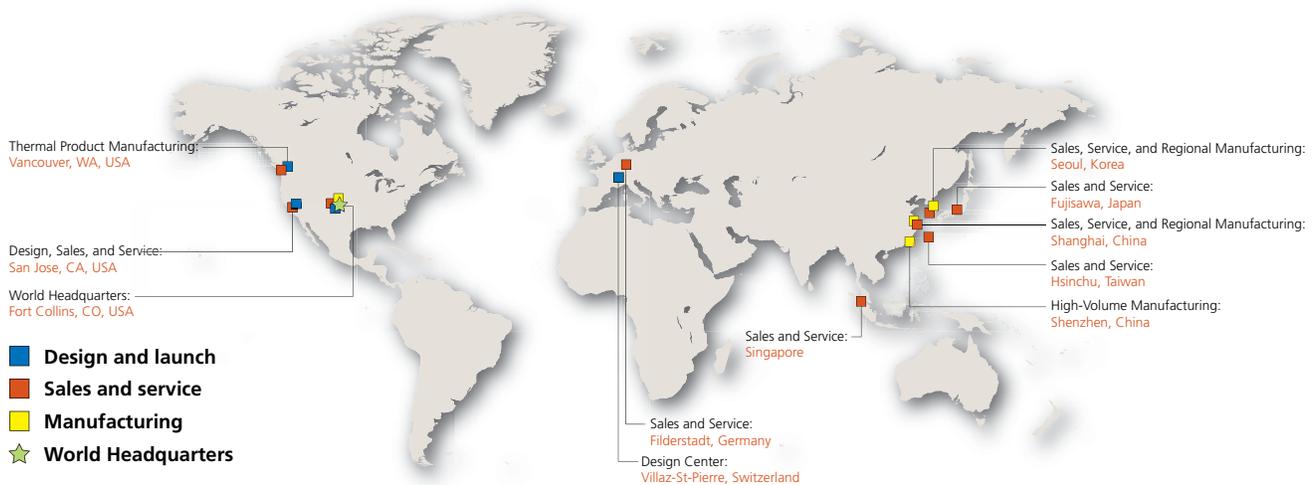
Extraordinary Service

AE Global Services help you maximize your capital equipment investment with solutions that go beyond typical break/fix services. We support you throughout the entire product lifecycle.



Global Presence

More than 200 professionals are available around the clock—in dozens of locations around the world—to provide highly responsive sales, service, and technical support. Our comprehensive network of AE offices and regional partners provides local insight into the unique priorities of every region we serve.



From flat-panel displays to solar cells, thin-film manufacturing advances are moving the world forward. And Advanced Energy is moving thin-film manufacturing forward—with power conversion and control technologies as dependable as they are innovative. Contact us for more information about our product portfolio or thin-film expertise; we're ready to lend a powerful advantage to your next solution.



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