

# PROCESS CONTROL FOR GLASS MANUFACTURING

PLASMA POWER DELIVERY, TEMPERATURE MEASUREMENT, AND  
TEMPERATURE CONTROL



# Improve Glass Process Control and Efficiency

## Glass Production

Precise temperature monitoring and control enable efficient melting, glass viscosity control, heat zone adjustment, annealing, and stress reduction. It also helps improve glass quality and prolongs the life of critical assets such as refractory walls. For decades, our instruments have provided robust, reliable performance in continuous and batch glass manufacturing processes.

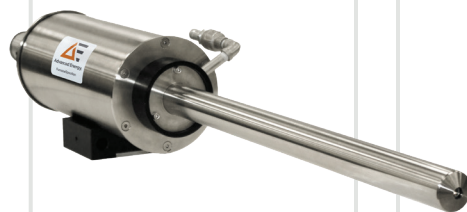
### TEMPERATURE MEASUREMENT SOLUTIONS

- Robust and non-contact
- High-quality infrared data
- Integration with production controls
- Custom software and support

Pyrometers



Thermal Imagers



### POWER CONTROL SOLUTIONS

- Flexible voltages and loads
- Digital and analog I/O options
- Custom software and support

Thyro Family

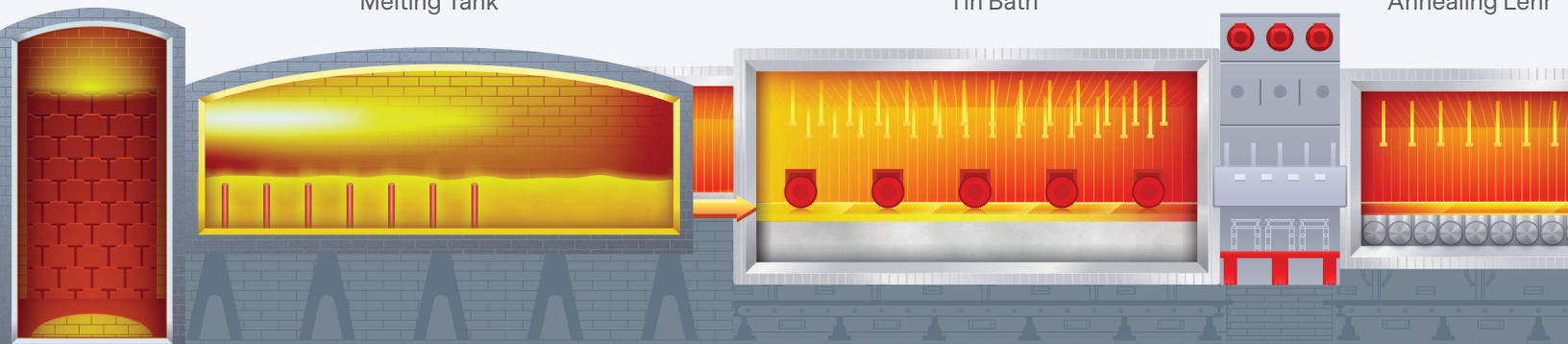


Regenerator

Melting Tank

Tin Bath

Annealing Lehr



## Glass Coating

New coating materials and layer stacks require highly developed plasma power delivery controls. Advanced Energy's DC, pulsed DC, bipolar pulsed DC, and MF solutions provide stable, reliable, precise power to increase uptime, deposition rates, and film quality.

### DC, PULSED-DC, AND BIPOLAR SOLUTIONS

- Metal and metal oxide deposition
- TCO
- AR coatings

### MF SOLUTIONS

- Two distinct arc-handling circuits
- 307 to 953 VRMS range
- Nearly 10:1 impedance range
- Power, voltage, or current regulation

Ascent AMS®  
Ascent DMS®



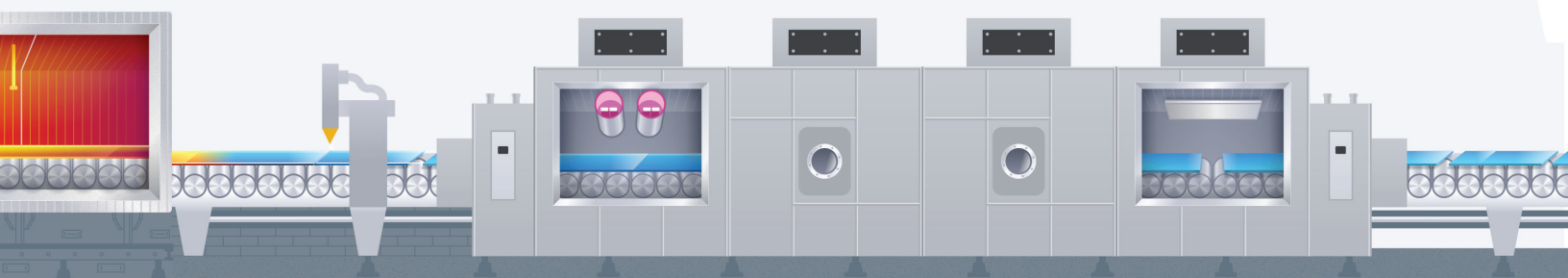
Dual-Magnetron Sputtering

Ascent AMS®  
Ascent® AP



Single-Magnetron  
or pDC Sputtering

### Industrial Glass Coater





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## ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than four 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 | TRUST

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