

# Pulsar™ High-Power DC Pulsing Accessory

*Improving process quality, uniformity, and throughput with a single, add-on solution*

*Advanced Energy® masterminds process technology challenges through a single, add-on solution for difficult and varying process requirements. The Pulsar™ accessory is designed to retrofit to old and new systems alike, without the need to add new power supplies or change established control schemes. When straight DC sputtering is inadequate, the Pulsar accessory provides improved process quality, uniformity, and throughput for both reactive and metallic processes, and manages charges to prevent arcing.*

## Products

Pulsar™ 40 kW, 100 A,  
single-output pulsing product

Pulsar™ 40/40 kW, 100 A,  
dual-output pulsing product

Pulsar™ 80 kW, 200 A,  
single-output pulsing product

## Applications

Residential and architectural  
glass coating

Flat panel display manufacturing

Headlight metalizing

Roll-to-roll coating

## Who Benefits

Companies who want to:

Improve film properties

Increase throughput

Significantly improve yield

Extend target utilization during  
long campaigns

## A Single Solution

When outdated technologies begin to affect yields and throughput, the procurement of new power supplies may be cost prohibitive and disturb existing control schemes. Advanced Energy's Pulsar accessory is a single, add-on solution that uses the latest technology in high-power pulsing and advanced arc management to bridge your outdated power supplies with the newer films, improved film properties, and higher throughput required for today's markets. Its ability to clear charges to prevent arcing improves uniformity and throughput in your most difficult and varying processes.

## Arc Management

The Pulsar accessory's pre-emptive arc management technology reverses the charge of a cathode to clear arc-inducing charge buildup. User-selectable frequency and reverse times allow you to tailor the device's capabilities to your processes, enabling high process stability and throughput.

When an arc does occur as a low-impedance event in the process, the Pulsar accessory detects the voltage drop and shunts power away from the target for 20 µsec.

It then re-energizes the plasma—all happening so quickly that the power supply doesn't even register the activity. Without this advanced arc management, many processes produce splattering and banding.

In glass application processes, arc tracks or "crazing" occurs when small, web-like cracks appear in the film near the edge of the glass. The advanced arc management capability of the Pulsar unit virtually eliminates crazing in large-area glass applications by preventing arcs from occurring, and responding quickly to micro-arc events when they do occur. Process yields are thus maximized through the arc management technology.

## Retrofit Capability

When existing SCR power supplies become detrimental to process throughput and create arc handling problems, obtaining new power supplies isn't always feasible. Cost considerations and the inability to modify established control schemes can make the problem seem insurmountable. The Pulsar accessory provides pulsing technology that installs between an existing power supply and the cathode. It requires no intervention on existing system controls and masterfully handles arcs for faster cathode burn-in and significant process improvements.

## Shorter Cathode Burn-In

The Pulsar accessory enables shorter cathode burn-in times, equivalent to those of new power supplies, by heating up the zone quickly and stabilizing the temperature. Typical cathode burn-in times can be cut in half with the Pulsar accessory.

## How It Works

The Pulsar accessory delivers increased yields and throughput performance to your existing DC supplies in a single, add-on solution for straight metal sputtered deposition or reactive sputtering deposition. Patented technology proactively prevents an arc event by periodically reversing the cathode voltage based on the self-run frequency, dissipating any charge buildup. The variable reverse time allows you to optimize the duty cycle to handle a variety of cathode sizes and film compositions. If a micro-arc event occurs, the Pulsar accessory initiates a micro-arc handling event to dissipate the arc and limit the delivered arc energy to less than 1 mJ per kW. Fewer arc events and lower delivered arc energy result in improved film properties, and greatly reduced splattering and contamination in your deposited films.

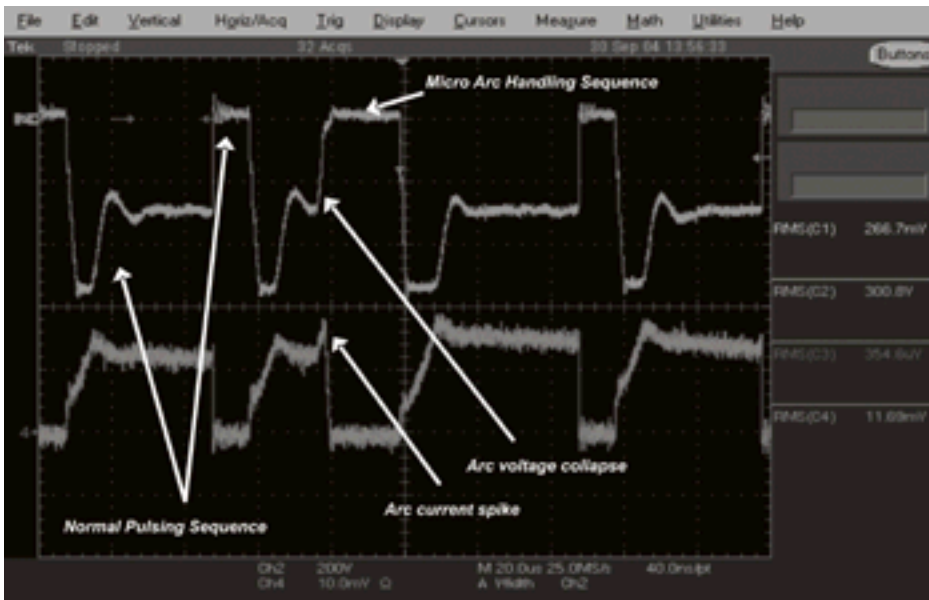


Figure 1. The Pulsar™ accessory works to dissipate any charge buildup.



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