

**Development and Demonstration of  
ROPE – A New Pulse Energization  
System for Electrostatic  
Precipitators**

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**Development and Demonstration of ROPE – A New Pulse Energization System for  
Electrostatic Precipitators**

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Pulsed energization has been used successfully to stabilize and smooth out the spatial distribution of the corona discharge in electrostatic precipitators, especially those affected by back corona resulting from the presence of ash with high electrical resistivity. A new approach that overcomes some of the complexity, inefficiency, and costs of short, sharp voltage pulses was conceived by Sabert Oglesby and Grady Nichols of Southern Research Institute. This approach, called rapid onset pulse energization (ROPE), is to require a sharp leading edge on the waveform, but instead of driving the potential back down to the baseline, allow the charge to decline by means of the corona discharge. Southern Company has supported the development of power supplies that have proven that ROPE provides the uniformity in corona emissions desired for improved ESP performance. This paper presents results of laboratory and pilot-scale tests and a full-scale demonstration that have documented the effectiveness of ROPE in improving corona current distribution and lowering emissions from ESPs.

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