



# ESP PERFORMANCE

Save Money & Improve Capture Efficiency  
with New AS-ESP™

Novinda's AS-ESP™ lowers the bulk resistivity of the particulates collected in the ESP, increasing collection efficiency to maintain regulatory compliance.

## •• ESP Efficiency Challenges

Variety in fuel types, undersized designs, and Dry Sorbent Injection are challenging the performance and contributing to reduced effectiveness of ESP systems. Novinda's AS-ESP™ product addresses these underperforming ESP issues by reducing the resistivity of the particulate dust cake on the ESP collector plate, enhancing the ESP performance and eliminating the need for SO<sub>3</sub> flue gas conditioning systems.

## •• Particulate Capture Compliance

### SO<sub>3</sub> Injection

Undersized ESPs with highly resistive fly ash struggle with particulate capture and compliance, often using SO<sub>3</sub> Injection systems to reduce fly ash resistivity, enabling the ESP to meet opacity and particulate emissions standards. While SO<sub>3</sub> systems perform this function pretty well, there are inherent issues and limitations to these systems:

- SO<sub>3</sub> is hazardous and difficult to store and handle.
- SO<sub>3</sub> can react with moisture to create highly corrosive sulfuric acid.
- Sulfuric acid can, and will, foul your SO<sub>3</sub> injection system.
- Using SO<sub>3</sub> typically requires higher flue gas temperatures, which increases plant heat rate.
- SO<sub>3</sub> can cause excessive rapper re-entrainment.
- SO<sub>3</sub> is preferentially adsorbed by PAC injected for mercury control, reducing PAC effectiveness, leading to increased PAC consumption.

## •• MATS & HCl

### Reducing Resistivity

The EPA's pending MATS regulations specify stricter HCl emissions that often are met via installation of dry sorbent injection (DSI) upstream of the ESP. These DSI systems dramatically increase the particulate loading to the ESP. One solution to this potential problem is to increase the size of the ESP, but a less expensive approach is to enhance the ESP performance by reducing the resistivity of the dust cake on the collector plates.

## How It Works

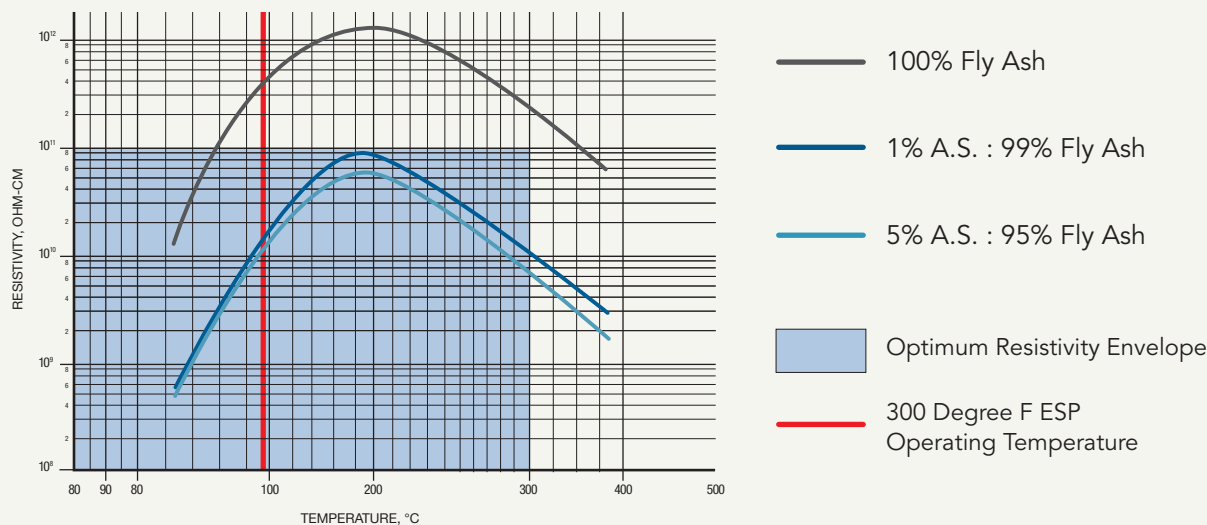
- ✓ Novinda's proprietary resistivity modifier product is a solid powder which reduces the bulk resistivity of the fly ash collected in the ESP. Novinda's AS-ESP™ is injected upstream of the ESP into the flue gas via an array of injection lances. It is then deposited on the collector plates via the same electrostatic charging and subsequent attraction to the grounded collector plates as the fly ash. The small particle size of AS-ESP™ facilitates more uniform collection in the ESP to extend the benefit of lower resistivity to later fields.
- ✓ Novinda AS-ESP™ is delivered in bulk pneumatic trucks and transferred to a storage silo. Automated injection equipment supplies the material in proportion to plant load to assure particulate emissions compliance in the ESP. Operation is simple, reliable and uses industry-standard equipment.

## Lowering Costs and Improving Performance

### The Clear AS-ESP™ Advantage

- ✓ AS-ESP™ operating costs are the equivalent to those of SO<sub>3</sub> systems.
- ✓ AS-ESP™ operating advantages of AS-ESP include:
  - Reduced consumption of PAC or Brominated PAC for Hg control
  - Reduced potential for corrosion
  - ½ the capital equipment costs for injection systems
  - No hazardous material handling issues

### Measured Resistivity Reduction in Fly Ash with 1% and 5% Novinda AS-ESP™



### 3 Easy Steps for Product Evaluation

- **Phase I (\$5k)** – Projected Performance & Injection Rates

From a sample of your fly ash (1qt) we measure the bulk resistivity (IEEE 548) providing:

- Predicted resistivity of ash mix in your ESP using Novinda proprietary model and a
- Quantitative recommendation for product injection at the plant.

- **Phase II (\$10K)** – Predicted Improvement in ESP Particulate Capture

An optimized solution can be provided, based on:

- Full Detailed ESP modeling, which
- Provides ESP performance predictions.

- **Phase III** – Full Scale Testing & Validation