

Post-ESP Dust Monitoring in a Coal-Fired Power Plant

Continuous dust trends for ESP optimisation and lower-maintenance process monitoring



Continuous dust monitoring immediately after an electrostatic precipitator (ESP) gives plant operators real-time visibility into dust-removal performance and provides trend data that can be used to optimise ESP operation.



The Challenge

A large power plant used electrostatic precipitators to remove dust before its emission points. The plant needed dust information immediately after the ESP as well as at the stack, and also wanted a usable process signal to help optimise the ESP rapping cycles.

The existing post-ESP solution was an opacity monitor. In the plant environment, it required substantial maintenance and was affected by frequent misalignment caused by process vibration, making reliable process trending difficult.



The Solution

During a one-month trial, the plant installed a Sintrol E-SPY alongside the existing opacity monitor. The E-SPY provided a continuous relative dust trend downstream of the ESP, and its 4–20 mA output was connected to the plant control system.

This gave operators a direct process signal for adjusting the ESP rapping cycles while allowing the two monitoring approaches to be compared under the same operating conditions.



Results

From one trial unit to four E-SPY measurement points.

After the one-month trial, the plant removed the opacity system at the trial point and ordered three additional E-SPY monitors for other measurement points in the plant.

- ➔ Continuous post-ESP dust trend data for process control
- ➔ Better information for optimising ESP rapping cycles
- ➔ Lower maintenance burden than the previous opacity monitor
- ➔ No recurring optical alignment issue from process vibration

Today's Sintrol solution

ESP optimisation: E-SPY is Sintrol's dedicated continuous dust monitor for post-ESP applications. It neutralises the electrostatic field in the ESP outlet duct and provides a relative dust-concentration trend that helps operators monitor and optimise electrostatic precipitator performance.

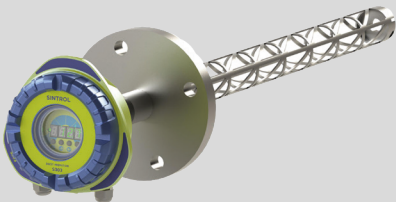
Official stack emissions measurement: Where certified particulate emissions measurement is required at the stack, **Sintrol S305QAL / S305QAL Ex** is QAL1-certified according to EN 15267-3 and approved for combustion-plant applications.

Wet and condensing flue gas applications: Where particulate measurement is required downstream of flue-gas desulphurisation, wet scrubbers, gas cooling or other wet gas-treatment stages, Sintrol **EXO QAL** provides extractive optical dust measurement designed for wet and condensing process conditions. The system conditions the sample before optical measurement to remove the influence of moisture and liquid droplets.

How it works

E-SPY is a probe-based dust monitor using Sintrol's Inductive Electrification measurement principle. Its post-ESP design neutralises the electrostatic field in the outlet duct so that the monitor can provide a stable relative dust trend for continuous process monitoring and ESP optimisation.

Product portfolio for the case



E-SPY

ESP monitoring and control



S305QAL / S305QAL Ex

QAL1-certified particulate emissions measurement



EXO QAL

Wet and condensing flue gas dust measurement