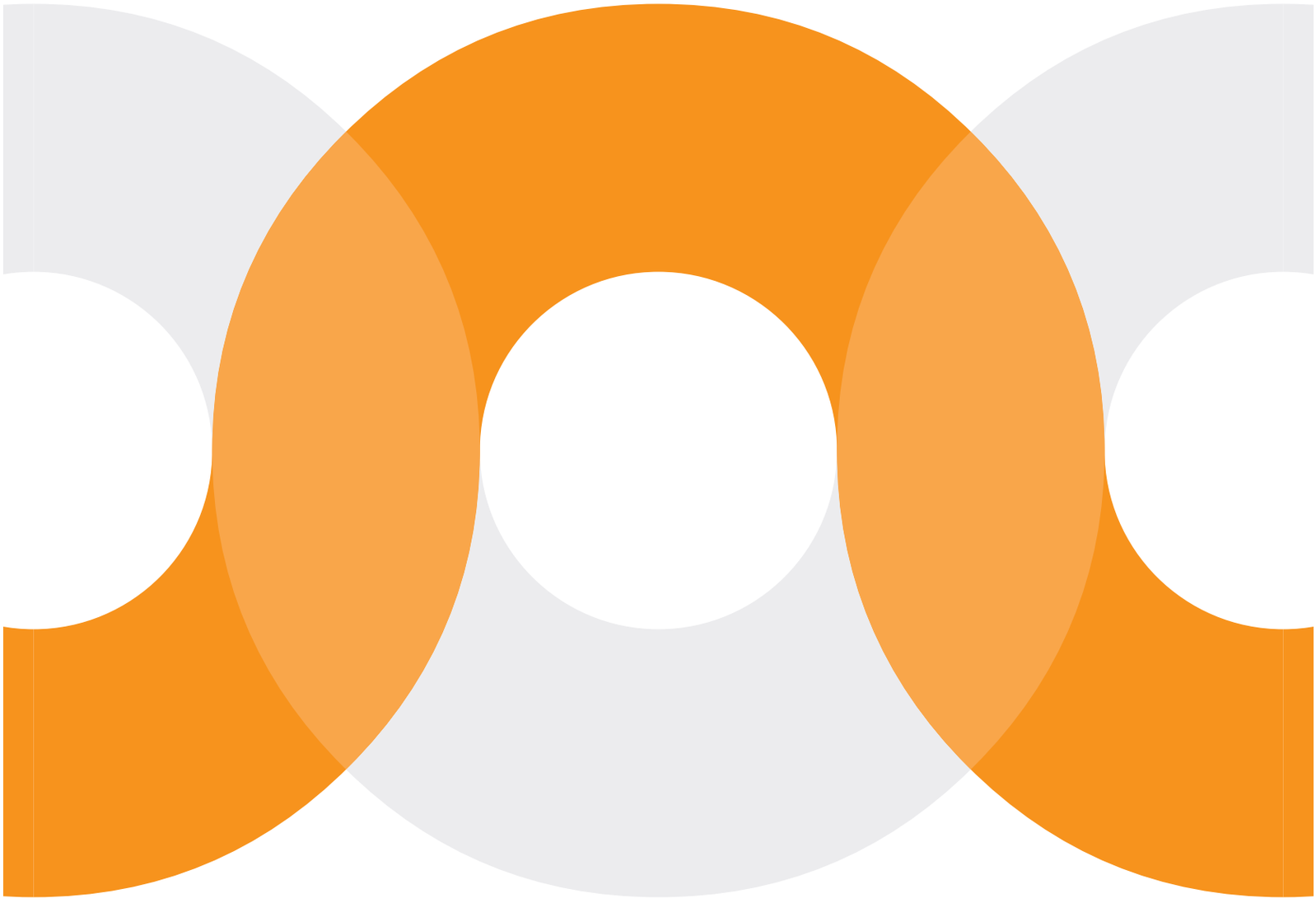
Application Note



# Process Monitoring – E-Spy
# Steel Industry

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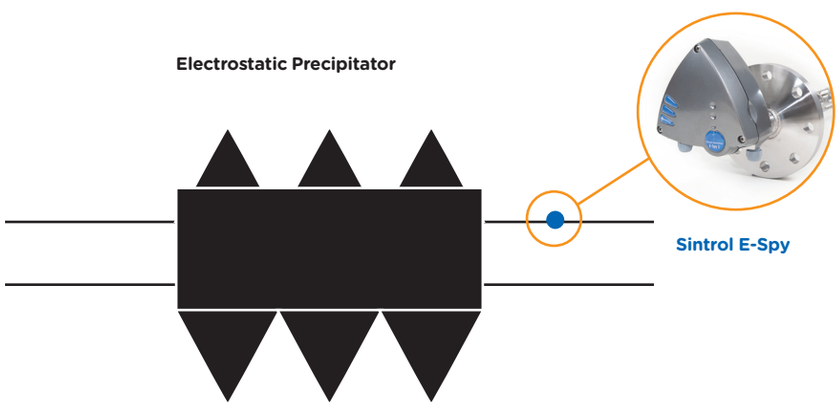
SINTROL
For Good Measure

**At Sintrol, we are committed to implementing solutions for our customer's problems. Our products are based on our unique Inductive Electrification technology and developed using a flexible modular based platform that allows us to tailor our products for the customer. While many dust monitoring systems are tailored towards the government regulated emissions limits, there are intermediary measurement points that can be just as critical to the costs and regulatory compliance of the end user. Managing the filtration systems is not only good for emissions, but also a strong indicator to help with maintenance and overall plant costs.**




**Objective**

Monitor the dust concentrations immediately after the electrostatic precipitator (ESP) to control the effectiveness of the dust collector.

**Problem**

A large Chinese iron and steel company needed to monitor the relative trend of dust after its ESP in the sintering plant. During the sintering process, water vapors along with corrosive compounds such as $SO_2$ and $H_2S$ are created along with dust particles. This created multiple challenges in finding the right solution. With a normal probe, the chemicals would likely stick to the probe and corrode the steel away. The water vapors would also affect the dust concentrations if it reached the enclosure carrying the electronics. Since the measuring point is immediately after the ESP, the charge of the electrostatic field must also be neutralized.

**Solution**

The customer installed an E-Spy 3 into the duct immediately after the ESP. This consisted of a modified S303 monitor along with a faraday cage. The faraday cage helps neutralize the electrostatic field created by the ESP enabling the monitor to gather an accurate relative trend measurement. To help withstand the chemical conditions, a PTFE tube was custom installed on the sensor protecting the probe from the corrosive elements in the process. The ability for Sintrol to provide this solution at a much better value to the customers enabled us to collect the order against competing companies that were offering much more expensive opacity based solutions. Not only is the Sintrol monitor lower in upfront costs, it is also much less maintenance intensive, allowing the plant to save time and money on maintenance costs.

# Principle of Operation:

**Sintrol dust monitors are based on a unique Inductive Electrification technology. The measurement is based on particles interacting with an isolated probe mounted into the duct or stack. When moving particles pass nearby or hit the probe a signal is induced. This signal is then processed through a series of Sintrol's advanced algorithms to filter out the noise and provide the most accurate dust measurement output.**

**Classic triboelectric technology is based on the DC signal, which is caused by particles making contact with the sensor to transfer charges. Compared to DC based measurements, the Inductive Electrification technology is more sensitive and minimizes the influence of sensor contamination, temperature drift and velocity changes. By using the Inductive Electrification technology it is possible to reach dust concentration measurement thresholds as low as 0.01 mg/m$^3$.**