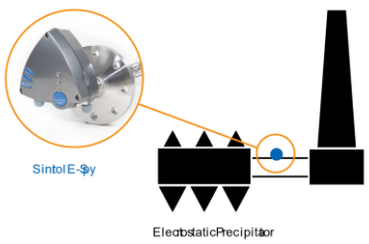
ProDetec
Measure . Prevent . Protect . Control

Application Notes – E-Spy Coal Fired Power Plant

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 efficiency of dust removal immediately after an Electrostatic Precipitator (ESP).



Problem

A large power plant utilizes ESPs to remove dust from its process before each of its emissions points. Due to high government regulations and recirculation of air in some parts of the plant for heat, the plant must measure dust concentrations immediately after the ESP, as well as in the stack. The incumbent solution at the plant was to utilize an opacity meter since that was the only solution, they were aware of. This monitor, however, had issues related to heavy maintenance requirements and frequent misalignment as a result of the vibration created in the plant's process. Additionally, the plants wanted to utilize the output of the monitor to help optimize the rapping process for cleaning the ESP cells.

Solution

During a one month trial period, the company installed a Sintrol E-Spy side by side with the opacity meter to test the output levels. With the E-Spy's easy installation process and auto setup feature, the monitor was in process within 30 minutes of installation. Once the monitor was set up under normal conditions, the mA output was automatically set at 20% of the range and the readings were then coordinated with the plant's control system to optimize the rapping cycles of the ESP. Just as importantly, the plant saved heavily on maintenance time and costs as the Sintrol E-Spy requires very little maintenance and is not subject to adjustments as a result of vibration in the process. After the one-month trial, the plant removed the opacity system and ordered three other Sintrol E-Spy's for other measuring points in the plant.

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/m3.

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