

Application Notes – Solutions for Abrasive Processes

Zaporizhstal Steel Works is one of the largest industrial enterprises in Ukraine. They produce hot and cold rolled steel coils and sheets as well as steel strips, black tin steel and roll-formed shapes.

In 2012 the plant started a renovation and reconstruction program of their filtration systems. The filtration system mainly consists of bag filters and includes a desulphurization unit. One requirement was to use the same technology for all measurement points to support a user-friendly operation and efficient maintenance. The decision was made to use Sintrol dust monitoring systems at all stages of the filtration system.

One of the problems was, that the dust concentrations before the first filter was as high as 10 grams/m³. The environmental requirements for dust pollution are maximum of 50 mg/m³ after final stage of filtration. Another problem was that 80% of the dust consists of highly abrasive Iron oxide. In order to withstand these harsh conditions a Sintrol S304 unit was chosen with ceramic probe for high dust concentrations (up to 10 grams/m³). To meet the requirements after desulfurization and the last filtration stage a S305 unit with a Teflon coated probe was chosen which operates in a range of 50mg/m³. After two years of the use in the process, at a concentration range from 2 to 6 g/m³, the coating was only slightly worn on the sides of the probe, but still meets the technical specification according to the local requirements for the dust concentration monitoring systems. All systems are periodically calibrated by local laboratories and verified once a year with the use of iso kinetic gravimetric sampling systems and independent verification organizations.

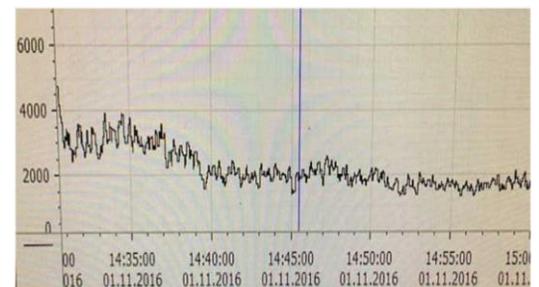


Sintrol offers multiple coatings for different purposes:

Ceramic Coating: To withstand abrasive dusts in higher concentrations

Teflon Coating: To assure proper functionality of adhesive and wet dusts < 250°C / non ATEX

Salokote Coating: To assure proper functionality of adhesive and wet dusts < 700°C



Concentration before first stage of filtration 2.000-6.000mg/m³

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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