

Dust Monitoring Across the Steel Manufacturing Process



Earlier filter-failure detection, lower downtime and better visibility across critical process stages



Continuous dust measurement supports filter condition assessment, process performance monitoring, post-ESP measurement and particulate emissions control in steel production.



The Challenge

Steel production uses dust collection throughout cokemaking and sintering, furnace operations, conversion and finishing. Filter failures can release dust back into the process or towards emission points, while delayed detection can increase maintenance time, product losses and the risk of unplanned shutdowns.

A large European steel producer was shutting down three to five times per month because of bag-filter failures. Each shutdown lasted approximately two to three hours while maintenance teams identified and replaced the affected filter bags, resulting in around 10-15 hours of downtime per month and substantial annual cost.



The Solution

The plant installed Sintrol Snifter monitors on each baghouse compartment to detect broken or deteriorating filter bags. Sintrol S303 trend monitors were added at outlet measurement points, and the monitoring system was connected to DustLog software.

Combining compartment-level leak detection with continuous trend information helped maintenance teams identify the affected baghouse more quickly and use cleaning-cycle behaviour together with dust trends to locate filter problems.



Results

Several hours of plant availability recovered each month.

The monitoring system shortened the time needed to identify filter failures and supported faster maintenance response.

- ➔ Earlier detection of deteriorating and broken filter bags
- ➔ Faster localisation of the affected baghouse compartment
- ➔ Reduced downtime for filter maintenance
- ➔ Better visibility into filtration performance

Today's Sintrol solution

Today, Sintrol offers complementary product families for filter monitoring, process trending, post-ESP measurement and emissions monitoring in steel and metals production.

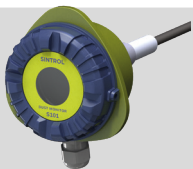
Filter leak detection and filter performance: The S101 / S103 Ex Filter Monitor series provides real-time broken-bag and filter-leak detection. For more demanding applications requiring certified filter leakage or filter dust monitoring, S304QAL-L and S304QAL-D conform to EN 15859:2010.

Process trend monitoring: S203 / S203 Ex and S303 / S303 Ex provide continuous dust trend monitoring after filtration systems and in common ducts leading towards plant emission points.

Post-ESP process monitoring: E-SPY provides a relative dust-concentration trend downstream of electrostatic precipitators and is designed to neutralise the electrostatic field at the measurement point.

Official emissions measurement: S305QAL / S305QAL Ex is QAL1-certified according to EN 15267-3 for continuous particulate emissions measurement in demanding industrial stacks.

Product portfolio for the case



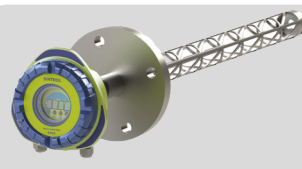
S101 / S103 Ex

Broken-bag detection



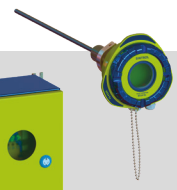
S203 / S203 Ex
S303 / S303 Ex

Process trend monitoring



E-SPY

Post-ESP process monitoring



S314 / S314 Ex

Demanding process monitoring



S305QAL / S305QAL Ex

Official emissions measurement



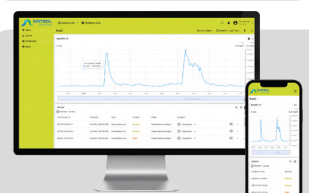
S304QAL-L / S304QAL-D

Certified filter monitoring



EXO QAL

Wet gas monitoring



DustCloud

Centralized access to trends and alerts

Demanding or difficult-to-access process locations:

S314 / S314 Ex split-architecture dust monitors allow the sensor to remain at the measurement point while the electronics are installed in a safer, more accessible location. The Ex version is intended for hazardous gas and dust atmospheres.

Wet or condensing gas conditions: Where process gas contains liquid droplets or operates below the dew point, EXO QAL provides extractive optical dust measurement with sample conditioning before measurement.

Centralized monitoring and reporting: For plants with multiple supported Sintrol monitors, DustCloud brings measurement trends, device status and alerts into one cloud-based environment for remote oversight and faster response.

How it works

Sintrol's probe-based dust monitors use Inductive Electrification technology. When solid particles contact or pass close to an insulated probe, they generate an electrical signal. Signal processing converts this response into a continuous indication of changes in dust levels for filter and process monitoring. Application-specific technologies are used where conditions require post-ESP field neutralisation or extractive measurement of wet and condensing gas.



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