

Dust Monitoring in Cement Manufacturing

Earlier filter-failure detection, better process visibility and reliable emissions monitoring



Continuous dust monitoring at key points in cement production helps plant operators detect filter failures earlier, reduce product loss, target maintenance, improve filtration control and support emissions compliance.



The Challenge

Cement production relies on dust collection throughout crushing and milling, the preheater and kiln, clinker handling and milling, and packaging. Deteriorating or broken filters can release valuable material from the process, increase particulate emissions and create avoidable maintenance and downtime.

A multinational cement producer was concerned about product loss and wanted better control of its filtration systems. The plant relied on differential-pressure gauges and visual indications of filter failures, but these methods did not provide sufficiently early or precise warning.



Results

From the original installation to plants in four countries.

The earlier warning allowed the plant to isolate a malfunctioning baghouse compartment, take corrective action sooner and reduce the amount of cement product being lost to the atmosphere. The company subsequently deployed Sintrol solutions at plants in four countries.

- ➔ Earlier detection of filter deterioration and bag failures
- ➔ Faster identification and isolation of the affected baghouse compartment
- ➔ More targeted maintenance and reduced product loss
- ➔ Better visibility into filtration performance



The Solution

The plant installed Sintrol Snifter monitors on the outlet ducts of its baghouses and four S303 trend monitors on the inlet ducts of its stacks. The monitors were connected to Sintrol DustLog software for centralized monitoring.

The combination gave operators earlier visibility into deteriorating or ruptured filter bags and helped them identify the affected baghouse before significant changes were visible in differential pressure. .

Today's Sintrol solution

Today, Sintrol offers updated product families for dust monitoring in cement manufacturing.

Filter leak detection and filter performance: 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, Sintrol offers S304QAL-L and S304QAL-D, conforming 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 to plant emission points. For post-ESP applications, E-SPY provides relative dust trend data to support electrostatic precipitator optimisation.

Emission monitoring: S304 / S304 Ex supports process control and emissions monitoring, while S305QAL / S305QAL Ex is QAL1-certified according to EN 15267-3 for official particulate emissions measurement.

Demanding or difficult-to-access process locations: Sintrol's S314 / S314 Ex split-architecture dust monitors provide continuous dust monitoring with the sensor installed at the measurement point and the electronics located in a safe, accessible area. S314 Ex is suitable for hazardous gas and dust atmospheres, while S314 is intended for non-hazardous locations.

Centralized monitoring and reporting: For plants with multiple dust measurement points, Sintrol DustCloud brings measurement trends, device status and alerts from supported Sintrol monitors into one cloud-based environment. This supports remote oversight, faster response to abnormal conditions and consistent reporting across measurement locations.

Product portfolio for the case

Filter leak detection and filter performance



Process trend monitoring



Emission monitoring



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. Sintrol's signal-processing and filtration algorithms convert this signal into an output that indicates changes in dust levels for filter, process and emission monitoring.

Dust monitoring across the cement process

Crushing and milling: Monitoring downstream of dust collectors helps detect filter deterioration or breakage and limit the loss of limestone and other raw materials.

Preheater and rotary kiln: Filter-leak detection and continuous trend monitoring provide early warning of changes in dust levels and support filtration-system control around kiln exhaust and stack measurement points.

Clinker milling: Early detection of filter failures helps retain product in the process and enables operators to respond before losses increase.

Packaging: Monitoring at final dust-collection points helps identify cement escaping from the process during transfer, packaging and shipping.



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