

Cement

Buzzi Unicem USA Tackles EPA Compliance, Streamlines Operations, and Reduces Downtime

“At just 10% of the total project cost, the system provides complete insight and control.”

Challenge

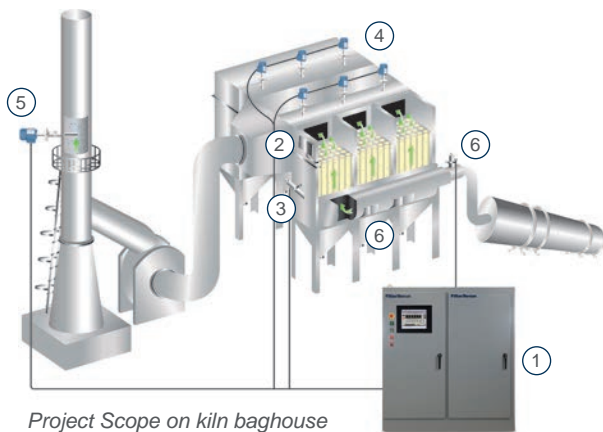
Cement producers are challenged to meet EPA regulations without interrupting production, while striving to improve profitability in a competitive cement market. Typical sensors and controls for baghouses are often basic and do not provide intelligent control or preventive insight into the process. Time-consuming manual inspection of filters and baghouse components become necessary. This can require a shut down or extend an outage. The historical EPA requirement for an opacity monitor in the stack provides little value toward preventive and proactive emissions control.

Solution

While striving to improve operations and meet US-EPA NESHAP requirements for particulate emissions, Buzzi Unicem USA researched solutions to implement during a rebuild/conversion of three kiln baghouses. **“We want a control system that can identify and inform operations of any filtration issues.”** The Plant Manager wanted an experienced leader in the field capable of engineering and supporting large projects. They trusted Auburn based on technology and application experience.

To fully monitor and optimize the kiln filtration systems and overall plant production, Buzzi purchased three Auburn B-PACs™ (Baghouse Performance Analyzer & Controller) with a full array of process sensors, integrated particulate monitors, and ancillary control electronics. FilterWARE™ software was purchased for local HMI while the B-PACs also provided Ethernet IP to an IFix SCADA system. Auburn also provided full support, including electrical engineering design and documentation, on-site installation review, product commissioning, and training.

B-PAC’s feature tightly integrated sensing and control providing intelligent differential pressure control, optimized filtration and pulse cleaning, actionable diagnostics, and advanced particulate monitoring technology, which utilizes charge induction sensing. Using the local FilterWARE HMI, operators can easily view process variables, diagnostics, total particulate emissions, filter leaks by row, pulse rates, and energy use. Pressure and cleaning settings and damper controls are readily available for easy adjustment. The solution provides total insight and control to minimize emissions and maximize production.



Project Scope on kiln baghouse

I.D.	Product
1	B-PAC Master Controller and FilterWARE HMI Software
2	B-PAC Compartment Controllers
3	Non-Clogging Differential Pressure Transmitters
4	FilterSense Compartment Leak Detectors
5	FilterSense Stack Particulate Monitor
6	Aux Controls/Sensors (Dampers, Airlocks, Level, Temp, etc.)

“This project reduced baghouse maintenance from 200 hours to only 14 hours.”

Benefits

The wide range of benefits available to Buzzi Unicem USA include:

- B-PAC - Baghouse Performance Analyzer & Controller**
- Optimize production and minimize downtime
 - Detect and locate failed solenoids and pulse valves
 - Tight pressure control from IntelliPULSE Technology
 - Stable airflow regardless of inlet loading
 - Multi-compartment online pulsing
 - Minimize compressed air consumption
 - Less pulsing extends filter life and reduces emissions

Filter Leak Detectors in Each Compartment

- Detect pre-visible particulate emissions
- Leak detection and locating by individual row
- Trend/compare total emissions from each Compartment for maintenance planning

Reliable Particulate Monitors for the stacks

- 1/4 to 1/10 the maintenance of optical sensors
- Preventive sensitivity (< 1 mg/m³)

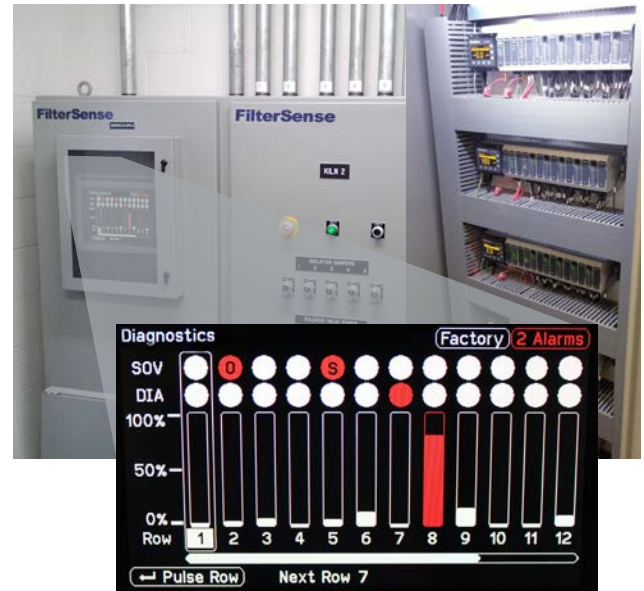
FilterWARE HMI

- Improved process control and insight
- Better operator awareness and maintenance

Auburn On-Site Services

- Quick return to production and trained operators

Diagnostic Screen: Filter leakage, failed solenoids, and valves by row.



“Real-time access to actionable diagnostics enables proactive maintenance”

Process

Filtration systems are a critical part of productivity and emissions control in cement manufacturing. In addition to the kiln, other baghouses include the raw mill, clinker cooler, and coal mill. There are also material handling and nuisance dust collectors. Larger baghouses are required under federal NESHAP, MACT, or state regulations for continuous monitoring, while nuisance filters often have no visible emission requirement.

In addition to EPA regulations, there are process and maintenance benefits from Auburn solutions. For example, B-PACs can help address concerns with coal mill fires by avoiding coal dust buildup in the clean air plenum or coal buildup between filters. Basic Auburn leak detectors can replace manual inspections of small dust collectors and individual compartments. All Auburn products can be networked to a central reporting solution, Insight or FilterWARE.



Auburn engineer commissioning particulate sensor.



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