



PROJECT PROFILE

Adapting a Solution to Fit the Existing Footprint

THE SITUATION

A North American cement producer decided to increase its production capacity through the purchase of a facility in 2014. Among the issues faced by the new owners was the need to upgrade the particulate emission control equipment at the facility.

It was quickly determined that baghouses were the best solution for particulate emission control at the clinker cooler and kiln exhaust points. Working through an Engineering, Procurement and Construction (EPC) partner, specifications were developed and bids were solicited from multiple providers.

The Scheuch team appreciated and respected the thorough evaluation that the new owners employed when considering their particulate control solution. The customer looked at every aspect of the project, from initial cost and total cost of ownership to safety, reliability, plant uptime, installation

PROJECT IN BRIEF:

EQUIPMENT & SERVICE

- EMC Dust Collection Technology
- Heat Exchanger
- Long Bag Technology (30' and 33')
- Duct Work
- Turnkey Solution

INDUSTRY

- Cement

APPLICATION

- Emission Control
- Clinker Cooler and Kiln Exhaust

time required and system performance.

At the time Scheuch was not well known by the producer's team in North America, but Scheuch enjoyed a strong relationship with the parent company globally. Between the arduous evaluation process employed at the plant level, and the experiences of other facilities with Scheuch, the project team became comfortable with the Scheuch solution.

THE SOLUTION

Scheuch's solution addressed many key needs for the new owners; including the project schedule and minimizing the downtime needed for installation.

Leveraging the aggressive project schedule provided by Scheuch, as well as citing the recent acquisition, the new owners sought and received temporary relief from the impending regulatory changes, ensuring that the facility remained in compliance throughout the project duration.

One of the ways that Scheuch was able to provide the most competitive solution was by retaining as much of the structure of the existing particulate removal equipment as possible. By retaining portions of the casing, structural steel, footings and process ductwork, Scheuch's solution minimized the needed downtime for construction while also minimizing construction costs.

As part of the plan to retain existing structures, Scheuch completed a site laser scan to create an accurate three-dimensional model of the baghouse, ductwork and surrounding equipment. The three-dimensional model proved invaluable as the pre-fabricated components moved into place smoothly, avoiding costly and disruptive interferences that would otherwise require unplanned field alterations and project delays.

The Scheuch solution checked many boxes for the new owners, including project schedule, reliability, performance, and total cost of ownership. But, what makes the Scheuch EMC baghouse different from all the others and such a good fit for this customer?

Scheuch's EMC technology provides multiple, small, individually isolated modules within the baghouse. Bags within a module are cleaned in EMC mode. For cleaning, a single-module is taken off-line through the use of clean gas dampers within the baghouse that isolate the module from the process stream. Once the module is isolated from the process stream, the

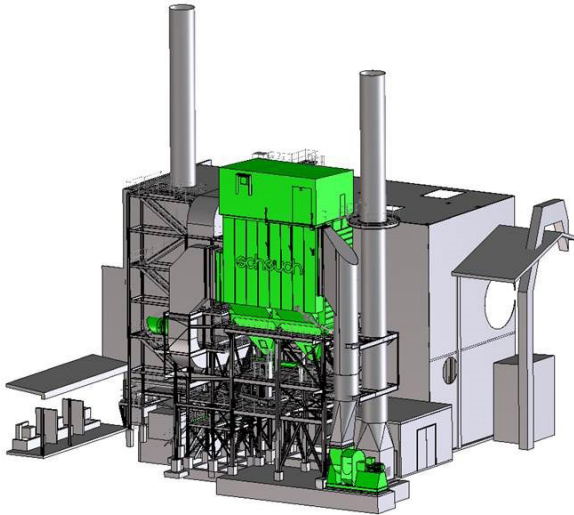


Scheuch Impuls (pulse jet) bag cleaning utilizes low-pressure compressed air, that passes through engineered nozzles and venturis, entraining more ambient air than more traditional pulse jet arrangements. The tuned nozzles ensure that each bag in the row receives the same volume of cleaning air, ensuring even, effective bag cleaning and consistent emissions and pressure drop performance over the life of the bags.

Because the plant is using low-pressure compressed air, less energy is imparted to the bags during cleaning, thus more gently pulsing the bags and contributing to extended bag life. Lower compressed air energy costs and extended bag life, along with lower differential pressure, significantly contribute to both improved plant availability and reduced operating costs. One of the reasons that Scheuch was able to adapt its solution to the existing equipment footprint and casing configuration was the application of long-bag technology. The filter bags used at this facility are 9m (30 ft) long (Clinker Cooler baghouse) and 10m (33 ft) long (Main Kiln/Raw Mill baghouse) long, providing the maximum filtration surface area within the minimum footprint. The Scheuch Impuls bag cleaning technology makes this possible, while requiring less power for compressed air and providing optimal bag cleaning.

An added benefit of the EMC technology to the customer is that broken bags can be isolated within the baghouse by closing the

clean gas damper on the associated module. A small portion of the total filtration area is removed from service until an opportunity to replace the broken bag is identified by plant operations. Using input from the on-board emissions monitoring instruments, the controller identifies in which module(s) the broken bag(s) resides and closes the associated inlet damper(s). The days of shutting down the kiln because of a single-bag failure and emissions rising outside of the permissible limits are over for this satisfied customer.



The process operating temperatures were outside those that are suitable for a fabric filter application. The solution was the installation of an air-to-air heat exchanger (HEX) on the clinker cooler exhaust gas. The HEX is Scheuch's modular design, with bundles of heat transfer tubes oriented in a staggered row arrangement, that provides improved heat transfer characteristics and a smaller footprint. Each tube bundle is provided with a variable frequency drive (VFD) controlled axial flow fan, providing excellent temperature control and quick-response to system upset conditions.

With even the best process controls and equipment, system upsets occur. That's why Scheuch included fast-acting temperature-controlled fresh air bleed-in dampers to ensure that the air temperature within the system was maintained at a level that is not detrimental to the filtration system components. Scheuch, using its in-house Computational Fluid Dynamics (CFD) capabilities, modeled the entire system. It identified locations where baffles and other flow-directing devices were needed to ensure that flow was evenly distributed throughout the new retrofitted dedusting system, despite the less than ideal duct arrangements.

Scheuch support of the customer extended far beyond identifying the best solution technology.

Scheuch and its installation partners developed a project implementation plan that maximized pre-fabrication and pre-assembly, minimizing plant downtime for project installation. Installation downtime was further minimized by retaining the footprint and much of the existing ESP structure.

Fast-forward two years after installation. Follow-up compliance testing demonstrates that the particulate emissions from the plant remain remarkably low at less than 0.0005 grains/ft³.

Scheuch is pleased that the equipment continues to perform so well. Not only are the emissions extremely low, there have been no bags replaced at this site since start-up. In fact, Scheuch has units over ten years old with all of their original bags.

Globally, Scheuch has installed over 300 EMC baghouses in the cement and other material handling industries. Scheuch customers enjoy not only premium emissions performance, but lower pressure-drop, less downtime and extended bag life.

[Contact Scheuch to learn more about this project.](#)

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