

IMPROVING THE COAL-FEEDING CONVEYING SYSTEM IN A HOLCIM CEMENT PLANT

Background:

AERZEN, as a specialist in cement applications, improves the pneumatic conveying coal feeding system to the main burner in Holcim Colombia Plant. The plant located in Nobsa, a small town 2.5 hours away from Bogota. The plant capacity is about 3Mt/year of cement and a market share in Colombia of 12% with high growth expectation after Lafarge Holcim joint venture in 2015. AERZEN started operations in Colombia in 2008 as a daughter entity from AERZEN Head Quarters in Germany with the primary purpose of supporting existing customers, such as Holcim, with Aerzen machinery in their processes. The Holcim Colombia plant uses AERZEN technology in all eight (8) main applications that required oil-free, low-pressure air supply, from the raw mill pneumatic conveying to the raw meal silos up to the bagging systems for finished cement. Thanks to AERZEN specific knowledge in cement applications, an upgrade was successfully implemented in the coal feeding system to the main burner that brings savings in energy consumption, noise reduction and more stable and laminar air flow that helps the burner stability.

Initial Situation:

In 2014 an AERZEN Application Sales Team identified an upgrading opportunity in the coal pneumatic conveying transport to the main burner, also known as the Pfister system. In this application, two AERZEN GM 35S tri-lobe blowers from the ,90s were in operation. Each machine operated at an intake volume flow of 37.4m³/min, differential pressure of 600mbar and 75kW (100HP) electric motor. The noise generated was calculated at 102dB since the machines didn't have acoustic hoods (local Colombian regulations defines 80dB as the maximum allowed noise level). Power consumption demand for the system was measured in an average of 54kW/h per machine that represented a yearly energy cost of USD 78,00 (considering a kW cost of 0.1 USD and 20.000 hours MTBR*).



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| Process | Coal-Feeding Pneumatic Conveying System |
| Problem | High energy usage and noise levels with unstable air flow. |
| Solution | Aerzen Delta Hybrid D62S |
| Result | Operational costs reduced by 40%, 40,000 hours MTBR, with 10% more performance than conventional tri-lobe blowers. Process stability with a more laminar flow |
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In Holcim Colombia, each production area is independent in their operation. This makes easier the upgrading projects for specific applications. In Holcim, the corporate policy claims that every kW counts. * MTBR (Mean Time Between Repairs)

Delta Hybrid, AERZEN technology applied to the cement industry

AERZEN's commitment as an application specialist presented a technology upgrade solution with Delta Hybrid Blowers, model D62S, that were selected specifically for this application with the primary purpose of improving the following aspects: Noise level reduction to fulfill Colombian regulation of 80dB. The D62S operate at 72dB under the same operational conditions with a 10% energy consumption reduction that represents savings of around USD 7.800 yearly.

Installed power reduction was achieved with the Delta Hybrid performance by replacing the existing 75kW motors for 55kW IE3 premium efficiency motors. Process stability improved due to the Delta Hybrid's operating principle that reduces

pulsations when the flow is conveyed, delivering a more laminar flow, which makes the burning process more smooth.

Total Cost Of Ownership (TCO) Project evaluation:

In addition to the obvious advantages for upgrading the technology, for Holcim, it was important to have a TCO evaluation of the new machines in the system. AERZEN delivers a 5-year projection that by using the Delta Hybrid Blowers operational costs will be reduced by 40% and will operate a 40,000 hours MTBR, with 50% more performance than conventional tri-lobe blowers.

Testimonial:

Javier Forero, Pfister Area Manager, indicates the results after one year of operation with the new technology, "10% energy consumption reduction, about 20% noise level reduction in the operating area thanks to the improved acoustic hoods, better control of the coal flow into the burner which improves our kiln operation".



See the case study video:
www.youtube.com/c/AerzenUSA



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