PROBLEM SOLVED™ PAPER

SOLUTION: Martin® Air Cannons

INDUSTRY: Cement

LOCATION: Drake Cement Paulden, AZ

Drake Cement specializes in high quality Portland cement products for the North American market.

PROBLEM

The Drake Cement plant began operations in 2011, specializing in high quality Portland cement products for the North American market. Located about 10 miles north of Paulden, AZ, the facility includes a state-of-the-art, six-stage precalciner/preheater with a rated capacity of 660,000 tons of clinker per year. Efficient material flow is a key component of Drake's dry-process manufacturing, and accumulation in storage bins, process vessels or feed pipes could choke even this well-designed system.

These cannons were positioned in the lower part of the pre-heat tower, near the automatic sampler.

SOLUTION

Like most new cement plants, the Drake facility required some fine-tuning of material flow to optimize the process. Martin Engineering visited the site and helped Drake pinpoint the optimum locations for air cannons in the plant's additive silos and in the bottom part of the preheater, as well as the calciner and cyclones. Martin installed a total of 53 air cannons to prevent accumulations and ensure process flow, with the timing and firing sequence determined primarily by programmable logic control.

The Martin® Air Cannons at Drake Cement fire a powerful discharge of compressed air to remove material adhered to the vessel walls. The air cannon design requires no high-temperature discharge pipes or special mounting plates, and discharge nozzles are embedded directly in refractory linings. All of the units in the network are equipped with valves designed to deliver reliable performance and long service life.

Several of the cannons were located in the entry to the kiln, cooler inlet and the preheater tower.

RESULTS

The efforts at Drake Cement have been so successful that the plant is now running at its rated capacity of about 100 short tons per hour. With no shutdowns for manual cleanout after the first year of operation, the facility has avoided the lost production time and maintenance costs associated with excessive material buildup.

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