



PROBLEM SOLVED™ PAPER

SOLUTION: Martin® Air Cannon

INDUSTRY: Lime

LOCATION: Mississippi Lime Company
Sainte Genevieve, Missouri



Mississippi Lime Company Sainte Genevieve Plant.



Martin® XHV Air Cannons are installed on the kiln at Mississippi Lime Company.



A total of 20 Martin® XHV Air Cannons from Martin Engineering were installed on the Maerz Kiln at Mississippi Lime Company's Sainte Genevieve Plant.

PROBLEM

This fuel-efficient kiln operates by alternating the firing of two shafts, so one shaft burns while the other acts as a fuel for exhaust gases. The heated gases leave the combustion chamber through arches opening into a crossover channel. But dust would adhere to the refractory in the arches, choking the flow of gases from one combustion chamber into the other.

To maintain kiln efficiency, the plant was forced to shut down every three months to remove the dust buildup. Each outage would mean five to seven days of lost production—costly outages costing more than a quarter-million dollars a year.

SOLUTION

The kiln manufacturer suggested that the solution was to install air cannons between the piers of the vertical kiln. But lime company officials were skeptical about how well air cannons would work in the heated and dusty environment of the vertical kiln. To test performance, they agreed to a trial with installation of four Martin® XHV Air Cannons supplied by Martin Engineering.

The elastomer-free construction of the Martin® Air Cannon XHV valve provides long life and high performance in tough, high-temperature applications like lime kilns.

RESULTS

Within three months the Ste. Genevieve plant was forced to take another outage due to excessive material buildup in the piers. But the results were different in the piers where the Martin® XHV Air Cannons had been installed. The plant manager reported those four arches were completely clean.

After reviewing these results, Mississippi Lime Company ordered the installation of an additional 16 air cannons.

Now, a total of 20 Martin® XHV Air Cannons are installed in a single level around the circumference of the kiln. The air cannons discharge during the 10-minute pre-heat cycle of each shaft, with each cannon firing once during that time. This removes the material accumulations without affecting the kiln's combustion cycle.

Martin® XHV Air Cannon Valve is protected by U.S. Patent No. 5,853,160.

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