



PROBLEM SOLVED™ PAPER

SOLUTION: Martin® Air Cannon

INDUSTRY: Coal-Fired Power

LOCATION: Bay Shore Station, FirstEnergy Corporation
Oregon, Ohio



Martin® Air Cannons were installed to prevent choking of pet coke feed chutes at the Bay Shore Power Station.

PROBLEM

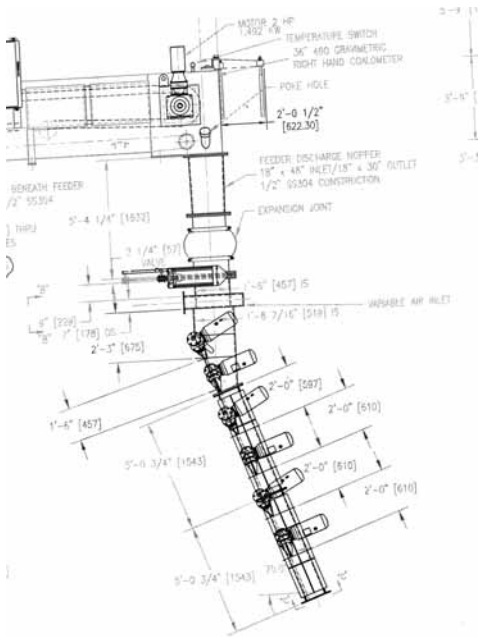
This 631 MW power plant uses petroleum coke—a refinery waste product—to fire its boilers. But the sticky material would build up on the walls of the chutes carrying it from the gravimetric feeders to the boiler. Instead of the 300 tph required, the feed rate would slow down to 75 to 100 tph, starving the boilers.

The plant staff resorted to frequent cleaning of the chutes. But even after a cleaning, material would begin to build up almost immediately and the chutes would begin to choke again. Within one eight-hour shift, the feed rate might be reduced to 75 to 100 tph again.

SOLUTION

To prevent buildups and maintain the boiler feed rate, Martin Engineering recommended the installation of Martin® Air Cannons on each fuel chute.

Each of the 14-foot (4.3-m) tall chutes was fitted with a battery of eight Martin® Air Cannons. Two air cannons were installed at the chute discharge, and six were installed in an alternating side pattern up each chute. The cannons were installed so the air discharge sweeps across the walls of the chute to remove adhering material.



At Bay Shore Station, eight Martin® Air Cannons were installed on each of the fuel chutes from the gravimetric feeders to the boiler.

RESULTS

The air cannons are discharged in a cycle that calls for the two bottom cannons on a given chute to be fired together, with progressively higher air cannons fired individually at five-second intervals. After all cannons on a given chute are fired, the cycle moves to the next chute.

After installation of the air cannons, the feeder system is operating as designed. The boiler unit has not tripped due to fuel shortage resulting from plugged feed chutes since the air cannon installation.

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

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