PROBLEM SOLVED™ PAPER

SOLUTION: Typhoon Air Cannon, SMART™ Series Nozzle, Martin® Core Gate

INDUSTRY: Cement

LOCATION: JK Cement Works, Nimbahera, Rajasthan, India

Holes are drilled at approximately a 30º angle to support the flow of material.

The Y-Shaped assembly allows the nozzle and cannon to be installed and replaced easily.

The 70L Martin® Typhoon Air Cannon dislodges accumulation over a large area.

PROBLEM

JK Cement Works in Northern India, producing 3.25 mt/y, was experiencing clogging issues in its preheater tower requiring manual cleaning of the feed pipe while the tower was in operation. The dangerous procedure used an air lance through an access hatch, which can result in extreme heat exposure, blowback, and potential contact with molten debris. Production demands prohibited managers from allowing downtime to fully clear the duct. This increased cleaning schedules, further exposed workers to danger and pulled resources away from other essential tasks in the plant. The extra labor also increased the cost of operation, so managers sought a solution that allowed them to address the problem without downtime.

SOLUTION

Technicians from Martin Engineering India were invited to examine the issue, and they decided to install two air cannons at the clogging point. Buildup is common in preheater towers and can take up to 10 days of downtime for cooling, cleaning and reheating. By using a Martin® Core Gate, holes were carefully drilled through the refractory during operation, then the air cannon assemblies were installed. Using a 70L Martin Typhoon Air Cannon connected to the plant's compressed air system and a SMART™ Series Jet Nozzle designed for high-temperature environments, each unit delivers a powerful shot of air that dislodges adhered material. The cannons were set to fire automatically at predefined intervals.

RESULT

The drilling and installation only took two hours. With the ability to service and maintain the valve and nozzle without removing the tank or assembly, a permanent solution was provided that significantly reduced maintenance labor, while improving safety. Moreover, dislodging adhered material before it accumulates means the problem area no longer requires manual cleaning. "We have never seen this done in a running cement plant, said an operator close to the project. "We are very happy with the performance." Managers are now working with Martin Engineering India to install a similar air cannon solution in other parts of the tower and throughout the plant.

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