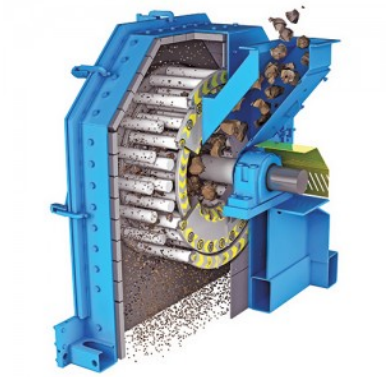
PROBLEM SOLVED™ PAPER

SOLUTION: Martin® Typhoon Air Cannon

INDUSTRY: Phosphorite Processing / Fertilizer Production

LOCATION: Zuari Agro Chemicals Limited; Goa, India

The Zuari Agro plant in Goa, India produces more than 613,000 mt/y (676,000 st/y) of fertilizer.



The cage mill crusher is a closed system that cycles rock through a series of rotating rollers.

Unpainted stainless steel components are used to resist the harsh service environment.

PROBLEM

A fertilizer production plant using a cage mill crusher was experiencing excessive downtime from the buildup of fine phosphate-based fertilizer on the walls of the enclosed unit. Processing over 613,000 mt/y (676,000 st/y), throughout the 24 hour production cycle, dust and fines from the high speed rotating crusher would build up on the internal walls enough to potentially affect the crusher's functionality. The situation required three hours of shutdown per day so that workers could clear the accumulation and introduce it back into the process flow. This increased the overall cost of operation due to the downtime and additional labor, which took personnel away from more productive tasks.

SOLUTION

Martin Engineering India was invited to inspect the issue and offer solutions. Representatives suggested the locations for installing three 150-Liter Martin® Typhoon Air Cannons. To resist the chemically corrosive environment, the tanks, pipes and lines were specially manufactured using stainless steel. Providing more force output with less air consumption than comparable air cannons, the Typhoon requires only one air line to fill the tank and trigger the valve. The complete valve assembly can be removed in one easy step and replaced within minutes, while working from one side of the tank. With a separate control box, operators are able to schedule an automated firing pattern or fire the system manually, giving them more flexibility in high humidity conditions.

RESULT

After three months of operation, managers report that the cleaning schedule has been reduced from 3 hours per day to once every three days to clear corners and conduct necessary service on the crusher. Along with a significant reduction in downtime, the cost of operation has improved due to the reallocated labor that was previously required for cleaning and maintenance. Operators say they are "very satisfied with the outcome." Managers have been so pleased with the results that they have placed an order for the same solution for a second cage mill and are working on a budget for the third one.

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