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CASE HISTORY

Maintenance-Free Tube Feeder System Reduces Waste and Dust Issues at Graymont Lime Plant

Lime and limestone products are among the oldest materials used for a wide variety of applications. Today, these products serve as an essential building block in virtually every industrial process. For Graymont, a leading producer of these products, that means a customer base that crosses into such diverse industries as environmental remediation, steel, pulp and paper, mining, power generation, agriculture, construction materials, chemical and waste treatment, and more.

As the third largest producer of lime in North America, Graymont is committed to efficient production and to responsibly meeting society's need for its products by controlling the impact of its operations on the environment. "Graymont makes a conscious and ongoing effort to protect the health and safety of our employees, visitors to our sites, and people in surrounding communities," explains Kim Jaynes, Plant Engineer for Graymont's Cricket Mountain Plant near Delta, Utah.

"In all aspects of our operations, we strive to not only reduce waste, but to identify and prevent hazards, as well. Here in our Cricket Mountain Plant, we recently ran across a problem that had negative potential in both areas."

The environment in which the plant is located and the nature of some of its product create conditions where controlling dust isn critical. In this case, the plant had a belt conveyor that transported minus–1/8 inch sized quick lime from two screens to an elevator, to be lifted to a product storage silo. It was discovered that they were spending at least 4 man-hours each week just to sweep and shovel the carryback from the conveyor.

The dust problem also affected production, since dust continually built up in the conveyor's webbing and moving parts, contributing to checking and wear of the belt

"The carryback, which was discarded as unusable, amounted to about 5 tons per week. We tried using belt scrapers, but they didn't hold up under the adverse conditions. We also tried an air knife, but it proved to be ineffective, and used expensive plant compressed air, as well. It was the that we considered that we already had a Vibra Screw vibrating tube feeder in operation for a similar application," Jaynes said.

The Vibra Screw tube feeder, which had been installed nearly six years ago, had been so effective that it was basically forgotten. It literally ran day in and day out with so few problems, that it grew to be taken for granted.

Jaynes contacted Vibra Screw, asking the company to spec and quote a new tube feeder to replace the belt conveyor in question. With hands-on engineering support from Vibra Screw, a vibrating tube feeder system was soon installed. It eliminated dust and reduced carryback and the need for maintenance.

The unit consists of a sealed tube mounted with two rotary vibrators and supported on special elastomer isloators. There are no internal moving parts and the unit is totally sealed. In operation, applied vibration moves material along the tube surface, from inlet to outlet. Inlet and outlet seals provide a dust-free interface with the rest of the production process.

"The new Vibra Screw tube feeder provided material conveying without the carryback and without the need for frequent belt replacement associated with a belt-type conveyor," Jaynes reported. "And because the tube feeder is totally enclosed, it greatly reduced our overall need for dust collection and control. These advantages allowed us to keep nearly 5 tons of lime per week in the product stream as salable material, while freeing up man-hours that could be used to enhance production rather than performing maintenance and housekeeping."