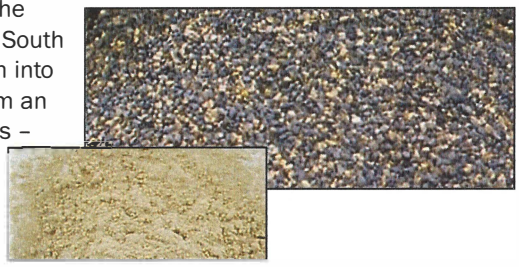
PROBLEM SOLVED

The Proof is in the Flow!

AIRSWEEP®
MATERIAL ACTIVATION SYSTEMS

FROM 1 HOUR TO 2 MINUTES:
AirSweeps Blow Away Productivity Concerns at Minerals Processing Plant!

Bulk solid materials, whether powdery or granular, can form blockages such as bridging and ratholing in processing vessels, restricting flow and decreasing production. A leading processor of alumina-based industrial minerals used in the refractory and abrasive product industries experienced flow problems in their systems. The company annually imports 120,000 tons of raw bauxite rocks from China and South America. The processing of rocks includes crushing, screening and sizing them into smaller pebbles, grits and powders. The finished materials are transferred from an array of small hoppers into supersacks, which are transported to the end-users – manufacturers of brick, coatings, abrasive, and refractory products.



Material Plugging From Bin to Supersack

The consistency of the processed material ranges from a fine, flour-like consistency to small pebbles, with bulk densities from 80 to over 100 lb/ft^3. The transfer of the processed material from storage bins into the final packaging, mainly supersacks, was becoming an issue at the plant. The material transfer from bin to supersack took up to an hour due to material plugging the outlet, significantly reducing the flow to a trickle, or causing a complete blockage. To increase the flow of the stuck material, operators banged the bins with sledgehammers. This "primitive" method of material flow control began to damage to the vessel walls. The company was concerned with the safety of its operators due to the increased risk of injury from dropping the heavy hammers on toes or feet, as well as shoulder and back injury from swinging.

The AirSweep Material Activation System is a pneumatic flow aid designed to provide on-demand bulk material flow. Each AirSweep nozzle disperses a powerful burst of high-pressure, high-volume air or inert gas in 250 millisecond bursts along the inner vessel wall. Each burst activates up to 8-ft diameter of material by breaking the friction bond between the material and the wall, and lifting and sweeping the stalled material back into the flow stream. The system is pulsed in a pre-set sequence when material is to be discharged from the bin. A typical system will consist of 3 or 4 AirSweep nozzles, high-flow solenoid valves, sequence timer/controller, air filter, regulator, air receiver, flex hoses and ball valves.

A Hammer-Free Success!

After implementing the AirSweep system, the bin outlet blockages were eliminated and the filling time of supersacks went from 1 hour to 2 minutes! Operator safety concerns were solved because hammers were no longer needed to activate material. After the initial trial of two bins, AirSweeps were installed on 16 additional product bins which ranged in size from 4-ft to 9-ft diameter. Production volume increased significantly, resulting in the hiring of anadditional forklift driver to keep up with the output of finished product.

The AirSweep Material Activation System is ideal for any industry that produces or processes dry to sticky bulk material. The units can be mounted to bins, silos, chutes, hoppers and other process vessels to eliminate and prevent bridging, ratholing, and material blockages. The AirSweep system uses plant air, making it energy-efficient. The units do not wear vessel walls, which is common from other material activation products such as vibrators or air hammers. The AirSweep is available in a variety of sizes and materials of construction to fit different applications. USDA-Accepted models are also available for promoting material flow in sanitary process environments.

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