

Bin Activator Provides First-In, First-Out Flow of Foundry Sand

Customer

Brass Foundry Company, Peoria, Illinois.
Manufacturers since 1887 of brass and aluminum castings.

Problem

In the past, recycling of shakeout sand was handled at the Brass Foundry Company by charging a hopper on the floor with a payloader. The company decided to improve production with a new storage and handling system. Its success was conditioned on solving a fundamental foundry problem: to discharge sticky sand from storage without ratholing, bridging and segregation of hot and cold sand. The company asked a leading foundry equipment supplier for its recommendation.

Solution

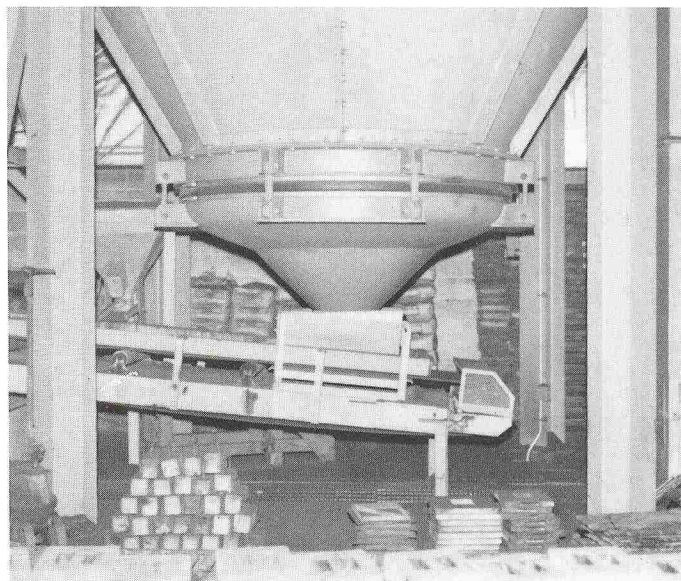
Vibra Screw Bin Activator, 7 ft. diameter, carbon steel construction.

The system recommended called for storing the return sand in a 12 ft. diameter by 20 ft. high silo equipped with a Vibra Screw Bin Activator. Bin capacity is 80 tons. The sand has a bulk density of 80-90 lbs./cu. ft. and a moisture content of about 1.4 to 1.9%. A conveyor belt fills the bin and return and new sand. A second belt below the bin receives the sand and conveys it to the muller. Just prior to reaching the muller an additive blend of southern bentonite and carbonaceous material is added to the sand.

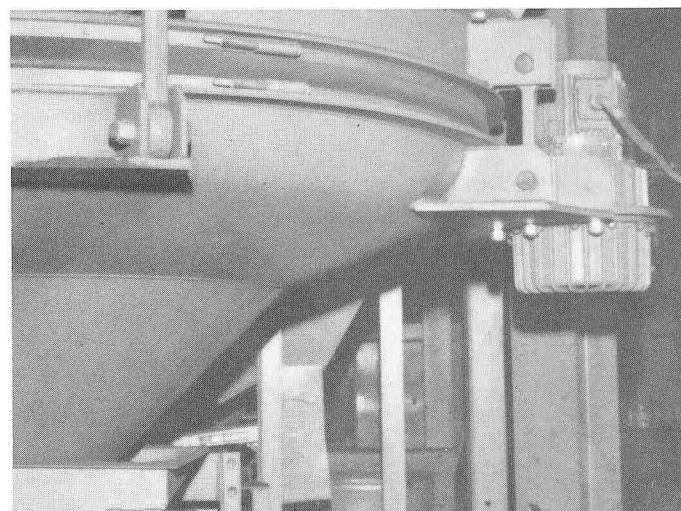
The Bin Activator is flexibly hung from the storage silo, substantially replacing the lower bin cone section. An integral baffle relieves headload over the outlet. In operation, a gyrator produces powerful horizontal thrusts which vibrate the Activator, its baffle and the contained material, but not the bin. The baffle resolves horizontal vibrations into vertical thrusts high up into the bin. This eliminates ratholing and bridging. The baffle also eliminates segregation, or the natural tendency of the silo to empty down the middle first and the sides last, which causes uneven cooling of the sand. Instead, the baffle helps provide flow from the entire bin cross section for true first-in, first-out flow and maximum cooling. This prevents casting defects due to hot sand in the molds.

Results

Brass Foundry Company has had no problems at all with their new installation. In addition to achieving consistent, dependable flow of return sand, they have had no downtime since the unit was installed over a year ago.



The Vibra Screw Bin Activator eliminates ratholing, bridging, and segregation of hot and cold sand to provide true first-in, first-out flow and maximum cooling.



In operation, a patented oil-cooled, oil-lubricated gyrator (right) produces powerful horizontal thrusts which vibrate the Activator, its baffle and the contained material, but not the bin.