

VIBRA SCREW CASE HISTORY



C-220

Bin Activators Help Maintain Flow of Prills

Customer

Union Chemicals Division, Nitrogen Group. Union Oil Company of California, Brea, California. Producers of nitrogen-based chemicals for industry and agriculture.

Problem

Ammonium nitrate is produced by Union Chemicals in the form of prills, or beads. After leaving the prilling tower, the prills are further processed, then carried by mechanical conveyor to two storage silos, both of which are 17 ft. high. One bin, 12 ft. in diameter, supplies the bagging operation and the other, 14 ft. in diameter, supplies a 24-in. vibrating feeder to bulk trucks for transport to users. The ammonium nitrate has a bulk density of 48 lbs. per cu. ft. and particle size of the prills is mainly between 14 and 10 mesh. Like many similar products, such as urea, if it is too warm when it enters the hopper, it tends to agglomerate. When the atmosphere is cold and the prills warm, a bridge of prills will form and cause a jam-up. In the past, physical force was frequently required to dislodge the material and restore flow.

Solution

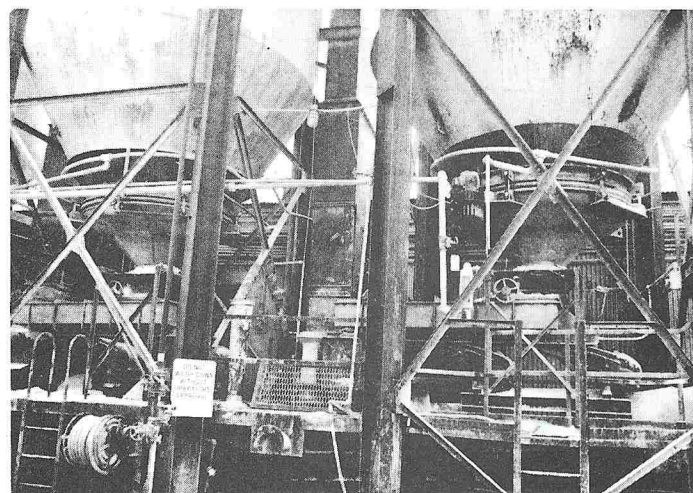
2 Vibra Screw Bin Activators (one 7 ft. diam., one 6 ft. diam.), 304 stainless steel construction, preassembled mounting rings.

After careful research into successful solutions to this problem, the company installed Vibra Screw Bin Activators under their storage silos. These bin dischargers employ a powerful gyrator which produces vigorous vibration of both the Activator and the bin contents, but not the bin. The dished head design of the Bin Activator permits horizontal disengagement of particles, eliminating packing in the bottom cone and producing a steady discharge of the bin contents to the conveyor below it. Any agglomeration along the sides of the bin is inhibited by the action of the internal baffle of the Activator; it relieves headload above the outlet and at the same time directs vibrations high up into the stored material.

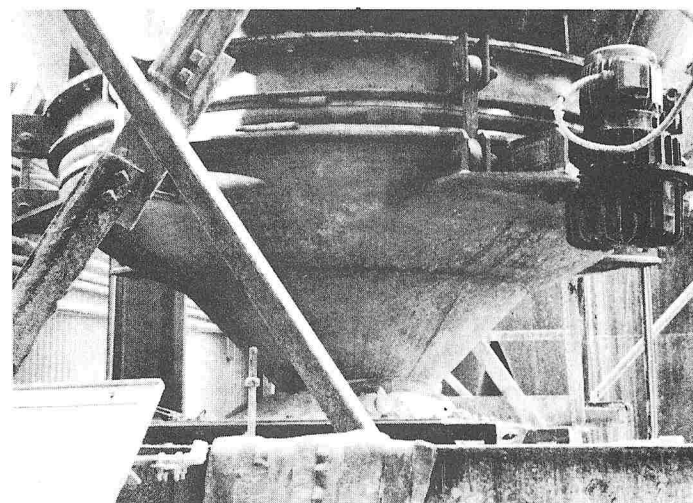
Results

The two Bin Activators have now been in use for

more than a year, and the results have been uniformly good. Even in conditions of unusual agglomeration, flow has been steady and uninterrupted by bridging or ratholing. The company has meanwhile purchased two additional Bin Activators to further extend their production benefits.



Even in conditions of unusual agglomeration, flow from the two Vibra Screw Bin Activators at Union Chemicals has been steady and uninterrupted by bridging and ratholing. The company has meanwhile purchased two additional Bin Activators to further extend their production benefits.



The dished head design of the Bin Activator permits horizontal disengagement of particles, eliminating packing in the bottom cone and producing a steady discharge of the bin contents. A powerful gyrator (right) produces vigorous vibration of both the Activator and the bin contents, but not the bin.