

VIBRA SCREW CASE HISTORY



C-221

**“Tough” sand
flows “like water”
with Bin Activators**

Customer

National Castings Division, Midland-Ross Corporation, Melrose Park, Illinois. Makers of cast railroad couplers, yokes, knuckles, and locks.

Problem

National Castings uses 14 lb. green strength molding sand with a moisture content of 4% in their casting operations. The sand is so tacky that it will stick on a vertical wall. As the Melrose Park Works handles about 6000 lbs. of sand every three minutes, assured flow without hangups is essential. Massive ratholes about 3 ft. in diameter from the top of the bin going all the way down to the gate were common, resulting in “red hot” sand going into the mixer (where Bentonite and cereal flour are added). It was necessary to sledge hammer the hoppers to start the sand flowing. Only about half the sand was usable; broken molds resulted.

Solution

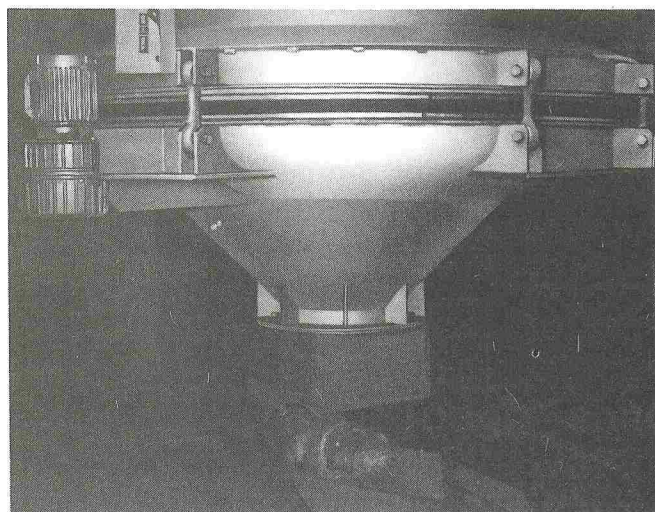
8 Vibra Screw Bin Activators: three 10 ft. diameter (on return sand bins); and four 8 ft. diameter and one 9 ft. diameter (on prepared molding sand bins), carbon steel construction.

The company installed Vibra Screw Bin Activators on bins for return sand and prepared molding sand after a demonstration unit was successfully tried out in their plant. The Bin Activators are flexibly mounted to the bottom of the storage bins where they apply controlled vibration to assure uninterrupted flow even of wet, sticky sand. A powerful gyrotor mounted to the Bin Activator vibrates the Activator, an internal baffle and its contents, but not the bin. The horizontal thrusts of the gyrotor are converted into vertical thrusts high up into the bin to prevent ratholing and wall build-up. The unique dished head design of the Bin Activator avoids wedging of sand and provides positive discharge with a minimum of energy requirements. About a year ago the company

changed over from a two-part sand system (using facing and backing sand) to an all-purpose sand system. The Bin Activators are an integral part of the new system.

Results

The amount of sand necessary to fill a mold is measured by revolutions of a counter on the head pulley of the feeder. Since the feeder was shut off automatically after a certain number of revolutions of the pulley, the molds would only be half filled if there were sand delays from the bins. This no longer happens. With Bin Activators, the Melrose Park Works gets even sand flow without hangups; full use of storage space in bins for more usable sand storage space; sand feeds to the molding machines without having to use sledge hammers. Bins no longer have to be drained and scraped on weekends as they did before.



A powerful gyrotor (left) mounted to the Bin Activator vibrates the Activator, an internal baffle and the contents of the bin, but not the bin. The unique dished head design of the Bin Activator avoids wedging of sand and provides positive discharge with a minimum of energy requirements.