

VIBRA SCREW CASE HISTORY



C-240

Segregation of Material Prevented by Vibra Screw Combination

Customer

Kraft Incorporated, Coshocton, Ohio. R&D pilot plant for perfecting of process and manufacture of soy protein isolate.

Problem

The soy flake used in this process is a Class 2 material, with 10% compressibility. Its bulk density is 32 lbs. per cu. ft. It is hygroscopic, and though it normally flows without assistance, it occasionally bridges in storage. It is difficult to meter uniformly into process because it tends to segregate into varying degrees of fineness. Fines from the center discharge first, causing a "pipe," or "rathole" to form down the center to the outlet. Because of this, the flow rate of the flakes into process was erratic, which caused upsets in the process. Previously, the company used a mass rate meter, but it was not suitable for this application.

Solution

1 Vibra Screw Live Bottom Bin, LBB 28-10, stainless steel construction, sanitary construction;
1 Vibra Screw Live Bin Feeder, 3 in. wire screw and tube, 304 stainless steel construction, sanitary construction.

The company decided that a different approach to handling their product was called for, and they determined that their soy flake processing was a good application for the controlled vibration concept of Vibra Screw equipment. The Live Bottom Bin has a 10 cu. ft. static hopper and the bottom section is a movable Bin Activator. When subjected to controlled vibration, it provides a steady flow of material to the Live Bin Feeder below it. Segregation is prevented because the Bin Activator by its internal design continually reestablishes proper particle distribution. The shape of an integral baffle encourages flow from the core while the Bin Activator's body allows flow from the periphery. The result is first-in, first-out flow to the Live Bin Feeder. The Live Bin Feeder employs controlled vibration of its rotating feed screw to condition the soy flake to a consistent density, filling each screw flight uniformly, and delivering a precise, regulated flow. The resultant accuracy is ± 1 to 2%.

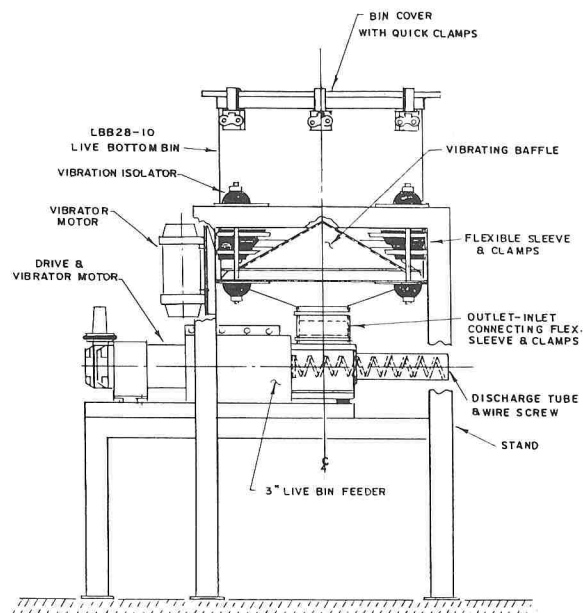
Results

The combination of Live Bottom Bin and Live Bin Feeder has prevented the segregation which previously occurred. The company now obtains

first-in, first-out flow from the Live Bottom Bin, and uniform rate of flow from the Live Bin Feeder. The end result is improved efficiency and economy.



The Live Bottom Bin has a static hopper and movable Bin Activator, preventing segregation and providing first-in, first-out flow to the Live Bin Feeder.



A diagram of the Live Bottom Bin and Live Bin Feeder used at Kraft to move soy flake from storage to process.