VIBRA SCREW

CASE HISTORY

C-176

Du Pont Cellophane Flake Effectively Handled by Bin Activators and Heavy Duty Feeder

Company

E. I. Du Pont de Nemours & Co., Tecumseh, Kansas. Manufacturers of cellophane film.

Problem

At the Du Pont plant in Tecumseh, Kansas, cellophane flake is bulk stored for the manufacturing of cellophane film. To move the cellophane flake from the storage bins to processing equipment requires accurate and reliable flow-aid devices. Three different size cuts of the flake are handled. Du Pont had previously been storing the materials in ribbon-blender bins. The ribbon at the bottom of the bin fed material from both ends to the center discharge outlet. Problems were encountered with this type of system — bridging and compacting in the bottom portion of the bin resulted in erratic and unreliable flow, reducing the efficiency of the processing system.

Solution

3 Vibra Screw Bin Activators
1 Vibra Screw Heavy-Duty Feeder Model 7-24

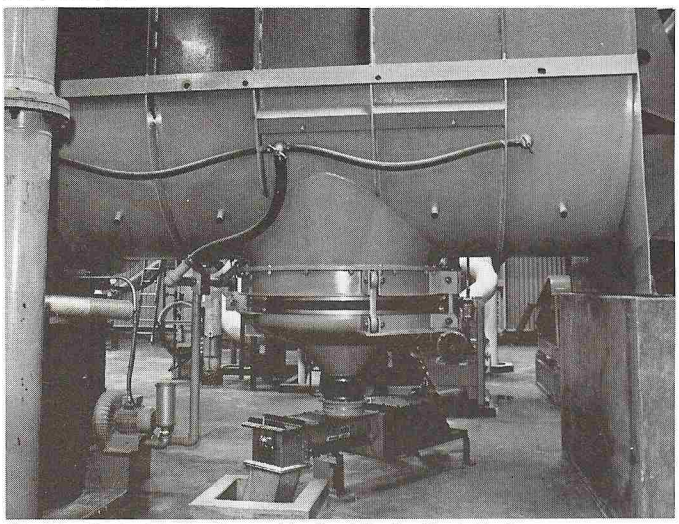
After achieving satisfactory results demonstrated by testing at Vibra Screw, Du Pont installed three Bin Activators and a Heavy-Duty Screw Feeder to eliminate flow problems. The Bin Activator is a vibrated bin discharger flexibility hung from the bottom of a storage bin. A patented gyrator causes strong horizontal thrusts which vibrate the activator and the contained material, but not the bin structure itself. A curved integral baffle directs these vibrations high up into the bin, keeping the material mobile and free flowing while simultaneously relieving headload and overhead bridging at the discharge outlet.

Modifications were made on an existing ribbon blender by attaching a 4-ft. diameter Bin Activator to provide more uniform feed of the material at higher rates than the existing 6 inch outlet in the bin could provide.

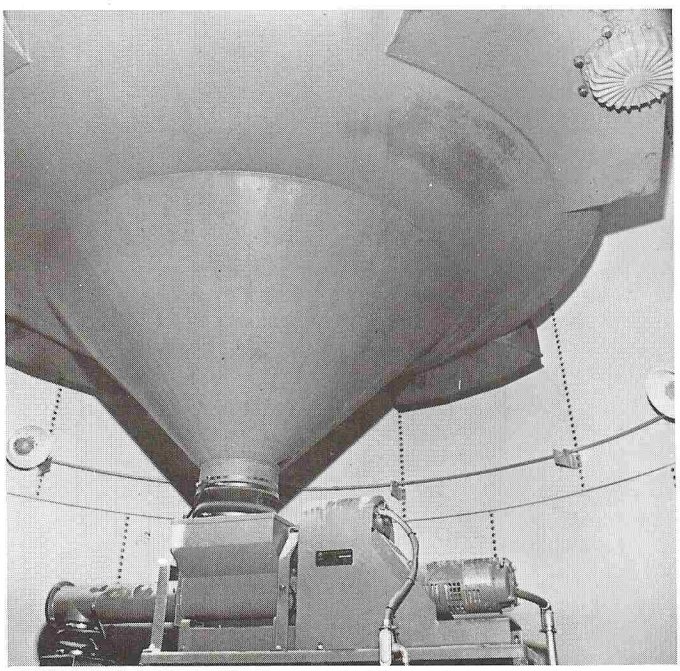
Two new skirted silos were installed for handling the remaining material. A 7-ft. Bin Activator was attached to a 9-ft. diameter silo to discharge material to an existing gravimetric feeder for further processing. A 56-ft. high silo required the installation of a 12-ft. diameter Bin Activator. Material is discharged directly to a Vibra Screw Heavy-Duty Feeder. The feeder employs controlled vibration in the trough section and 6 inch feed screw. The vibrations maintain uniform density of the cellophane flake and ensure that each flight of the screw is completely filled and emptied, providing extremely accurate feed.

Results

Since the installation of the Vibra Screw equipment, Du Pont is able to eliminate flow problems and maintain an efficient bulk storage and handling system. According to Larry Groff, project leader at Du Pont, "These units have enabled us to unload and feed cellophane flake from storage bins at a reasonable investment."



Flexibly attached to the storage bin, the 4-ft. dia. Bin Activator assures positive, on-demand flow of cellophane flake to a screw feeder.



A 12-ft. dia. Bin Activator discharges material from storage directly to a Heavy-Duty Screw Feeder below.