



IBC System Replaces Unreliable Tubular Drag Conveyor

Manufacturer – ALM & Carolina Conveying

Product – Brake Mixes

Case History #101

Background

A southeast brake manufacturer uses 100-plus different materials in the manufacture of various, different brake pads. The raw ingredients range from fine, sticky powders to heavy metals chips to light weight cotton fibers. In 1998 they purchased a tubular drag conveyor and a filtered bag dump station to transfer these products to their mixer, approximately 15' off grade level.

Existing Problem

- Tubular drag conveying system broke down bi- monthly.
- Tubular drag conveyor was never able to handle a number of the raw ingredients.
- Pallets had to be hand dumped into a special inlet on the mixer, which was laborious, unsafe and done without proper dust control.
- For nearly four years the company limped along with a tubular drag conveyor, which was never able to meet their needs or specifications.

The Solution

The company contacted 3Sigma, whom had provided a number of specialty systems to the plant in the past, to arrive at a solution that would:

- Handle all products – 100+ ingredients.
- From the ground level – to hand additions at the deck level.
- With dust control.
- That would automatically discharge to the mixer without operator interface
- That would fit within the tight headroom constraints (3" to spare once installed)



IBC being set in place by Column Lift

Together we looked at numerous options and arrived at a simplistic solution that would meet the company's system goals. The system included one PLC Based Control, one Scale, one Hydraulic Lift and one Intermediate Bulk Container (IBC), fitted with a Vertical Screw and a Slide Gate Valve.



**IBC docked atop the mixer,
discharging product**

System Operation

- 1- The operator loads the IBC, by weight, *with all products*, as it is “parked” on the floor.
- 2- The operator depresses the “Load IBC” button.
 - a. The IBC is lifted until a limit switch is made.
 - b. The IBC is then rotated 180-degrees until a second limit switch is made.
 - c. The IBC is then lowered onto the discharge station and a mechanical connection is made with the slide gate valve.
 - d. “X” seconds later the slide gate valve opens and the vertical screw starts.
 - e. “Y” seconds later the vertical screw stops and the valve closes.
- 3- The operator depresses one button, which reverses the above procedure, returning the IBC to floor level – “park”.
- 4- The operation is repeated.

This system operates with three moving parts – The Hydraulic Lift; The Vertical Screw; The Slide Gate Valve.

Results

- The system was installed in 2003 and has run continuously, 7 days per week, without one signal failure.
- The only spare part purchased to date was a set of load cells.
- The coordinated work by the Customer and 3Sigma allowed us to provide a reliable solution, saving the company thousands and thousands of dollars each year in spared downtime costs.

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