

Spiroflow Aero Mechanical Conveyor Provides Worry Free Operation for Paint Film Manufacturer



Customer Requirements

Soliant, LLC., a paint film manufacturer, needed a better way to weigh and mix 275 lb. drums of acrylic resin. Before purchasing a Spiroflow Aero Mechanical Conveyor, employees manually pushed 275 lb. drums filled with the powder to a scale for weighing and adding to a mix. Once weighed out, two employees manually scooped 1.5 lb. of powder at a time from the drums to the mixing vessel, the beginning stage of the Fluorex™ process.

Fluorex™ is an alternative to traditional paint and plating systems and is more durable, cost effective and environmentally friendly. With a current production palette of over 140 different colors, Soliant thermoplastic decorative film and coating is used by a variety of industries from automotive to marine, architectural, signage, appliance, electronics, telecom and others.

Before scooping into the mixing vessel, employees first had to hand inspect the contents of each drum and

physically break up any lumps or sticky powder. Speed and consistency varied from application to application. Each application required an average of 25 minutes per employee or almost a man-hour hour for each operation.

Spiroflow Solution

Designed and custom built for Soliant, the all stainless steel Conveyor and Distribution system consists of an inclined 90" long straight-line Aero Mechanical Conveyor (AMC) with a sack tip hopper at the inlet.

The Spiroflow AMC system is mounted on a mobile frame complete with two fixed and two swivel casters. The casters assure easy positioning and have locking brakes for maximum safety. When required to add material to the mixer, the mobile conveyor is positioned on to a 4' x 4' weight platform that is sunk into the floor so that it's top is flush with the factory floor.

Once located on the weigh platform, the weight of the conveyor is tared so that the precise amount of acrylic powder can be loaded into the conveyor feed hopper. The powder is tipped into the hopper through a plastic strip curtain located at the front of the dust hood above it. The dust hood is connected to a dust extraction system that assures an environmentally safe dust free operation. A grid across the top of the hopper is used to break up any agglomerates of material, a main concern with the previous procedure. A rotary valve controls the flow rate from the hopper to the conveyor. Six air operated vibratory pads strategically placed around the hopper ensure a consistent flow of powder into the rotary valve at the hopper outlet without bridging.

The conveyor has 3" conveying tubes and operates at a 45° angle. An air motor powers both the conveyor and rotary valve which is common in hazardous environments. An inter-locked access panel facilitates cleaning of the internal conveyor components and a vision panel in one of the conveying tubes enables operators to determine when cleaning is required.

The conveyor systems consist of several evenly spaced polyurethane disks attached to a wire rope. The rope and disks travel in a continuous loop fashion at a consistent high speed within parallel steel tubes. At each end, the rope assembly runs from one tube to the other around specially designed sprockets. One of the sprockets drives the rope and disks while the other provides tension to the rope. By maintaining the rope and disk assembly at a constant high speed, the conveyor produces an air stream that fluidizes and conveys product to the mixing vessel where the powder is centrifugally ejected. This method of conveying action allows varied production capacities from high to low, with low energy requirements and minimal production degradation and separation.

The problem of lumpy, sticky powder has been eliminated, making it a virtually worry-free operation.