Delicate blend

Flexicon screw conveyor enables in-house ingredient blending of cosmetic powder

The recent addition of a 3m Flexicon screw conveyor and mixer to an established Flexicon bulk handling system at the New York manufacturing facility of Delagar Division, Belcam Inc. has enabled the company to bring in-house, the blending of ingredients for its Spring Fresh body powder. They saved on purchasing of blends from a contract manufacturer, and on shipping them to Delagar’s plant for packaging. It addition it has given the company greater control and flexibility to modify formulations to satisfy individual customer requirements.

Belcam has been producing and distributing an outstanding selection of Bath and Body Products, Fine Fragrances, and Personal Care Implements for over 50 years. Using its’ own highly effective, professional formulations, the products employ only the finest ingredients and are designed to delight the most discriminating customers.

The Spring Fresh product, one of many that Delagar markets to retail and professional customers, is a blend of talc powder, glitter and fragrant oil that creates a shimmering effect when applied to the neck and shoulders. Prior to the plant up-grade raw talc was shipped directly from the mine to a contract manufacturer where it was blended with glitter and fragrance, loaded into bulk bags and shipped. Once at Delagar, the pre-blended material was discharged by a bulk bag unloader into a 4.5m long flexible screw conveyor that fed a packaging line.

The retrofit operation

Since the up-grade raw talc now arrives at the plant in 900kg bulk bags, the straps of which are attached to a bag lifting frame that is fork lifted into cradle cups atop the 4.6m high telescoping posts of the original Flexicon Model BFF Bulk Bag Unloader.

The operator pulls the bag spout through an iris flow control valve positioned at the top of a hopper intake chute, and then closes the valve. This allows the spout drawstring to be untied and the valve opened slowly, avoiding uncontrolled bursts of material into the hopper and dust into the plant environment. Spring-loaded Pop-Top bag extension devices on each of the frame posts stretch the bag upward into a cone shape as it loses weight to promote discharge of material through the spout. Additionally, Flow-Flexer bag activators raise and lower opposite bottom edges of the bag into a steep "V" shape to loosen compacted talc and promote total discharge through the spout.

The new Flexicon 3m long x 11cm diameter flexible screw conveyor moves talc from the unloader to the new 1.12m³ horizontal paddle blender. As the conveyor discharges talc into the blender, a liquid metering pump for the liquid fragrance oil
A 3 m long flexible screw conveyor moves talc from hopper beneath the bulk bag to the paddle blender, while a liquid metering pump and bulk solids feeder meter glitter and fragrance oil into the blender. and a bulk solids feeder for the powdered glitter deliver small preset amounts of the two materials continuously into the blender while it is running.

During the 8 to 12-hour continuous run cycle, the blender automatically discharges the blended batch into a 0.028m³ surge hopper that charges the company’s original 4.6m long flexible screw conveyer (previously used to unload bulk bags) which discharges into the surge hopper of the packaging machine.

Both hoppers have high/low level sensors to signal a controller that activates the flexible screw conveyors to maintain fill levels. The level sensor on the hopper below the unloader also alerts the operator to replace empty bags. The same volumetric system also controls the motors that meter glitter and fragrant oil into the blender.

**Talc requires gentle handling**

Raw talc powder is soft and dusty “much like flour,” says Delagar’s production manager, and must be handled by the machinery quickly and lightly so as not to become too aerated. She adds that the addition of glitter and fragrance oil has little effect on the powder’s flow characteristics.

The flexible screw conveyors are equipped with spirals which are designed to efficiently handle the aeratable powder, while minimising compression of the talc which could pack and cake under excessive pressure and frictional heat.

“Between production runs, an operator vacuums what little powder remains in the blender,” explains the production manager. The bottom end cap of the conveyors can be removed and the screws rotated in reverse to evacuate the tubes. “The flexible screw conveyors do not leave enough residue to concern us,” she says.

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**Big squeeze at Flexicon’s test laboratory**

For many years Flexicon Europe has maintained a dedicated test laboratory to demonstrate the versatility and practicality of its bulk handling systems and show how it contributes to improved distribution of free-flowing and not-so-free-flowing materials to downstream processes or into intermediate storage hoppers.

This month Flexicon Europe has added a hydraulic Bulk Bag Conditioner to the recently expanded Test Facility at its production plant in Kent. The new equipment overcomes the problematical occurrence facing many organisations when bagged bulk materials such as hygroscopic chemicals, certain types of spice blends, heat-sensitive products and many more have compacted and solidified during storage and shipment. They reach a point at which pneumatically-actuated flow promotion accessories integral to bulk bag dischargers are inefficient or completely ineffective.

The Bulk Bag Conditioner incorporates two hydraulic rams with specially-contoured end plates which gently press opposing sides of bulk bags reinstating a more free-flowing material state. Where more stubborn materials are a regular occurrence Flexicon can equip the Bulk Bag Conditioner with a hydraulically-actuated, variable-height turntable enabling in-frame bag rotation and conditioning at varying heights; the height of the turntable and the number of 90-degree rotations being user-adjustable.

Having been treated in the Bulk Bag Conditioner loosened bulk solid material is then ready for induction into bulk bag unloaders with discharge through bag spouts.

- Measuring 2210mm H x 3378mm W x 1981mm D the conditioner is designed to accommodate the most popular sized bulk bags. It is fully enclosed on all four sides for operator safety and includes full-height doors that are interlocked preventing actuation when the doors are open.

Visitors to the Flexicon Test Laboratory are now able to see the Bulk Bag Conditioner working alongside other Flexicon bulk handling systems such as the Company’s flexible screw and pneumatic conveyors, bulk discharger units and bag fillers. The functionality of the expanded test facility enables Flexicon to fully trial the handling of specific materials to maximise performance.

For more information contact Flexicon on tel: 01227 374710 or visit: www.flexicon.co.uk