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Keeping spice blends together

Easy-to-clean conveyors move powder blends without segregation and contamination.

World Flavors Co., Inc. (Ivyland, PA) blends and packages a variety of seasonings, powdered coffee and drink mixes, requiring process equipment that can prevent segregation of blended products and can be sanitized quickly and thoroughly between changeovers to prevent cross-contamination. In addition, the company needs to handle large runs of certain products, e.g., 12 million lb/year of dry cappuccino in 9,000-lb batches for the holidays.

World Flavors' Packaging Manager Russ Perry recalls the days before the company installed its flexible screw conveyors. "Previously, we manually scooped material into the filling machine hoppers. The company now runs eight 4-in. diameter, flexible 15-ft. screw conveyors. Produced by Flexicon Corporation, the conveyors consist of a polymer tube that encloses a flexible stainless steel screw driven by an electric motor. As it rotates, the screw propels material through the tube while providing sufficient clearance between the screw and the tube wall to eliminate or minimize product degradation. World Flavors standardized on the Model 1450 conveyor so spare parts would be a negligible issue.

Three of the conveyors run on lines dedicated to cappuccino mix, but during the holiday season, the company runs the cappuccino on six lines. The other conveyors run a variety of spice blends and individualspices (e.g., cinnamon and vanilla) throughout the year. World Flavors is diligent in preventing the separation of blended products (often comprised of disparate particle sizes and shapes) as they move from blending to packaging.

Following World Flavors' formulas, workers combine ingredients, and then load each batch into one of seven blenders according to batch weight, typically 300 lb. (small), 1,400 lb. (medium) and 8,000 lb. (large). Uniform blends are discharged from blenders into rigid-plastic, 38-in.-square totes holding 1,600 lb. After passing quality control, workers move the totes to a holding area.

When a production run is readied on one of the eight packaging lines, a forklift operator sets a tote atop a flexible screw conveyor's 38-in.-high, 8-cu.-ft. hopper. The operator opens the 10-in. slide gate at the bottom of the tote, and the material flows into the hopper. When the hopper is full, the operator activates the flexible screw conveyor, which conveys the material at a 45° angle, at a rate of 140 cu. ft./hr. to an elevation of 12 ft. for discharge into the packaging machine. High- and low-level sensors in the packaging machine signal a controller to stop or re-start the rotation of the flexible screw when the machine calls for material.

When needed, the company performs a washdown depending on the flavors conveyed that day. The quick-disconnect feature of the conveyor allows operators to move it to a dedicated area for a pressure-wash between runs. "T-bolts at each end of the conveyor tube are removed rapidly without tools," says Perry. "If we run a hot-Italian seasoning blend for sausages, and need to follow it with a cappuccino mix, we disassemble the conveyor, pressure wash and dry everything, reassemble the components and start running the next flavor, in about 20 minutes."

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