

Flexible conveyors double output in confined area

Conveyor flexibility allows line introduction and smoothes production when sales of a product line decrease, expand.

THAT APPROACH PAID DIVIDENDS FOR DAIRY Industries Jamaica, Kingston, Jamaica, with the help of flexible screw conveyors, which allowed the company to expand its product line in limited space and double production.

A soft local economy decreased demand for Dairy Industries Jamaica's Horlicks malted milk drink that it bottles and packages. Jamaican consumers were buying less Horlicks malted milk and more milk powder and milk substitutes. At the same time, Dairy Industries' powder department was not contributing sufficiently to company profits.

The solution was to add a new line of whole-milk powder and a soy-based powder drink, EnerPlus. The challenge was to gain flexibility to run packages of all three products at once or one at a time, with Horlicks additionally running in bottles.

A heavy stainless steel solid flight auger conveyor system presented the main hurdle to running two more products on the original line. "We would have to start and stop the line, clean and make adjustments. The conveyors were also far too heavy for us to redesign the department floor layout," says Ryan Peralto, operations manager. "You would need a crane to move them, and the vibration of the augers would have necessitated reinforcing the building's floor."

Gained flexibility

The department gained the needed flexibility by installing lightweight flexible conveyors by Flexicon Corp., Phillipsberg, N.J. Dairy Industries installed the conveyors and reconfigured the layout in January 1998. During 1999, the department expanded from one mixer, one sachet packaging machine and manual bag dumping to two Flexicon automated bag dump stations, two mixers, three surge bins (manufactured by Flexicon) and a second sachet packaging machine. Connecting it all are 11 flexible conveyors, lengths

ranging from 15 to 30 feet, with transitions.

Each Flexicon bag dump station collects dust via a high-velocity vacuum fan as bags are dumped. The outlet is configured to connect with the flexible conveyor.

The new layout operates in the original space of 48 feet by 70 feet, divided into an ambient-temperature and another temperature-controlled room to ensure product quality. The surge bins feed ingredients to the packaging and bottling lines for continuous production, cutting downtime by 30 to 40 percent.

Multiple benefits

The new layout doubles production from six metric tons/day to 12 metric tons/day, and in the original space. Profits improve as the increased production decreases the cost per case, with the same amount of labor. Consistency of quality has improved. Workers are deployed more efficiently. Safety has improved because workers no longer have to lift the heavy lids of the auger conveyors, which could catch or fall on fingers.

Flexible conveyors

The flexible conveyors transport the material through a 4.5-inch-diameter polyethylene outer tube enclosing a rugged, flexible stainless steel screw. Only the inner screw contacts the product. The gentle rolling action created by the screw prevents any separation of blended products. The enclosed conveyor tube prevents contamination of product and plant environment, and cleans easily and quickly. In the powder department, the flexible conveyors move product from station to station in steep, space-saving inclines in a tight area.

The lightweight conveyors make rearranging the floor layout easy. "We can change the layout over a weekend," Peralto says. Dairy Industries already has expanded the layout once. "With a sketch, we told Flexicon what we wanted. They came back with drawings and a plan." Another advantage of the flexible conveyors is their simplicity. Peralto says the one-half- and three-horsepower motors are easy to fix or replace at any local motor supply store.

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