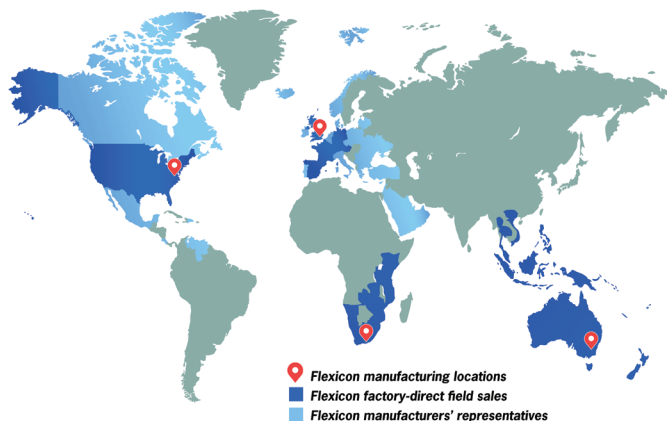




The flexible screw conveyors automatically feed material into the packaging machine hoppers.

Bulk Bag Unloading System Improves Productivity and Cleanliness for Packaging Operation

AA-0670



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Bulk Bag Unloading System Improves Productivity and Cleanliness for Packaging Operation

ATLANTA, GA — GSC Packaging operates a state-of-the-art contract packaging facility, producing pouches, stick packs, envelopes and other flexible containers for packaging of food products and nutritional supplements. The entire facility is certified cGMP (certified Good Manufacturing Practice) compliant by NSF (National Sanitation Foundation), and Certified Organic and OU (Orthodox Union) Kosher. Lot code tracking and real-time inventory control are employed on the multitude of jobs the plant processes weekly.

Serving such blue ribbon clients as Unilever, McCormick Spices, Ghirardelli and other well-known food product marketers, the company's specialty is dry food grade powders including seasonings, protein supplements, baking mixes, drink mixes, soup mixes and hot cereal mixes. GSC Packaging is also experienced in multiple drop products such as rice and pasta mixes where various individual components have to be dropped separately into one pouch.

The facility recently improved productivity by bringing its bulk handling system up to speed with its automated packaging machinery, and improved plant cleanliness at the same time.

GSC receives bulk shipments of dry powdered food products in 500 lb (227 kg) bulk bags and repackages the contents in individual flexible containers, which the company prints and forms internally from roll stock. "Until recently, the bulk bags were suspended in a stationary apparatus and manually emptied," says Robert Shapiro, President of GSC Packaging. "This made it difficult to maintain proper sanitation standards. In addition, fine powders such as cake and beverage mixes generated dust, which became a potential hazard within the plant. The manual process was also slow, becoming a bottleneck for the highly automated package filling equipment."

To speed handling of the heavy bags, as well as improve sanitation and eliminate dust, GSC Packaging installed automated bulk bag dischargers feeding Flexicon flexible screw conveyors — all under PLC control. The powders remain totally enclosed from bulk bag to packaging machine.

"The speed with which we can empty a bulk bag is now limited only by the fill rate of the flexible pouches to which the contents are being transferred," says Shapiro. "The entire system is so automated and reliable that the operator is free to attend to other duties."

Bulk bag dischargers reduce manual labor

Among the bulk bag dischargers is a Flexicon forklift-loaded discharger frame, with sanitary stainless steel hopper. A forklift operator attaches the bulk bag's straps to a bag lifting frame and loads the frame and bag into the discharger frame. With the bag lifting frame secured on the discharger, the operator connects the bag spout to the intake of a circular vibratory screener which discharges the on-size powders into the 18 cu ft. (0.51 cu m) capacity floor hopper.



Powders remain totally enclosed from bulk bags to packaging machines, improving plant cleanliness.



GSC Packaging repackages and fills pouches and other flexible containers with dry powdered food products and nutritional supplements.

Flexible screw conveyors feed material to packaging machines

To accommodate GSC's semi-free-flowing materials, the 15 ft (4.6 m) long flexible screw conveyors are engineered to move difficult-to-handle materials. Consisting of a screw rotating within a 4.5 in. (11.4 cm) outer diameter flexible plastic tube, the conveyor extends from the hopper outlet at a 45-degree incline to the packaging machine's inlet 9 ft (2.7 m) above the floor. The rotating screw, powered by an electric motor at the discharge end, automatically feeds material into the packaging machine hopper.

"We supplied samples of the various powdered materials that we repackage to Flexicon for testing," says Shapiro. "They were able to find one of their standard configurations that could handle all of them, which is highly important for our business since we do not work with one material all the time."

The packaging machine meters the powdered material into flexible pouches of various sizes and capacities. High and low level sensors in the packaging machine hopper send signals to the PLC (programmable logic controller) to turn the conveyor on and off when the contents reach preset maximum and minimum levels.

"Once the forklift operator loads the bulk bag onto the discharger frame, connects and then unties the bag spout, the work is practically done," Shapiro says. "The only other thing the operator needs to do is press a button on the control panel to start the conveyor, and the PLC and level sensors take over from there."

Rates of filling the flexible pouches vary. He says, "It takes longer to fill a pouch with light, fluffy powder-like cake mix than it does to fill it with larger particles like freeze dried rice or pasta. If individual components have to be dropped separately into one pouch, it also adds to the fill time. If we are emptying 2.2 to 4.4 lb (1 to 2 kg) per pouch, we can empty the entire bulk bag in as little as 15 minutes. If we are emptying only a few ounces or grams per pouch, it can take several hours. It takes only about 3 minutes, however, to remove an empty bag and replace it with a full one."

Conveyor is designed for sanitary operation

The intake end of the flexible screw conveyor requires no bearings, and since the discharge end is coupled to the motor drive above the point at which material exits the discharge spout, material does not contact any seals or bearings within the conveyor.

A removable clean-out cap at the intake end of the conveyor tube permits rapid emptying and flushing of the tube as well as disassembly and wash-down of components. "The system does not require cleaning during short runs," says Shapiro. "For longer runs, we disassemble and sanitize the system at least once a week."



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