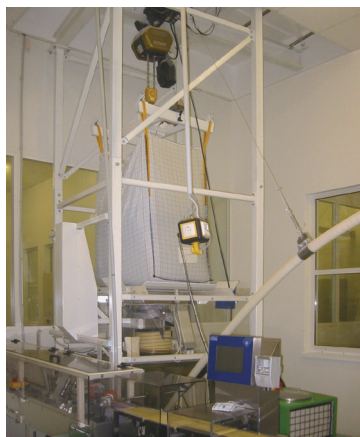
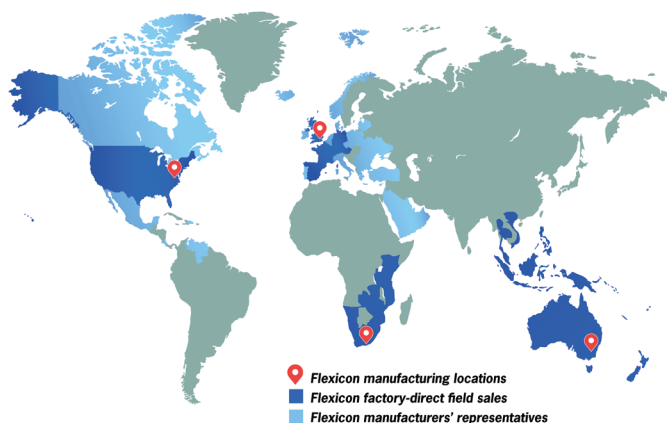




Bulk bag discharger: Chain hoist on cantilevered I-beam lifts 1320 lb (600 kg) bulk bag into place. Flexible screw conveyor moves the bulk material around, over or under obstructions at any angle.

Bulk Bag Unloaders Clean up Nutritional Products Packaging Line

S-0630



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Bulk Bag Unloaders Clean up Nutritional Products Packaging Line

LANGENFELD, GERMANY — To operate under HACCP and other international certifications, the Orthomol Company shifted to clean room production and needed to upgrade from manual packaging to automated filling of granulated nutritional mixtures into 15 gm (1/2 oz) packets.

Orthomol (from “orthomolecular”) makes nutritional supplements with micronutrient combinations of vitamins, minerals, trace elements, amino acids, essential fatty acids, secondary vegetable substances and probiotic cultures.

The company originally filled 15 gm (1/2 oz) packages by hand, and later manually dumped 50 lb (19 kg) bags (up to 1320 lb [600 kg] per shift) into a receiving hopper that fed a packaging machine.

Any automated bulk transfer and filling system had to overcome the tendency of hygroscopic materials in the mixtures to agglomerate in presence of humidity and clog the packaging machine. Other components of the mixtures created dust and thus a health/safety issue for workers.

The company tested open auger conveyors that created dust, and ruled out pneumatic conveyors, which were unable to prevent separation of blends containing materials of disparate bulk densities.

Transfer system promotes flow of hygroscopic materials, dust free

Orthomol ultimately tested and specified a dust-free transfer system from Flexicon (Europe) Ltd. that prevents product separation and moves moisture-absorbing granules without agglomeration. A bulk bag unloader, hopper and flexible screw conveyor isolate granules from the plant atmosphere from point of introduction to the point of packaging. The product remains stable as moisture and temperature levels remain constant within the air-tight system.

In discharging 600 kg (1320 lb) bulk bags, a manual SPOUT-LOCK® clamp ring mounted atop a TELE-TUBE® telescoping tube creates a sealed connection between the clean side of the bag outlet spout and clean side of the telescoping tube, and then promotes flow by maintaining constant downward tension on the bag as it empties and elongates. Simultaneously, FLOW-FLEXER® bulk bag agitation devices raise and lower opposite bottom edges of the bag at timed intervals. As the bag becomes lighter, the stroke of the bag activators increases, raising the bag into a steep “V” shape for total evacuation of material.

To tie off partially empty bags, a POWER-CINCHER® flow control valve cinches the bag spout concentrically on a horizontal axis and vertically in a tight zigzag pattern, preventing leakage of fine powders.



POWER-CINCHER® flow control valve (wide upper ring), SPOUT-LOCK® clamp ring (thin ring) and TELE-TUBE® telescoping tube (yellow tube) create dust-free connection between bulk bag and receiving hopper while promoting flow and permitting leak-proof retying of partially emptied bags.



Enclosed system maintains moisture and temperature level of nutritional supplements from point of introduction to point of packaging.

Beneath the bulk bag unloader, the stainless steel receiving hopper is equipped with a FlexiFinger device to promote flow into the flexible screw conveyor's intake adapter. The 10 ft long (3 m) flexible screw conveyor consists of a plastic outer tube enclosing a flexible stainless steel screw — the only moving part contacting the material. The rolling action created by the self-centering screw prevents separation of ingredients having disparate bulk densities, particle sizes and shapes.

At the conveyor's discharge end, material falls through a transition adapter into the packaging machine's hopper at approximately 119 lbs/h (54 kg/h), a rate sufficient to fill 3600, 1/2 oz (15 gm) packages per hour.

A servo control maintains a constant level in the packaging machine's hopper. Depending on the packaging machine's pickup rate, the control increases or decreases the flexible screw's rate of rotation.

Rapid cleanout between changeovers

During product changeovers, a removable clean-out cap at the intake end of the conveyor tube allows the screw rotation to be reversed for total material evacuation and in-place cleaning of the screw and tube interior.

After six months of evaluation, Orthomol installed two additional Flexicon conveyors.



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