

APPLICATION REVIEW

Unload, Convey, Fill, Repeat

Breaking down bulk bags into smaller sizes for production.

Maggie Beauchamp, a Hapman sales rep from Gull Material Handling Company, contacted Hapman product specialist, Stephanie Avery, regarding a customer who manufactures premium bakery ingredients including icings, fruit fillings, crème fillings, dry mixes, fondant, glazes and more. The customer needed to pre-weigh bulk bags of powdered sugar from the 2,200 pound bags they were receiving to 1,000 pound bags for batching, into their production process.

For this application, the customer did not have the ceiling height that was needed to unload the bulk bag directly into a filler in a vertical common frame, so Hapman quoted the option of a Bulk Bag Unloader into a Hi/Lo Helix® and finish with a Bulk Bag Filler. Loading the Bulk Bag Unloader is easy with the integral hoist. The operator can safely prep the bag for discharge using the custom untie box. An automated pinch valve provides control of flow from the bulk bag for operator safety and improved operations flexibility. The unloader discharges into a hopper with integral dust collection and flow aid components to ensure consistent feed of the Helix flexible screw conveyor that supplies the Hapman Bulk Bag Filler. This Bulk Bag filler uses hanging load cells for gain-in-weight control of the Helix to ensure accurate bag filling. Standard features provide rapid empty bag inflation and secure spout retention for quick filling with minimal dusting. The entire system is safety interlocked and managed as a complete controlled package. Once the bag has reached the target weight, the operator would raise the pallet to the filled bag, deflate the bladder to release the fill spout, and unhook the straps to remove the filled bag. The process would be repeated.

Hapman's Bulk Bag Unloader frame was fabricated in stainless steel with standard 3" square tubing and a 4,000 pound bag capacity. It includes fixed height frame, pre-drilled mounting pads, and a load tested and



3D engineering file from Hapman engineers depicting bulk bag unloader emptying into the Helix® before refilling a smaller bulk bag.

certified hoist style bag adapter. An electric hoist and trolley were designed to give the operator the ability to lift and support the bulk bag while unloading the powdered sugar. A bag agitator assembly was included to keep material flowing from the bulk bag even when nearly empty. The pneumatically actuated pinch valve mentioned above is capable of close through a static column of material, which enables retying and removing partially used bags not possible with a basic iris valve. The pinch valve has specifically designed opposing plates that close around the discharge spout to provide a more positive closure than conventional iris valves.

A series #500 Helix® conveyor with controls was fabricated with a 15 foot long stainless steel bevel wire auger, 5" diameter U.H.M.W. polyethylene food grade conveyor casing, quick release T-handle stainless compression couplings, and stainless steel drive/discharge assembly. The Helix included an 8 cubic foot volume surge capacity, stainless steel, receiving hopper with 45° pick up, and quick-release end clean out cap. An integral ribbon style agitator within the hopper ensures mass flow of powdered sugar into the auger without bridging. All components were assembled onto a common Hapman's Hi/Lo Portable base assembly that allows easy maneuvering and lowering the conveyor for the fastest possible cleaning and changeovers..

Lastly, a bulk bag filler was supplied with fully welded stainless-steel square tube framing with fork-lift pockets for portability of the entire piece of equipment. This Filler design is made to fill directly onto a pallet that can be removed with a fork truck. The powered frame adjustment includes a motorized lift assembly to accommodate different bag sizes and ease of hanging new bags. The filler includes basic "up-down" pushbutton controls with a stop switch, stainless steel quick release bag hooks, and a venturi empty bag inflation system. The fill head utilizes a 304 stainless steel product fill tube with inflatable rubber bladder with self-contained pressure control and a product fill tube, fabricated of #304 stainless steel. Finally, four (4) frame mounted load cells and Hardy based controls were included for precise filling of bags.

A future project will see the loaded bags moving to the production area which will also feature Hapman equipment.

ABOUT HAPMAN

For 70 years, Hapman has provided manufacturing plants around the world with the most technologically advanced powder and bulk handling equipment and systems, offering custom engineered equipment and systems for chemical, food, pharmaceutical, plastics, building, minerals, and other industries.

HAPMAN

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