

Automatic Sack Emptying System

System Overview

C J Waterhouse company were contracted to supply an automated sack emptying system for a large UK petfood manufacturer. In addition to their bulk ingredients the company also introduce numerous materials into their mixing process which are supplied in sack format. The current system allows the inclusion of these sacks via a manual tip station which is time consuming and labour intensive.

The new system permits the automated input of sack materials at higher speeds with lower levels of manual intervention.



Auto Bag Feeding

Sacks are fed to the sack emptying machine via an inclined chevron belt conveyor. The conveyor can be loaded manually by hand or using a vacuum lifter to reduce manual handling. The system incorporates a rope safety switch and photo-electric sensor to count the number of bags added.



Manual Bag Additions

Partial and small sack contents can be manually added directly into the system via a small manual additions station.

This sack tip station is positioned upon the inlet section of the sack slitter discharge screw to allow these ingredient to be discharged along with the full sack materials to the downstream blending process.

The station incorporates a lockable hinged access door and internal mesh grill together with gated extraction spigot for connection to the dust collector unit.

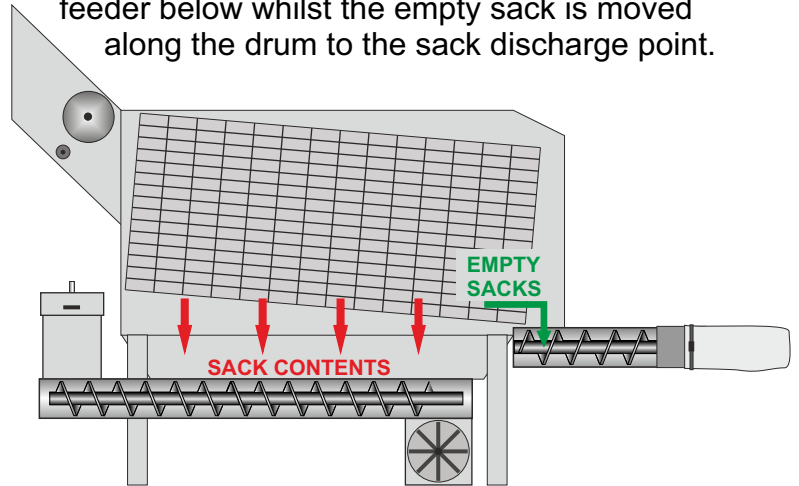


Sack Emptying Machine



The sack emptying machine provides fully automated sack opening, content discharging and waste material removal of materials supplied in either paper or plastic bags at a rate of up to 600 bags per hour.

The system comprises of a feed chute containing a powered feed roller and a separately powdered rotary cutting disc. As the bag moves down the chute the cutting disc slices it in half, the bag and its contents then fall into a rotating mesh drum. As the drum rotates, the sack contents are discharged and fall through the drum into the collection hopper and screw feeder below whilst the empty sack is moved along the drum to the sack discharge point.



Sack pressing Screw



When the empty bags are discharged from the mesh drum they fall into a pressing screw which forces them along the trough and out into a collection tube. This tube is retained under tension and only extends when the applied pressure of the discharged sacks overcomes the retention system. This system results in the sacks being compacted into the collection tube to maximise storage space.

Filter Unit

A free standing filtration unit provides dust extraction from the sack emptying machine to reduce the potential risk of material expulsion into the atmosphere.

Extracted dust falls into a collection container below the hopper and expelled air is filtered by a series of specialist media filter bags. The filter bags are automatically cleaned using reverse air jets.



Control

Stand alone control is via a local automation panel housing a PLC and door mounted HMI unit. From the HMI the operator is provided with both manual and auto operation modes. In manual mode the number of required bags is locally set and the system will run through the required recipe until completion. In auto mode the required number of bags is remotely set via the clients master recipe system.

