

## Sack filling, sealing & emptying

# Still a place for sacks

In an era of economics of scale and with increasing emphasis on efficiency in industry, one might ask whether sacks are still a worthwhile and practical means of transporting product. **Spiroflow** identifies the advantages that sacks can offer with filling and emptying options.



Spiroflow force flow sack packer

In an age of bulk handling, sacks are still used, mainly as a means of measure e.g. 25kg sacks to be placed straight into a mixer. Their main advantage over a 1 tonne bag (FIBC) is that many raw materials are very expensive and the volumes are often fairly low. Sacks allow a company to purchase a range of products in small quantities. They are easy to handle and do not always require capital outlay on handling machines. For instance, in the food industry, bakers simply do not have the space for large FIBCs.

Spiroflow manufactures a wide range of machinery for low to medium volume filling and emptying of sacks. The Force Flow Packer is an extremely versatile machine that will pack a wide range of difficult to handle powders and granular materials into a variety of sacks. The principle of operation is fluidisation of the product. This means that the material is made to flow by supporting the particles on an upward airstream.

During the filling operation, the powder chamber is pressurised, forcing the fluidised material through the filling tube whenever the outlet valve is operated. This packer will fill most types of paper or plastic valve sacks at a rate of up to five sacks per minute. Higher speeds can be obtained by combining several machines in a single operation. One operator can easily control up to four machines. Load cells with digital read-out achieve weighing accuracy.

At one time, the Force Flow packer was looked upon as the perfect packing machine, mainly due to the fact that it can be set up to pack most products. However, the nature of the filling method can fill the sacks with air on certain products. This excess air can be removed with the use of a deaeration/powered sack compaction device prior to stacking the sacks on pallets.

The Impeller Packer enables a wide range of ground rock and powdered products to be packed into valve sacks. The Impeller can weigh and pack up to four sacks per minute, again by load cell.

The Screw Packer is designed to replace older gravity type packers with a cost effective packaging solution for low volume users. This machine has the added advantage of being able to handle poor flowing materials that require the positive action of a powered screw to perform the packing process.

Another important feature of the Screw packer is an integral ribbon type agitator in the feed hopper to ensure continuous discharge of material into the feed screw. This allows a wide range of products with differing flow properties to be packed by the standard machine. The feed screw has variable speed control, allowing adjustment of fast feed and dribble feed to ensure accurate weight.

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Fundamental sack filling technology has actually changed very little over the past forty years. Spiroflow still supplies spares to machines that are at least 35 years old and are still working today. The reason for this lack of change is because it is the product to be handled that dictates the machine.

The most significant change for Spiroflow was the development of the Turbo Impeller Sack Packer. The Turbo Packer is used for high speed handling of a wide variety of products on the same machine and features advanced dust control. The main changes to the machines have been the advancement of the control systems from the old even arm beam to today's load cell controls.

The Turbo Packer can now handle a lot of the same products but does not use air to fill the sack with product. This unit is a lot smaller in height than the Impeller and Force Flow packers, which is a major advantage for customers who are conscious of workspace.

Most packers are easily installed in today's modern plants with a typical timescale to install a Turbo Packer being two days including commissioning.

Customers now require full management control and data collection facilities. These may take the form of direct inputs from a computer that can take a note of the final sack weights from the machine.

These can then be downloaded to a printer and placed on the sacks. However, the main principles of the filling machines are unlikely to change. The future lies in a machine that is easy to adapt to the customer's special requirements. For example, a stainless steel Turbo Packer sold with a spare Turbo for easy cleaning for the food and chemical industries.

The emptying of sacks presents a number of issues to be solved, the main one being suppression of dust. These dust problems come from emptying sacks containing light, permeating powders and other volatile materials. As with sack packers, Spiroflow designs solutions for relatively low volume users who need to empty a small number of bags as part of a production process.

Spiroflow sack emptiers come in a variety of forms. Most are open-fronted sack dump cabinets with a dust extraction outlet for connection to an integral dust collector or existing extraction plant.

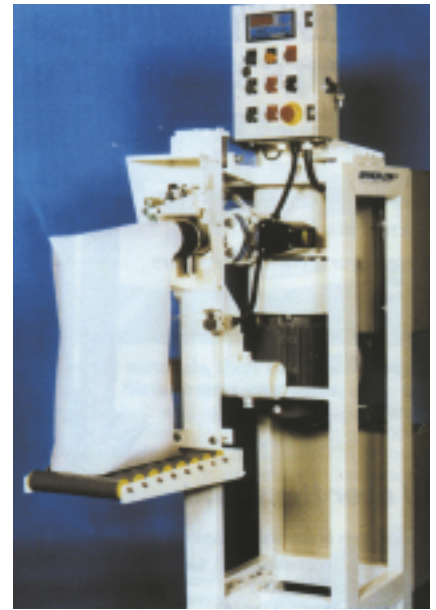
A sack is placed on a mesh support shelf and manually slit, the contents falling into the inlet of a Spiroflow flexible screw conveyor, the size of which is determined by the flow rate required, (from 50kg to 20tph). Integral agitators can also be provided for poor flowing products.

The empty sack is then pushed to the back of the unit into a separate chamber that houses a large diameter auger. This is driven at low speed and compresses the sack into a plastic sack arrangement, which can be tied off when full. This not only eradicates the dust problems caused by manually emptying sacks but also the subsequent disposal of the empty packaging.

Pneumatic sack dumping stations work on similar principles but have several advantages due to the vacuum transfer operation. When the pneumatic conveyor is started, the vacuum that is created ensures that no material can escape into the atmosphere. This also prevents contamination to the material, the plant and the operator.

Reverse pulse-air filter cleaning and no-weld construction adds to the high level of sanitation. Various features can be added to the system such as an integral agitator for poor flowing products.

As with any handling system, comprehensive testing is fundamental to selecting the correct equipment for the product.



Spiroflow turbo packer

Spiroflow designs and manufactures a wide range of conveying, weighing, blending, filling and discharge equipment and systems for dry bulk solids and ingredients. The company's experience in spiral conveying and bulk bag discharging spans over 25 years with thousands of installations worldwide.

Facilities for equipment design, testing and demonstration are available to customers, plus full design and installation services.



Impeller sack packer running alongside FIBC fillers at a cement factory

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