Vertical Bagging Machines Offer Cost Cutting Opportunities

Vertical baggers lower the cost of labor and materials plus boost sustainability

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Companies that bag loose and irregularly shaped products typically have three packing options:

- Filling pre-made bags by hand
- Horizontal bagging machines
- Vertical bagging machines

For a wide range of products, automating the bagging process with a vertical bagging machine offers the advantages of lowering operating costs while improving productivity and sustainability. In these difficult economic times when material and labor costs are rising, it is important to understand the fundamentals of where, when, and why to automate the bagging process with vertical bagging technology. Armed with this knowledge, operations personnel can optimize machine selection and at the same time accrue a host of advantages.

Vertical bagging machines form the bag around the product. Because the film travels vertically around and down over the product, vertical equipment is ideal for bagging items that are longer than they are wide, have irregular shapes, or are pieces and parts for a kit. Products most often packed with this method include:

- Food service items — cups, lids, knives, forks, and spoons
- Do-it-yourself items — paint rollers, wallpaper rolls, widow shades, and curtain rods
- Toys — footballs
- Kit packaging — auto parts, nuts and bolts, puzzle pieces, tie wraps
- Bulk packaging — bottle caps
- Products that are not easy to handle on a flat surface — tennis, golf, and soccer balls
- Mixed products — books and CDs, shoes and shirts
- Irregularly shaped products — surfboards

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Vertical and horizontal bagging machines

Horizontal bagging machines, which form the bag around a product lying flat, are typically used for items that are longer than they are wide on the horizontal axis. Items that roll and are not stable or easily grouped on a horizontal surface are optimum candidates for a vertical machine. It pays to match the shape of the product to the correct bagging machine because of material savings. Scrap on the vertical machine comes from the narrow width not the length, while the converse is true on the horizontal bagger.

Both vertical and horizontal bagging machines offer a number of removable closure options as well as full sealed bags. Both machines can run printed film, and the customer has the choice of roll stocks, including flat or center folded polyethylene, polyolefin shrink wrap, and PVC.

Vertical bagging machines can make bags from 2 inches square (.8 centimeters) to 65 inches by 24 inches (1.7 meters by .6 meters). Vertical bagging machines come in semi-automatic for hand loading and fully automated. They range in price from $20,000 to $100,000 (€14,700 to €73,320 Euros) with the top end offering full automation of the bagging process. Production rates in fully automated mode vary by the product. Typical throughput in automated mode ranges from 10 to 35 bags a minute depending upon product size. Custom machines from leading suppliers can be manufactured on average from two to five months. Training for operators and maintenance personnel is straightforward. Operators can be up and running in as little as a day.

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Labor savings

In today's economic environment, management is re-evaluating packing lines to determine where direct labor costs can be reduced and throughput increased. In situations where three or more employees hand pack pre-made bags, it pays to do a return on investment analysis with a vertical bagging machine supplier. In situations where three or more employees are replaced with an automated machine, return on investment can be achieved on average within two years.

Increased throughput

In both automated and semi-automatic configurations, vertical bagging machines offer throughput advantages over hand packing of pre-made bags. When working with pre-made bags, employees must open the box of bags, remove bags individually, and, when the box is empty, open another one and repeat the process. Contrast this with loading a roll of film on the machine. For example, a 20,000-foot-long roll of film (6096 meters) can make roughly 20,000 one-foot bags. A box of comparably sized bags may only contain 5,000. That means the one roll of film eliminated four changeovers. There are similar labor and throughput savings when transitioning from boxes to bags.

Sustainability

Sustainability entails decreasing the environmental footprint of the material from source extraction and conversion through the supply chain to end-of-life recovery or disposal. Shipping rolls of film requires fewer trucks for the equivalent amount of pre-made bags. This means less oil consumed and

reduced greenhouse gas generation. There is also a reduction in corrugated board sourced, converted, and transported.

Furthermore, one of the most effective ways of improving the sustainability of packaging is to reduce the amount of material through light weighting. Vertical bagging machines provide the organization with the ability to specify the lightest gauge film for the application because the weight of the product pulls the film, giving it additional stiffness. For example, Rennco has had customers routinely replace 2 millimeter pre-made bags with 1.25 millimeter bags made from film. Not only is this a sustainable improvement, but also a cost reduction.

Material cost savings

As the price of petroleum-based products has increased, packaging operations personnel have intensified efforts to decrease material costs. For many organizations, investing in vertical bagging technology can be cost justified on material savings alone.

For example, there is no need to buy and stock a wide range of different sized pre-made bags. The bagging machine can use one roll to make many different bags. This means the organization is not tying up funds in excessive inventory. Rennco has seen customers replace inventories of 20 different sized pre-made bags with five to seven different sized rolls of film.

As stated above, many applications lend themselves to thinner-gauge less-expensive material. Depending on the volume of the application and the type and sizes of pre-made bags used, organizations can experience a 40 to

70 percent decrease in material costs in the transition from pre-made bags to center-folded roll stock.

At rates of 500,000 to 1 million bags per year, a fully automated machine can be cost justified on materials savings alone in 2 years or less. At a rate of 50,000 bags a year, a semi-automatic machine can be cost justified on material savings in about the same length of time. Furthermore, the larger the bag the more the average savings with purchasing roll stock compared to pre-made bags.

Key attributes of vertical baggers

In terms of control technology, the machines should feature the latest PLCs, human machine interface (HMI) devices, and communications technology. All machine functions — bag length, seal opening, heater setting, dwell time, and other parameters — should be controlled from the HMI. The interface should be easy to use and intuitive for employees, especially entry-level personnel.

Look for film feed and seal assembly controlled by servo motors for fast, precise operation. Also look for a constantly heated, coated “seal bar,” which helps ensure high-throughput, smokeless, and odorless sealing. Buyers should expect the supplier to be able to provide equipment suitable for the widest possible range of films. There should be a choice of closure options, including easy open and re-closeable, and the capability for on-the-bag printing. Look for both semi-automatic and fully automatic bagging equipment in the supplier’s line. This implies extensive application expertise on the part of the supplier.

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It is always a good idea to work with a manufacturer to ensure that the vertical bagging machine has the capability for higher throughput than what is required today. Greater capacity means room for growth. The same thinking applies to the capability of adding new closures or registration systems for printed film. It is easier and more cost effective to add the hooks for future expansion at the time the machine is built.

How to choose a vertical bagging supplier

When evaluating a supplier for vertical bagging equipment, investigate the longevity of the company, its record of innovation, and commitment to service and support. Have the manufacturer provide bagged samples of the products made on the equipment they are recommending to ensure the bag appearance and seal quality are acceptable.

For more information on the advantages of vertical bagging technology from the quality and reliability leader, contact Rennco at 1-800-409-5225 and visit the company's website www.rennco.com.