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Ten Tips for Buying a Vertical Form-Fill-Seal Machine

Strategies companies can use to grow business through successful packaging automation.

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Many organizations reach a point where manual or semi-automatic product bagging no longer makes sense because of growing demand or a desire to expand into new markets. For the past quarter century Matrix Packaging Machinery, a Pro Mach company, has been helping companies make the transition from manual to automated bagging by manufacturing and supporting vertical form-fill-seal machines for chips, candy, coffee, trail mix, rice and other dry products such as spices, assembly parts and more.

Buying a vertical form-fill-seal machine for the first time can be a daunting undertaking. Each manufacturer offers its own flavor of technology and even seemingly comparable machines from different manufacturers can vary widely in price. Use the following ten tips to help guide the purchasing process to a successful conclusion.

Tip 1: Align machine design to the highest volume package

Many first time buyers purchase a vertical form-fill-seal machine large enough to package all of their bags from the widest on down to the narrowest. On the surface this makes sense – buy one machine and automate the entire operation. The problem with

this approach is that the wider the bag the bigger the form-fill-seal machine and the more expensive. Furthermore, the large machines tend to run the wider bags just fine, but don't perform as well filling the narrower ones.

A more effective strategy for buying the first machine is to size the machine to the width of the highest volume bags – the size that most needs automation. That machine will be optimized for the bread and butter package size and will run the fastest, use the least material, and be the most cost effective to operate. Perhaps continue semi-automatic operations for the other sized bags or consider a second machine down the road. Refrain from designating one machine to be a jack of all trades because it will end up becoming a master of none. That vertical form-fill-seal machine simply won't live up to expectations and will be a potential headache for years.

Tip 2: Work with an OEM that understands the application

There is both an art and a science to manufacturing a machine that will run for years without issues. Work with a manufacturer with a track record of success in similar if not identical application in terms of product and film type. That manufacturer knows what it takes to be successful in that application.

Tip 3: Be open to packaging suggestions

Some customers come to the OEM and say, we want to run this identical bag. Matrix advises customers to stay open to alternatives. A slightly different width, length, or film type may run with much better efficiency than the original on a high-speed automated machine. This doesn't mean that the original is always discarded. It is not. Simply be open to discussing the options. Furthermore, expect the manufacturer to provide sample bags. Work with the manufacturer on any needed improvements.

Tip 4: The manufacturer should be able to recommend a number of film suppliers

Film companies are experts in films. They invest in the latest manufacturing technology to reduce cost and improve performance. The machine OEM should have experience working with the best film manufacturers and make recommendations to its customers on the ones best suited to an application. Do not buy film from the form-fill-seal OEM because it is simply a revenue generator and not in the best interest of the customer.

Tip 5: The machine OEM should provide flexibility in fillers

The filler is a specialized machine that collects the product and then is synchronized to meter product into the form-fill-seal machine. Fillers are optimized for the type of product being packaged. Just like film companies being expert in what they do, filler companies are expert in the different designs for various products. During the life of one form-fill-seal machine there may be two, three, four, or more fillers attached to the machine because of changing product mixes.

The form-fill-seal manufacturer of choice will have software already installed on their machine that will synchronize various fillers. As time goes on and fillers are changed, the software on the form-fill-seal machine synchronizes to the new filler. This leads to optimum installation time and higher uptime for the machine. For example, in its standard software package Matrix has eight different control methods for synchronizing fillers. With this software strategy changing fillers is seamless. Working with outside film suppliers and having the flexibility of switching fillers ensures that the equipment purchased today will grow with the future needs of the company.

Tip 6: Toolless changeover and other key operation strategies

Being able to effectively run a number of bag sizes – similar widths and various lengths – on one machine gives the organization greater flexibility. A fast way to “changeover” the machines between different bag sizes is to have the operator switch between different size filling tubes without the need of wrenches, screw drivers, and other tools. This is called toolless changeover and it is a must for the organization because it is fast, effective, and does not require maintenance personnel to be taken away from more urgent tasks to swap a part.

A new bag size means a new roll of film needs to be strung onto the machine. The form-fill-seal OEM should demonstrate stringing a new role. If this process is time consuming and cumbersome for the OEM, it will be so for the operator as well and much time will be lost during changeover. Look for speed and simplicity.

Another thing to look at is the operator interface. The interface should be intuitive and also multilingual to accommodate a range of operators. The onscreen help functionality should actually be able to help and not require a software engineering degree to navigate.

Tip 7: Beware of 360-degree timing

For the past generation, the norm in form-fill-seal machines has been 360-degree timing. As the film is pulled down, formed, filled, and sealed, timing cams revolve one whole revolution – 360 degrees. Temperature, time, and pressure of the sealing process are all set to that one revolution. For example, a 360-degree machine may be calibrated at the factory to run 30 bags per minute – 30 360-degree revolutions per minute. When this machine is installed it is set, in this example, to run optimally at the 30 bags per minute speed. However, what happens if the customer for any number of

reasons needs to speed up or slow down the production rate? All of the timing cams on the machine must be readjusted, a time consuming and frustrating task to perform and to get right.

The latest generation machines do not use 360-degree timing. Speeding up or slowing down these machines does not affect the optimum sealing time and temperature. Ask the OEM whether they are using the 360-degree timing. If the answer is yes, look for a more modern control and timing strategy.

Tip 8: The base price should include stainless steel construction, registration capability, and automatic web guide control

Some OEMs keep the base price of machines low by leaving out essential features. Without those features, the machine is no bargain. Ascertain whether the base price of the machine covers stainless steel construction, registration capability, and automatic web guide control.

- Stainless steel is vital for long service life and food safety
- Print registration ensures bags and copy lineup
- Automatic web guide control ensures proper sealing, optimum productivity, and low waste

If the base price does not include these features, ask the OEM for the price of the machine with those features. Because along with all of the other features described in this white paper, they are required for an optimum machine experience.

Tip 9: Ask the manufacturer for the average yearly operating cost

A number of parts on the machine such as the knives, cartridge heaters, and ware strips are considered consumable because they will need to be replaced on a regular basis. Other parts like knife cylinders that operate at warm temperatures need to be replaced more frequently than other components, but not as often as consumables.

On-going consumables and replacement part costs should be considered in a purchasing decision. The OEM should have this information.

Tip 10: Keep it simple

Complexity and reliability tend to be at odds. Ask the OEM for its design strategy. Do the words simple come up? Open the control cabinet. Compare the differences in appearance and number of components between suppliers. Is one clean and streamlined and the other crammed?

It is also a good idea to visit the manufacturing plant. Ask the design engineers about their basic design philosophy. Watch how common tasks on the machine like changeover are performed. If it looks hard for the manufacturer, it will not be any easier for the machine's operator. Talk with the OEM's customers. Ask those customers about their purchasing experience.

Every application has its uniqueness. Yet there are commonalities as well. Use these ten tips to help successfully guide the purchasing decision.

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