Link Pack
Packaging Automation Experts

6 KEY FACTORS TO CONSIDER WHEN BUYING A POUCH BAGGER

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The popularity of stand-up pouches is growing in many product categories, both for food and other consumer products. It is a convenient and modern packaging solution that is increasingly appealing to brand owners and retailers alike.

With the continued technological advances in the packaging industry, food processors can offer a multitude of options to their customers. In addition to offering a better performance and production using recyclable materials, baggers can produce different sizes and styles using the same equipment - making them more versatile than ever before.

This white paper is destined to manufacturers drawn to the potential, flexibility and ease of use that a pouch bagger can offer them. Unlike form-fill-seal (FFS) baggers, with bags made from rollstock, this paper will focus solely on systems fill and seal pre-made bags. In addition to the bagger itself, the system consists of a few other important components to complete a functional system. Namely, a bulk product feeder, scale (or filler) a marking system to print variable information and a quality control device.

There are several factors essential to making an informed pouch bagging machine purchase. We have listed the 6 key elements that we feel are the most important for you to consider. Our advice should get you started on the right path to making an educated choice which will enhance the productivity of your packaging operations.

This document will provide a better understanding of the major design aspects and benefits that pre-formed pouch baggers offer in terms of user experience and production optimization.

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1- QUICK AND EASY SIZE CHANGEOVERS

Some of the advantages of using pre-made pouch bagger include the overall final look and presentation of the packaged product as well as the ease of bag & product changeovers. Bag dimension changeovers are accomplished with ease and unlike FFS baggers there is no need to fuss with the actual bag fabrication process.

There is a direct link between changeovers and the appearance of the finished bag. While it is possible to produce and fill a flat bottom bag with an FFS bagger, the resulting packaging may not be as attractive as if it were produced on a specialized machine. To fully grasp the process, you should know that quality ziplock flat bottom bags are commonly produced on machines with an approximate length of 20' (6 meters) long and equipped with high precision cutters and sealing stations. Achieving similar results in a small space with a vertical FFS bagger is demanding, size changes are relatively complex and overall finish is not as uniform as pre-formed packaging.

The more complex the bag, the more that the above statement applies. By complexity, we mean that a stand-up bag with a flat bottom and a ziplock is more elaborate and complicated to produce esthetically perfect packaging. VFFSs are however ideal for the production of pillow bags, like those used for potato chips.

Horizontal FFS bagging machines, which have a much larger footprint, are quite efficient it can be used to produce and fill stand-up bags without compromising quality. For more information: http://link-pack.com/portfolio-item/fbm300-hffs-bagger-usda-3a-compliant/

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Rotary bagging machines for pre-formed bags are relatively straightforward; you can expect operators to require minimal training or assistance to complete quick and easy size changeovers.

The time required for employee training and changeovers are recurring costs that are ideally kept to a minimum. In general, rotary baggers stand out for their simplicity when it comes to size changes, critical adjustment points should be well identified and equipped with digital dials for repetitive adjustments and minimized downtime.

Where mechanical adjustments can be optimized with dials, electronic parameters, such as clamp width adjustment, speeds, delays, motors and sensors, should be saved to the machine's PLC for future use.

Minimising the changeover process is one of the great advantages that quality pre-made pouch baggers hold above other bagging machinery.

Changeover process

1. **Empty remaining bags from the magazine**
2. **Select the size or product from the touch screen (all electronic parameters adjust automatically, including clamp width)**
3. **Refer to indications on the touch screen to make mechanical adjustments**
4. **Place the new bag sizes in the magazine**

The average size change should take between 10 and 15 minutes. However, it may be necessary to account for more time when performing product changeovers du to scale and or doser cleaning.

2- BAG MANIPULATION

Preformed bags are often grouped in 50 counts and delivered in boxes. An operator is necessary to place and spread out the pouches on the magazine to facilitate separation and pick-up for the suction cups. When the bags reach the bottom of the magazine at the end of the run, they are aligned, picked up and transferred to the adjustable grippers. Compared to traditional stand-up pouches, the magazine corner capped bags have a slightly different design.

Adjustable Clamps

The rotary design, consisting of several sets of grippers which hold the preformed bags during different operations have several advantages. Unlike a linear bagging machine for preformed bags, the rotary bagger does not transfer bags from one station to another with suction cups. The bag is positively placed in the grippers and remain there while traveling through the entire packaging process. In addition to avoiding bag transfers, the grip strength is many times greater than that of suction cups allows for a better sealing quality.

Zipper Bag Opening

Although zippers bags are commonly ordered to be open, it is common to find that many zippers partially close during transport and storage. Efficiently opening zippers using suction is a challenging task, so a mechanical solution is preferable. Make sure to schedule visits to see the bagging machine for pre-made bags with a zipper opening mechanism in operation, and if possible, ask to test your product bags on the machine.

Gusset Opening and Confirmation

The gusset is the folded portion at the bottom of the bag that allows the bag to stand upright. The bag gusset is made by perforating the film and sealing the flaps during bag manufacturing. It is essential that the gusset be sufficiently well opened before filling to ensure that the products are properly deposited and do not obstruct the sealing area. Validating that the system possesses a bag opening confirmation system will ensure optimized bag filling operations.

Rejection of Non-Compliant Bags

If the programmable controller does not receive a confirmation of opening, filling and sealing will not occur, and the bag will be ejected into a separate hopper. This prevents products spillage on the machine table or the floor and allows bags to be reused rather than thrown out. The discharge station separates unused bags without any operator intervention and prevents faulty packages from making their way to the the outlet conveyor. In addition to avoiding unnecessary contamination risks, the bags are grouped together at a single location and the operator can verify the cause of non-compliance.

8 or 10 Stations

Most rotary baggers for flat-bottomed bags have 8 sets of clamps, which we call stations. Each station can perform one or two tasks, such as coding, bag opening , filling, sealing etc. For several applications, an 8-station rotary bagging machine is sufficient, but here are the a 10-station bagging machine offers additional advantages. After filling the bag, the next station is free to be used for filling of a second product, extracting particles/dust, inserting a promotional coupon, an oxygen absorber or a measuring spoon. A 10-station machine also makes it possible to have a station dedicated to the injection of neutral gas for the preservation of products. Added adaptability is always an asset in a rapidly evolving industry..

3- THE PRODUCTION ENVIRONMENT

Several design elements can protect machines that need to be installed in dusty, damp or aggressive environments.

Dust and Particulate Matter

Dust is certainly an important consideration, mainly due to potential sealing problems, but also vital to component protection. Products from with volatile particles require special attention. The particles linger in the ambient air, and tend to adhere to the walls of the bags, which causes sealing inefficiency. Limiting dust and particles upstream of the filling process with a dust removal mechanism contributes to increased sealing performance . It is particularly critical for industries that pack powdered products such as beverage preparations, ground coffee or sauces. Even some solid products, such as pasta and dry pet food release airborne particles during packaging, so it is important to evaluate product characteristics to obtain maximum sealing performance.

Water and Cleaning Products

In several industries where washdown is exercised daily it is imperative to consider the housing of electrical components. Ideally, the main electrical housing should be separate from the machine and installed in a location where exposure to direct water is limited. As for the systems touch screen, it is advisable that even water resistant models, which offer some water resistance, be exposed to a minimum. It is prudent to cover or move them from the washing area.

Protection Indexes

IP protection index assigned to the machine housings and sensors is an important indicator to consider. The IP indexes, or protection indexes, specify the environmental protection provided by the housing. The higher the IP protection index, the more the housing is protected against dust and liquid penetration. For example, several machines have a basic IP55 index, however, companies such as those in the the dairy industry, where frequent washdowns are required, would benefit from a machine with a higher IP index.

If your production environment requires a bagging machine resistant to frequent cleanings with chemicals and water, known as a "washdown" machine, it is essential to validate cleaning procedures with the manufacturer. In fact, there are several levels of sanitary design ranging from wipe-down with a damp cloth, to a full 3A sanitary design commonly used the dairy industry.

4- DESIGN AND COMPONENT SELECTION

Floor Space Optimization

Rotary machines are designed to maximize factory floor space. The entry and exit points are in such close proximity that it is possible for one operator to oversee the depositing of empty bags in the magazine at the entry point, to perform discarded bag inspection, to check the flow of bulk products and to assist in boxing at the end of the line. The circular design of rotary machines allows for corner installations, limiting the occupation of floor space needed when compared to a linear bagging machine.

Machine Access

An important feature of the rotary baggage machine design is the 360^0 access to it's different sections. There should be secure access doors on all at least two sides of the system which allow operators to perform maintenance and adjustments ergonomically - without compromising their safety

Modularity

Modularity of the bagging machine allows the integration of several accessories in order to meet varying industry needs. Machine manufacturers conceive their systems with free spaces and additional connections (I/O) in the power box to add modules, in order to conform to different integration requirements. The automation programing is also equipped to take on additional modules which will be controlled from the touch screen. Modular design also allows different filling systems to be installed on the pouch bagger as needed. It may be a volumetric pump, an auger, a metering device, a scale or an electronic counter. In all cases, the bagging machine should be able to receive the signal and transmit it to the filling system for smooth operations.

HMI Operator Interface

The interface greatly facilitates format and product changes when it allows parameters to be stored. For each product type, a "recipe" is created by saving the parameters of the following elements: :

- Machine speed
- Clamp widths
- Variable Information Printing (with a coder)
- Bag opening (top and bottom)
- Suction loss detector (to validate if bags are open)
- Time limits for product filling
- Neutral gas injection
- Sealing temperature, time and pressure
- Bag inspection and rejection of problematic bags

Sealing System

Bag sealers are certainly one of the most important elements of the machine. There are three adjustable parameters necessary to achieve quality sealing. The temperature of the jaws, the pressure exerted on the film and the time. These three parameters will vary greatly depending on the materials used to manufacture the bags, the bag thickness, and the required production speed.

Depending on the application, there are different ways to execute sealing. For very thick bags, such as those used for autoclave cooking, it is sometimes necessary to provide two hot sealing stations to ensure seal integrity. For liquids or other products such as salads or sauerkraut, it is preferable to use ultrasonic jaws, which will seal through the contaminants located in the sealing zone.

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Poor sealing can cause a small leak, which can be catastrophic for your product and lead to the following problems :

- Oxidation
- Deterioration
- Pollution
- Spillage

Two-Step Sealing

The most efficient preformed bag bags include a two-step sealing process.

2. A solid packaging seal is created with heat sealing jaws.
3. A cooling sealing jaw rapidly decreases the temperature of the sealing zone, which ensures a clean and resistant seal by solidifying the heated film.

Servo Motors

Although rotary baggers for preformed bags have many mechanical movements, it is possible and advantageous to replace the main engine (AC) with a servo motor. The servo motor allows better control of accelerations and decelerations, is more precise and allows to slightly increase production rates.

5- LONG-TERM PERFORMANCE AND RELIABILITY

References

One of the simplest ways to judge performance of any machinery is to visit manufactures who use the same model. Although the overall condition of the bagging machine may vary from place to place depending on the packaged products and maintenance frequency , a summary inspection will reveal a lot. Don't hesitate to talk to operators and technical staff so they can tell you about the pros and cons.

Machine Quality

The noise emitted by operating machinery is also an important factor to be taken into account as it is often helps in distinguishing high-quality equipment from others. Simply listening and observing a running machine can tell a story. A noisy machine with a lot of vibration will cause excessive wear of the components and result in a greater need for maintenance and adjustments throughout the life of the equipment. Generally, packaging equipment should emit 80 decibels or less.

Renowned Brands

Consider taking into account the machine's components and brand names for sensors, pneumatics, engines, PLC and touch screen. Ideally, renowned brands distributed across the country are not only a positive indicator for quality, but a guarantee of supply at fair price. For example, a brand name engine will be more readily sourced through local distributor which will save you time and money.

Simply examining a machine makes it possible to determine whether the pneumatic circuit is installed properly and whether the ducts will be easy to clean. As for wiring, sanitary standards recommend that they be passed over lattice supports, rather than inside the chassis. Electrical components should be certified, the CSA/UL logo and the assembly of the electrical enclosures should comply with local electrical codes. In addition you can rely on CSA inspectors that can certify all packaging machines across the country and offer you peace of mind.

Components and Materials

Stainless steel is indispensable in the food industry. Whether for use in catering or food processing, everything coming into contact with products meant for human or animal consumption should ideally be made of stainless steel. Depending on needs, grades may vary, but stainless steel should generally be 304 or 316L with or without treatment, such as passivation. At equal thickness, this material has an important advantage over other materials in terms of relative resistance to weight, corrosion, chemical and high heat resistance.

Beyond parts in direct contact with foods which should always be made of stainless steel, such as mixers, hoppers, funnels or filling nozzles, it is important to know with which materials the remainder of the pouch bagger is manufactured. If steel is used for the machine chassis, or for a mezzanine for scale installation, it must be painted. Paints are designed for this purpose are available and it is necessary to remain vigilant and repaint as soon as any steel becomes exposed to the elements.

Other Compliant Materials

Generally, other materials such as Anodized aluminum, and several types of food-grade plastic or polymers can be used for parts that do not come into contact with foods or aggressive products.

To ensure compliance, it is always possible to ask the equipment manufacturer to confirm that the material meets Food and Drug Administration (FDA) standards. Materials approved by the FDA are also approved by the Canadian Food Inspection Agency (CFIA).

Solid Clamps

For heavier products, such as chicken breasts or frozen fruit in "club" formats, clamps allow effective packaging with minimized production interruption and damage.

As required, baggers for prefabricated pouches should have a gripping force of 5 kg to 10 kg. A robust and durable construction will ensure that gripping force will withstand the test of time.

6- SUPPLIER EXPERTISE

As mentioned earlier in this white paper, purchasing a bagging system for preformed bags is not simply limited to the bagging machine itself. The relevance of working with a qualified supplier takes on all its importance when it comes time to install and integrate the peripheral equipment necessary for the system to operate optimally.

Autocad Renderings

Before the actual equipment purchase happens , it is fundamental to prepare an installation plan for the designated floor space and ensure that there is nothing hindering the transport of the bulk products and to move the finished products. A good supplier will find solutions and advise you on how to avoid costly errors.

Peripheral Equipment

Unfortunately, it is not uncommon to see baggers capable of producing 45 bags per minute combined with scales that struggle to weigh 25 bags per minute. The problem can be related to any number of things including the scale itself, the type of product, the transfer, the supply of bulk etc. It is absolutely crucial that the both the scale and the bagging machine suppliers evaluate the products to be packaged in order to offer the best suited equipment.

Integration and Signaling

Both the equipment used upstream of the bagger, such as the infeed conveyors and scale, and the equipment downstream, such as the conveyors and inspection systems, must communicate effectively. For example, if the checkweigher detects several overweight bags in a short period of time, it must send a signal to the bagger to stop. At that point, the bagger must signal the scale and the infeed conveyor to stop, and so on..

Technical Support and Parts

Even the best equipment needs attention after hundreds of hours of production. Be certain to request a good quality operation manual before or at the time of installation. Maintenance procedures are specified and by strictly following the schedule, you should avoid many problems. However, over time it is inevitable that a qualified service technician will work on your equipment, so inquire about the availability and cost of service at your plant.

Although many of the major components of your bagger should be available from industrial distributors, some parts are exclusive to the manufacturer. The operation manual includes an easy to identify parts list so find out which parts are available in your area! In addition, some suppliers offer online tools to facilitate parts purchasing and access to purchase history and all applicable technical documentation.

In the 4.0 Industry era , it is essential that your bagging machine allows you to compile all production data. Even if you don't have an elaborate data analysis system, at the very least, make sure that you have access to basic system performance data from the touch screen. This information will allow you to compare operator performance or limitations with certain products versus others.

CONCLUSION

We hope this document will help you make an informed decision about your next bagger purchase!

While we have shared a great deal of information in this white paper, we know that every company's needs are different and that you may have unanswered questions. Please feel free to contact us and we will advise you in the most honest and transparent way possible.

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