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How to select your bulk bag filling station?

The optimal choice of a bulk bag filling solution is essential to achieve maximum performance. It is therefore essential to list the relevant aspects for the selection of your filling system.

Define my requirements and find the right filling solution:

- Characteristics of the bulk bag
- Process purposes (expected production rate)
- Sector of industry and material constraints
- Additional equipment
- Manufacturing of the main structure

1 Bulk bag characteristics

It is essential to consider the physical characteristics of the bulk bag in order to adapt the filling station components accordingly.

1. One size or variable size / capacity of the bulk bag:

The bulk bag hanging structure can be adjustable in height via a controlled pneumatic cylinder. Such an adaptable structure makes it possible to efficiently fill bulk bags of different heights according to material density. Note also that a manual adjustment can be carried out, both in height and width via the adjustment of the distance between the forks. Optimal width adjustment is essential to ensure efficient filling of the bulk bag and its stability on the pallet.

2. **4 handles or 1 handle** depending on the sector of industry.

2 Process requirements

1. Determine the requested rate to select the appropriate equipment.

(What investment for what performance?) Maximum efficiency requires suitable investment. For very high throughput packaging, a maximum number of operator tasks is integrated in masked time and packaging is carried out with minimum human intervention. For example, the addition of a pre-dosing hopper sets up the dosage in advance. This work in masked time makes it possible

Test Plant Palamatic Process

for the filling station to reach a high speed rate. Also, the addition of a rotating head allows an ergonomic positioning of the empty bulk bag by the operator.

2. Gross or net weighing?

By installing the station on 4 load cells, it is possible to control the filling of the bulk bag. A commercial weighing system can be added to confirm the weight of the bulk bag.

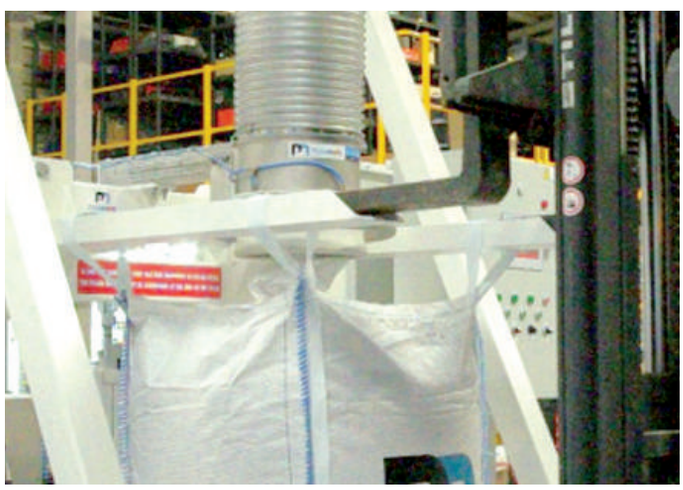
3. Transport and conveying:

Automatic or manual transport ?

Forklift truck or pallet truck, handling on pallet or by the handles (U-shaped forks)?

The choice of a fully automated, semi-automated or manual process depends on the required packaging rate.
For a throughput of up to 20 bulk bags per hour, a manual conveying system is sufficient:
Hanging the handles of the bulk bag with forks ensures easy sliding of the straps and optimized hygiene.
In addition, U-shaped forks will be used to evacuate the bulk bag without the use of a

pallet, through the straps using a forklift truck.
In the context of a more sustained and continuous packaging rate, up to 60 bulk bags per hour, automation is recommended.
A conveyor system is then added to the station: the pallets are placed automatically by means of an automatic pallet unstacker.



«U» shaped forks for removal of the bulk bag by the handles without the use of a pallet

This unstacker ensures, via a series of motorized roller conveyors, the supply of pallets to the packaging station (it is essential to take into account the size of the pallets in order to adapt the dimensions of the unstacker).

Motorized roller conveyors then ensure the transfer of empty pallets as well as loaded bulk bags.

Pallet unstacker

Also, the addition of an automatic bulk bag release system is installed on the bulk bag reception plate to evacuate the blk bag at the end of the dosing process.
In the case of truck or silo discharging, additional constraints related to the handling of powders must be considered.

Automatic release of the handles for ergonomics and high rates

First of all, a handling frame supporting the entire filling station and ensuring the necessary stability of the weighing system is used. This type of structure allows a safe movement of the entire station by using a forklift truck.
Also, the addition of stabilisers is essential to make the filling operation more reliable.

Finally, a docking cone, fitted with a socket joint and a re-centering hopper, ensures an easy and secure fitting of the truck loading sleeve.

3 Material-related constraints

1. Sector of activity:

Food & feed | Chemicals | Fine chemicals | Minerals & building | Nuclear

Depending on the constraints of the sector of activity, the characteristics of the packaging station differ.

Especially in the food, pharmaceutical and chemical sectors, which require special hygienic measures and ATEX regulations to be taken into consideration.
For the packaging of bulk products with high tonnage, mainly dedicated to the quarry, cereal or fertilizer industries, we recommend a packaging line for bulk bag with one handle loaded with a telescopic truck.
Specific equipment for bulk bags with 1 handle must be considered. Our Flowmatic 08 and Flowmatic 09 models are adapted to this purpose.

2. Hygienic constraints:

For the handling of powders and bulk products subject to high hygiene constraints, a suspended filling machine will be favoured. The installation to the ground of the weighing platform directly on the filling head reduces ground retention areas.
The bulk bag can be positioned by means of a lifting table and automatic hooks, or by hydraulic cylinder.
In extreme cases, particularly in the pharmaceutical and food industries, a structure will be used to fill the bulk bags in a white zone. The filled bulk bags are then remove to a storage area. The addition of a dust-tight area with two hermetic doors connecting the two zones, prevents the introduction of pallets into sensitive areas.

3. Dust-tight filling:

A double jacketed filling head ensures a balanced volume and avoids any dust emission. The contaminated air is discharged via the degassing line that can be connected to the dust collection network. It is also important to consider the inflatable seal, which ensures the tight connection between the filling head and the bulk bag.

4. ATEX regulations:

It is essential to carry out an audit and compliance as well as a risk analysis for machines.

5. Content aeration:

The use of a vibrating table permits to deaerate low density materials while giving an optimal shape to the bulk bag. The intensity of the electric vibrators is then adjusted according to the needs of the process.

6. Physical nature:

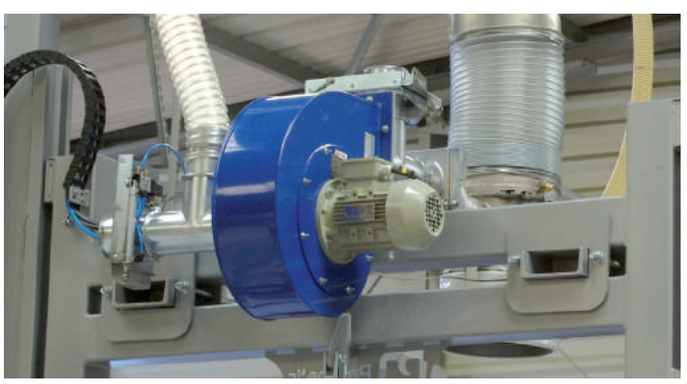
The nature of the processed material is to be considered. Dusty, density of the particule, fluidity?

Vibrating table to ensure product densification to obtain a stable big bag

4 Additional equipment

Additional equipment carefully chosen to ensure proper and efficient packaging.

1. Requirement of a **bulk bag shaping fan** to facilitate its filling.



Bulk bag shaping fan

2. Dust-tight closing of the bulk bag:

A welder for internal liner can be added to the station.

3. Bulk bag containment:

At the outlet of the bulk bag filling station, an automatic wrapper ensures the final containment of the bulk bag on its pallet.

Welder for internal liner

In addition, it is possible to install a mat positioning system between the pallet unstacker and the bulk bag filling machine. By automatically applying a mat on the empty pallet, the containment of the bulk bag is maximum and meets the quality standards of many industries.

Big bag wrapping

4. Platform for operator

The implementation of a platform allows an operator to install the bulk bag on the structure.

Plateform for operator

5 Manufacturing of the structure

The structure must also be carefully chosen.

1. The **manufacturing material of the support and in contact with the powders** must be chosen according to the working habits and the processed materials. A stainless steel structure will be adapted in the case of recurrent contacts with corrosive materials.

2. **Available space :**

The available space is to be considered when designing the station.

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