

New insulator technology protects the operators against product and vice versa - bag tipping into closed system

Avoidance of contamination

Protection of the operator

Closed system

Task

In the chemical and pharmaceutical industries it is often necessary to transfer bagged raw materials such as silicic acid (Aerosil) with a bulk density of 0.03 kg/l or substances hazardous to health that require TL values to be observed into a closed system. Special objectives are avoidance of contamination and protection of the operator.

The advantages

- Raw materials hazardous to health are ergonomically fed into a closed system
- Prescribed threshold limit values are stuck to
- Protection of operating personnel
- Avoidance of contamination
- Ergonomic design, good view of inside

SYSTEMS



AZO solution

This hermetically closed bag-emptying system is used in pharmaceutical and chemical fields. A number of bags can be loaded into the supply compartment. Via a hydraulic lifting table they are raised to working level and automatically moved into emptying position by a pneumatic pusher, pneumatic pusher i.e. that this is no need for the operator to intervene manually and thus can empty the bags without pulling off the

gloves. The necessary controls are arranged inside the station and can be operated via protective gloves. The illuminated can easily be inspected interior through large inspection windows.

How it works

The operator fills the supply compartment with up to 4 bags containing, for example, silicic acid (Aerosil) and closes the door. Via the built-in lifting table, the bags are successively raised to working level. This is done automatically as is their subsequent moving into the working area. The use of sensors ensures that the lifting table always transports each bag to the correct level, regardless of size. After the operator has put his hands into the protective gloves, he can start by opening the bag. For this purpose, the interior contains a special opening knife designed to protect the operator



Empty bag with docked inliner

against injuries. When the bag is open, the raw material flows into a collecting hopper with conveyor connection. The completely

emptied bag is transferred into the empty-bag compacter and there pushed into a tube with inliner by a pneumatic cylinder. In this way the bags can be compacted into easy-to-handle form for later disposal. Dust emerging during the emptying is suctioned by a dedusting filter



Good view of interior

with fan. After the filling process, the filter is cleaned fully automatically, and thus the dust removed is reentered into the further process. The interior is completely illuminated by special lamps. In addition, the casing is equipped with fresh-air filters which are required for the subsequent pneumatic conveying. For cleaning or changing gloves, the front cover on the operator side can be removed without tools.

Safety screening and simultaneous conveying into downstream processes

In order to ensure any impurities - e.g. bag residue - entering the production process, it is advisable to install a screening device after the insulator. In the simplest case, this may be a perforated metal sheet integrated into the conveying line. Such a screen can easily be opened manually for easy daily inspection and removal of any residue. The preferable alternative, however, is to use a cyclone screener at this point in the conveying stream. With this screening technology, the product is pneumatically sucked into the cyclone screener, where a feeding screw transports it uniformly into the screening compartment with fluidizing bars. The fines are sucked through the screen, coarse particles such as lumps, undesired material etc.

fully automatically eliminated, agglomerates gently broken. These screening systems are available as DA type and with extraction devices for dosing screw and screening frame, which makes them easy to inspect and clean.



Screening in the conveying stream

Pneumatic conveying of difficult products

Silicic acid (Aerosil) with a bulk density of 0.03 kg/l certainly is such a product. This very lightweight product can be conveyed at a low velocity. The pneumatic low-velocity vacuum conveying systems developed by AZO are highly suitable for the purpose. With these conveying systems, a vacuum generator generates a certain vacuum in the receiver. This extends via the conveying line to the cyclone screener. It is highly important to operate with as low as possible a conveying speed in order to minimize wear in the conveying lines. The new insulator technology will find new applications wherever the raw materials like silicic acid and toxic products have to be entered into the production process with

specific regard for operator protection. The necessary equipment may seem extensive at first, but by closer analysis will be found to pay very quickly because this technology prevents from any detrimental effects on the operator as well as any cross contamination with other raw materials.



Pneumatic feeding into downstream processes