

Suction weighing systems

DISCHARGING, DOSING, CONVEYING, CONSOLIDATION AND WEIGHING: MANY PROCESS STEPS WHICH CAN BE INTEGRATED IN ONE SYSTEM

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++ figure 1



++ figure 2



+ Discharging, dosing, conveying, consolidation and weighing –suction weighing systems as they are offered by German based AZO GmbH, Osterburken, are truly multitasking. The principle works as follows: A vacuum is generated in a container in the form of a conveyor scale using vacuum pumps, ring compressors and/or rotary piston blowers. This vacuum proceeds through the conveying line up to the product intake. The individual components are thus aspirated into the conveying line in a dust-free manner and transported to the conveyor scales. There the product is separated from the conveying air by filters. It remains in the weighing container, where it is accurately weighed.

Discharging:

The vibration bottom has become widely accepted as discharge system since it is universally usable. It has smooth surfaces and no mechanically moving parts, making it very easy to clean as well as wear- and maintenance-free. Water condensation in the silo is avoided as no heated air is blown into bulk materials. In association with a correctly dimensioned silo cone the vibration bottom provides symmetrical descent of the bulk material columns without funnel and bridge formation, thus guaranteeing „first in – first out“.

Dosing:

A dosing device is located under the discharge equipment for channelling raw materials into the conveying line: Either a rotary valve or a product feeder with rotating rotor, or a dosing screw with worm thread continuously transfers bulk materials into the conveying line. Dosing screws dose poorly flowing products with more precision than rotary feeder and

permit lateral offset if necessary. The suction nozzle offers a further alternative for granular, free flowing products.

Conveying/consolidation:

The multi-port valve developed by AZO is the core of the system. It permits a large number of conveying lines to be brought together at a single point. Shortly before reaching the set weight, the emptying suction valve is opened, the conveying line is closed and the multi-port valve is emptied by suction. This means that the in-flight is the same for all components.

Weighing:

The conveyor scales consist of a container on a weighing device, with a built-in compressed-air-cleaned filter unit and a butterfly valve. The container must be of the same size as the mixer, while the filter size depends on the conveying system. Filter quick release fasteners and an optional cleaning hatch permit quick and easy dismantling for cleaning at product change. The conveyor scales are placed on three load cells. These record the change in weight and pass it on to the controller via a measurement amplifier. Due to a minimum movement the weighing cells are extremely durable.

More than 7,500 convincing arguments for suction weighing systems from the market leader!

Pneumatic suction weighing systems with conveyor scales are today widely accepted for the economic automation of precisely weighed large and medium-sized components. With more than 7,500 suction weighing systems installed, as

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the inventors of suction weighing technology we are not only the technological leader, but also the market leader for fully automatic mixer loading.

The result of this is a high level of experience with conveying characteristics and flow speeds for many different kinds of bulk materials and liquids. In combination with innovative process leading control technology, we introduce all raw materials into your production processes at exactly the right time and in exactly the right quantity: Right to the point.

Reliable conveying technology for precise mixing results

Whether food, pharmaceuticals, plastics or chemicals – in many industrial production processes, product quality and the success of the company depend crucially on the precise mixing of raw materials. The basis for this is the reliable, high-precision feeding and dosing of individual components into the mixing process.

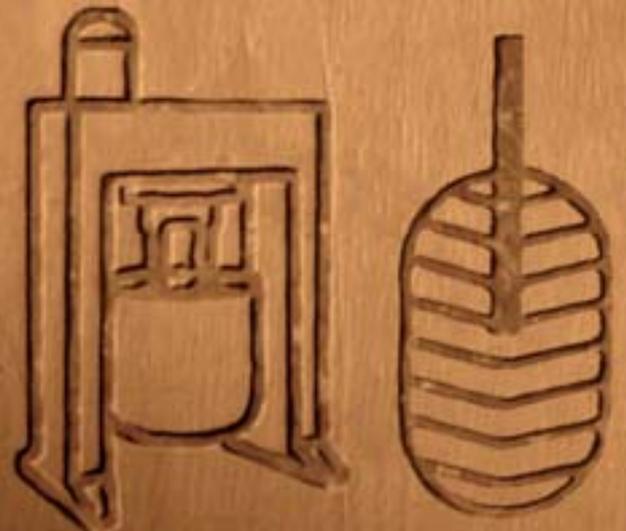
Whenever there is a requirement to convey numerous bulk components fully automatically to one or more dispensing points such as mixers, kneading units, stirrers, dissolvers and extruders, suction weighing systems are a reasonable solution. Even when there are large numbers of components to be delivered, AZO suction weighing systems are not only a reliable, but also an economical solution. ▶

++ figure 1
 Raw material storage in outdoor silos

++ figure 2
 AZO conveyor scales above two kneading units

++ figure 3
 AZO suction weighing systems get your raw materials right to the point

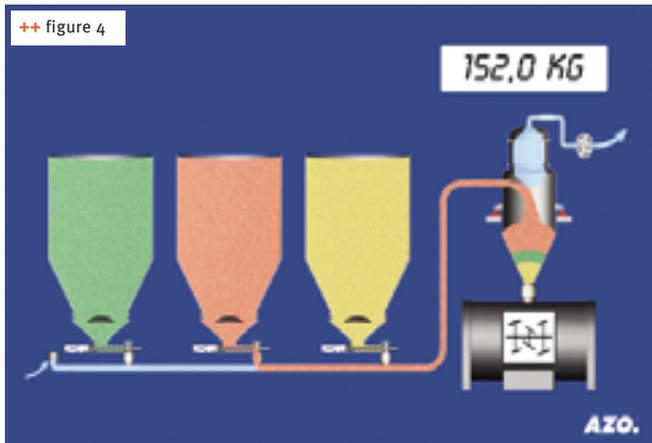
**timeless
 creations**



**mixing technologies
 sponge cake lines**

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A question of requirements: Mixer loading by single pipe system or by multi-pipe system

Single pipe system

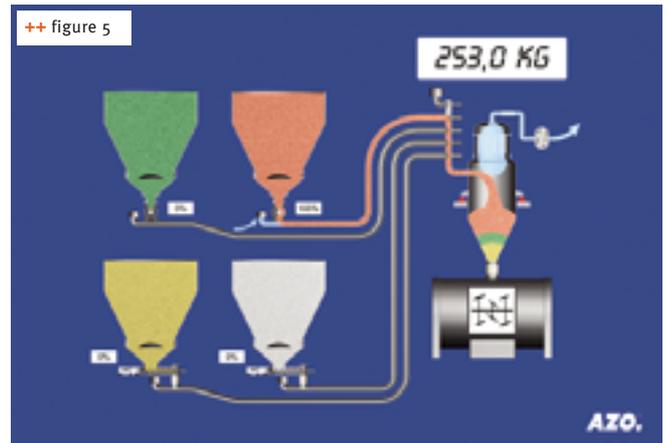
With the single pipe system, a conveying line carries products to the conveyor scales from all product feed points such as hoppers, big bag dumping stations and outdoor or indoor silos. The scales control compensates for the different heels resulting from varying distances. This increases system accuracy.

Benefits:

- + Lower system costs and lower assembly expenses, since only one pipe is required
- + Emptying of conveying pipe after each component
- + Conveying, dosing and weighing processes run automatically thanks to recipe specification by the control

Multi-pipe system

With the multi-pipe system, a conveyor line runs from each product feed point to a multi-port valve with fresh air valve, which is connected to the conveyor scales. This system has the benefit that, downstream of the multi-port valve, prod-



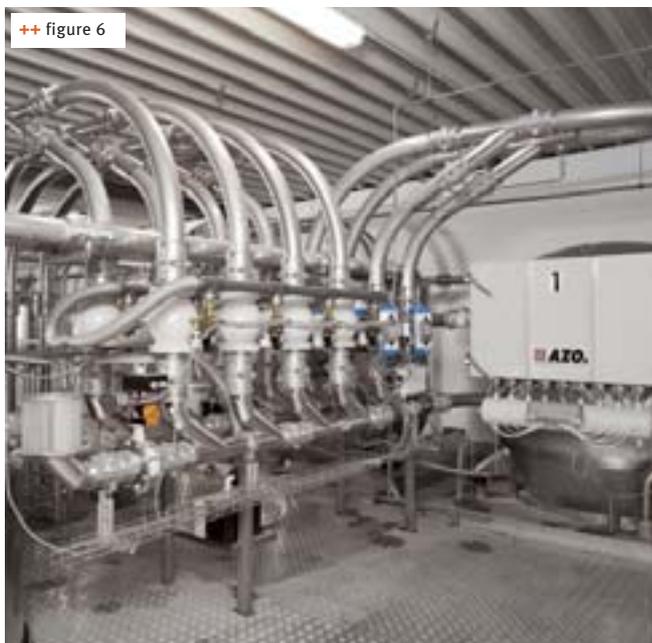
uct heel is very low. Higher precision is therefore achieved than with the single pipe system.

Benefits:

- + Suitable for many components
- + Fast component change possible
- + Very high dosing precision
- + Product intake can be distributed between different locations by the multiport valve

Perfect combination: Central weighing systems

A central weighing system is available for many intake points and discharge points. It combines the benefits of suction weighing and pressure conveying systems. With this system, individual components from the product intake points are sucked into central conveyor scales equipped with an electromechanical weighing device and weighed. The weighed batch is then emptied into a buffer container and conveyed from this point by a pressure conveying system to consumers such as kneading units, mixers or stirrers. In order to achieve high throughputs, the next batch is already assembled in the central scales during conveyance.



Quality is essential



Tailor-made baking solutions meeting effective production systems geared to accuracy, capacity, quality and flexibility

The DFE Meincke type Three ovens are the third generation of indirectly and directly heated convection/impingement tunnel ovens. The Turbu Three, Direct Three and Hybrid Three ovens are pre-assembled, tested and delivered in modules securing a fast installation time.

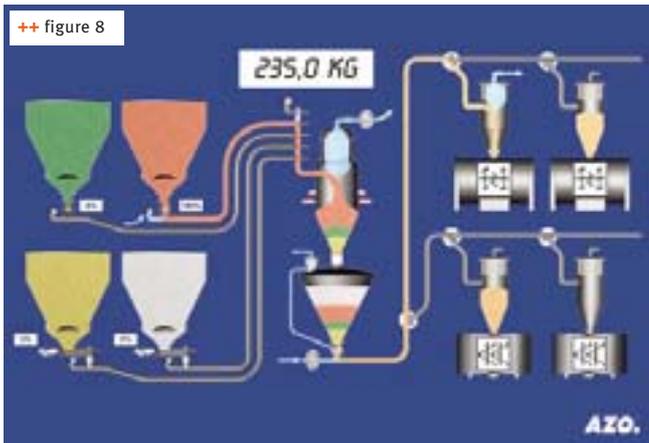


- Indirectly fired convection ovens
- Directly fired ovens
- Hybrid ovens
- High temperature ovens
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- Stone band ovens

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Benefits:

- + Perfect solution at many intake and discharge points
- + Accurately weighed batches for many consumers
- + Optimum for long conveying distance and high throughputs
- + Simultaneous weighing and conveying to several distant consumers

Special solutions for special requirements

Every AZO solution is an individual solution. The sturdy and flexible modular technology ensures that the entire system is also economical and offers maximum flexibility. It permits optimum solutions for both the integration into existing systems, and in the construction of new production plants.

The suction weighing systems are suitable for a very wide range of uses and comply with current production and safety requirements, such as the ATEX guidelines and CE conformity. The well-engineered technology is complemented optimally by intelligent control technology from our subsidiary, hsh – für prozess-IT. The smooth interaction of mechanics and control ensures the highest dosing and weighing accuracy and complete recipe documentation and connection to host systems depending on your requirements. Conveyor scales can also be installed as negative scales for adherent and poor flowing products such as titanium dioxide. Optional test functions such as automatic subsequent calibration and our double check system further increase the production reliability. +++

++ figure 4
Single pipe system

++ figure 5
Multi-pipe system

++ figure 6
Conveyor scales with multi-port valve

++ figure 7
Recipient hopper for flour and sugar in a system with central weighing system

++ figure 8
Central weighing station