



# Medium and small components have a decisive influence on the filler recipe

**Very high dosing precision**

**Clean recipe composition in a closed system**

**Simple raw material handling using big bags**

**Safe transport of the load over metres**

**Traceable, documented production**

## The customer

The Pufas Company in Hanoverian Münden, with 130 employees and a business volume of € 50 million, is a very innovative owner-managed business. Pufas, the painter's brand, has a core business alongside painters' filling that also includes adhesives, fixings and undercoats as well as a complete renovation programme in its product range.

## The Task

According to Mr. Jordan, Managing Director and sole proprietor, Pufas places very high value on cleanliness and the best quality. They therefore went into the medium and small component automation market seeking a supplier who was able to guarantee a closed system and very high formula composition precision, including verification.

## The AZO solution

This essentially consists of a product intake for sacks, big bags and containers and a dosing and weighing system for the precise weighing of batches, which are then conveyed to the mixing process.



Container docking station and vacuum generators

## THE SOLUTION



## Product feed from sacks

Raw materials, delivered in sacks, are supplied dust-free to the pneumatic mixer feeding system via a feeding station. Aspiration starts automatically when the hopper lid opens. The operator puts the sack onto the work table, opens it and discharges it with low dust levels into the closed system. The filter dust produced during suction falls back into the hopper through the assembled filter. The hopper is equipped with combined vibration dosing screw conveying and permits high-precision dosing into

the pneumatic conveying line. The screws gear drive with reversible poles makes it possible to greatly reduce dosing output during fine dosing, giving high dosing and weighing precision.



Product feeding from sacks into the closed system



## Big bag intake

A total of two big bag discharge stations are provided for emptying big bags into the closed system. The big bags are brought to the discharge station by transport vehicles. Then the big bag will be docked onto the outlet using a special connection system. As soon as docking is complete, the operator opens the clasp cord and the big bag is emptied into the downstream buffer hopper with a volume of 1,500 liter. These buffer hoppers are also equipped with vibration feeders and reversible pole dosing screws. The buffer hoppers are simultaneously used as a hold supply and the operator



Big Bag discharge into buffer hopper

is notified immediately by a low level indicator when they have to be filled.

## Formula preparation using suction weighing systems

The various components from the hoppers, big bag discharge stations and BATCHTAINER® filling stations, are conveyed into the conveyor scales and simultaneously weighed precisely in accordance with the formula. All components are linked via a conveying line with the conveyor scale. The blower unit creates the vacuum after system start. Product feeder or dosing screws start. The conveyed goods are fed into the conveying line and sucked into the scale. The conveyor scale is also used as a receiver and is equipped with compressed air cleaned filters for air product separation. The frequency-controlled dosing device is switched from rough to fine dosing before the set target value is reached. Product loading decreases. For any components the conveying line is then emptied by suction and the residual incorporated into the weighing process as a run-on.

This makes throughput somewhat lower than with the multiple-pipe system. The various run-on quantities are taken into account by the process control system. In accordance with the recipe, all components are then available in the conveyor scale within narrow tolerance limits for further transport into the bulk quantity mixing system.



Conveyor scale with pressure impulse unit

## Container filling stations for pre-mixes

**Special blends** are produced by a separate mixing process, which are then filled into (BATCHTAINER®) changeover containers. These (BATCHTAINERS®), equipped with a butterfly valve, are then put onto the container discharge station and docked on in a dust-free manner using a docking sleeve. The possibility of emptying the changeover containers into small buffer containers also exists here, which leaves enough time to put a new BATCHTAINER® into position for quick recipe change. These buffer containers are also equipped with



Discharge station for changeover container

a vibration bottom discharge in combination with dosing screws. The BATCHTAINERS® permit quick formula changing and maximum flexibility.

## Gentle, pressurised conveyor system for bridging large distances

The precisely-weighed batches are then conveyed by a pressure pulse conveying system into the bulk quantity mixing system via a 70-metre conveying distance. The precisely weighed batch is emptied into the pressure vessel. The pressure pulse conveying system works continuously with pressure pulses. This means that an air cushion is pushed into the conveying line by a special conveying air supply (Laval nozzle) between each product plug. A receiver equipped with a scale is located at the end of the conveying system. This receiver checks whether all the components sent from the conveyor scale have in fact arrived in the bulk quantity area. As soon as this check has been performed the entire batch is fed into the bulk quantity mixing process.

A process control system with process visualisation is used to control and monitor the entire

dosing, conveying and weighing process. It is possible to document all recipes with precision in accordance with the Pufas quality philosophy. The closed systems ensure clean production, prevent product displacements and material losses and reduce cleaning requirements. The automatic feeding system provides inventory transparency, data regarding quantities produced and a quick ROI (Return on Investment).



Reception hopper above mixer