Flexible mixer feeding for just-in-time production of flavourings

Maximum reliability, quality and hygiene

The Requirement

- Management of ever increasing demand and associated growth
- Individual solutions for changing markets
- Highest service and quality standards
- High-grade products with outstanding production reliability and short-term availability
- Thorough and comprehensive production documentation
- A unique solution for each customer
- Fast customer order processing irrespective of how large or small the final quantity is

The customer

As part of the Stockmeier Group, Stockmeier Food GmbH & Co. KG has been actively involved in the development and production of flavourings since 1982. The up-and-coming and independent company Stockmeier Food GmbH & Co. KG was founded in 1995. The company develops and produces flavourings that are marketed throughout the world and used in the following products:

- Confectionery, bread, cakes and pastries, dairy products, ready meals, gourmet products, meat and sausages, snacks, instant foods, beverages and food supplements. Stockmeier Food additionally supplies raw materials and additives to the food industry. They offer the customer professional and individual solutions for flavourings, spice mixtures and food additives.

The task

In 2008 a new mixing system for the manufacture of flavourings was installed in the Herford Plant. During the initial phase the first task for AZO was to feed large quantities of salt fully automatically into the mixing process. Sugar, dextrose and maltodextrin could then be added also fully automatically in further expansion stages.

In addition, a further objective was to weigh small and medium components manually and operator-prompted and to add them directly to the mixer through a feeding hopper such as to achieve a maximum degree of flexibility. With a choice of several hundred raw materials it is essential to ensure that all components are always precisely weighed and documented corresponding to the recipe. The broad range of required raw material quantities from one gram up to three metric tons presented a particular challenge.
The AZO solution
The large quantity salt is currently delivered in big bags. They are brought to the discharge station at ground level where they are lifted by a hoist into the big bag station and then docked dust-tight. The system now has permanent access to this raw material via the pneumatic suction conveying system.

The advantage of big bags is their large capacity. This means there are fewer empty sacks compared to product delivered in sack, while also substantially reducing material loss and disposal expenditure. A feeding hopper for feeding white and neutral raw materials is provided on the same level as the big bag discharge station. Here sacks can be emptied with minimum dust levels thanks to the connected aspiration system and the product fed into the closed pneumatic system. All product feeding stations as well as the mixer itself are connected to a central aspiration system with dedusting filter.

...In the context of raw material handling, this system ensures hygienic production, minimizes material loss and provides transparency in terms of the amount of raw materials currently available. Vibrating grids integrated both in the big bag discharge station as well as in the feeding hoppers ensure coarse impurities are effectively screened out of the production line.

Stefan Hanke, Production Manager
Stockmeier Food GmbH + Co. KG
Vacuum weighing systems for feeding of large quantities

The pneumatic vacuum weighing systems developed by AZO convey the large quantities to the mixer with the aid of vacuum. For this purpose, a vacuum is generated in the conveying scales. This vacuum extends via the piping system up to the big bag discharge station and the feeding hopper. The product is dosed without creating dust into the conveying line and transferred uniformly to the conveying scales located above the mixer. The capacity of the conveying scales is such that two metric tons can be added to the mixing process. A further batch can be simply added if a larger quantity is required.

Flexible handling of small and micro quantities

Stockmeier’s strengths lie in the manufacture of individual products for its customers. An extremely flexible production process is required in order to prepare hundreds of different recipes. In this context, the combination of fully automated delivery of large quantities and the manual, computer-aided feeding of small and micro quantities has a proven record of success. All coloured and spicy raw materials are manually pre-weighed from the gram range up to several hundred kilograms, prepared corresponding to the recipe and added directly to the mixer via a separate feeding hopper, while neutral raw materials, such as salt for example, are fed automatically.

Cyclone screening technology ensures outstanding product reliability

In line with the HACCP concept, all raw materials that are made available via the conveying scales are screened by an cyclone screener. The pull-out devices on the type DA screener enable quick inspection and cleaning. The screener ensures that no impurities whatsoever enter the mixing process.

The DA cyclone screener can be dismantled in no time at all to allow easy inspection and cleaning."

Stefan Hanke, Production Manager
Stockmeier Food GmbH + Co. KG

Adding liquid components

The liquid components are stored in two tanks and are dosed directly into the mixer corresponding to the recipe. In the same way as the dry raw materials, the addition of liquid components is controlled by the Kastor process control system developed by hsh-systeme für prozess-IT.
Mixing and filling into big bags. Process-IT for controlling the entire system

Mixing
When selecting the mixer, particular importance was attached to ensuring a gentle mixing principle. This requirement was fulfilled by an amixon® conical single-shaft mixer. It has a robust and precision design. The SinConvex® mixing tool (patented) is designed as a near-wall, rotating helix mixing tool (top-mounted) and achieves ideal mixing quality for all types of dry, wet and suspended products. Liquid components can be added at a rate of up to 7% without clumps and discharge problems occurring in the mixer. It homogenises products with extreme care when, for example, incorporating chunky recipe ingredients in mixtures.

Whenever necessary, the same mixer can intensively desagglomerate products or mix highly viscous pastes into powder. The mixed products are discharged quickly and completely. A shear disperser unit is installed low in the cone of the mixing chamber, allowing the mixer to be operated at low fill levels of approx. 30%. The mixer is mounted on an electromechanical weighing device and functions as reference scales for the filling process and negative scales for discharge.

A conical mixer was selected to ensure a homogenous and particularly gentle mixing process

Filling into big bags
Big bags are filled with the correct quantity of finished product via the mixer’s negative scales. The big bags cannot be overfilled. The number of big bags, into which the mixer content is to be emptied, is defined in the recipe. The operator is prompted by the control unit to remove the filled big bag and attach an empty bag. The finished product undergoes a final screening directly before filling into big bags. In a further process, the big bags are refilled into customer-specific pack sizes. The advantage of this process is that customers can add the flavourings pre-packed in this way directly to their production process.

Cleaning the mixer
A „washing in place” device in the mixer quickly and thoroughly wet-cleans and flash-dries the mixer. The mixer conforms to FDA and EHEDG requirements.

„We operate from white to coloured and from taste-neutral to extremely spicy as well as from non-allergic to allergenic products while conforming to the most stringent hygienic requirements, i.e. the entire system is constructed on the basis of hygienic design.”

Stefan Hanke, Production Manager Stockmeier Food GmbH + Co. KG

hsh Kastor process control system with SAP link
The Kastor process control system of hsh-systeme has a link to the higher-level SAP ERP system. The orders are transferred from the SAP system to Kastor where they are further processed. The process control system controls the complete production process from raw material feeding of the dry ingredients and liquids through the mixing process to packing the finished products. Corresponding to their authorisation level, operating personnel can control and monitor various system sectors and steps in production at operator terminals directly on the production line. Kastor enables complete documentation and tracing of the production process as well as all of all the raw materials used.

„The Kastor process control system makes it possible for us to optimally plan production corresponding to our customer orders that we receive and deliver on a just-in-time basis.”

„Summing up we can say that with the partners AZO, hsh and amixon we have found suppliers who completely satisfy all our requirements. There were virtually no interface problems and whenever a problem did occur, it was resolved quickly and effectively.”

Stefan Hanke, Production Manager Stockmeier Food GmbH + Co. KG

Conclusion:

AZO GmbH + Co. KG
D-74706 Osterburken
Tel. +49 (0)6291 92-0
azo-solids@azo.com
www.azo.com