

Flexible, Contamination-free Handling of Spice Blends

"Taste & Technology" is the recipe for success of spice blend producer AVO. The commitment to consistent first-class quality with more than 4.000 different spice blends is also reflected in the newly established production expansion. The innovative plant design of Daxner bulk solids technology, located in Wels/Austria, impresses with high efficiency and reliability. Daxner Container Systems DCS ensure an automatic handling of the products.

The company AVO-Werke August Beisse GmbH invested more than 18 million Euros in order to expand its technology lead at its headquarters in Belm/district of Osnabrück. As one of the leading spice blend producers with approximately 600 employees, the company is now well

equipped for further expansion. The installed production expansion was put into operation for the production of dry spice blends. Since then, the plant has been meeting the required highest standards according to ISO-9000, HACCP and IFS.

Daily silos with vibro-bin-discharger, weighing bin 500l, Hygienic Design, electropolished for high weighing accuracy



Complete solution across 5 production levels

The system design of Daxner ranges over 5 levels and covers the whole production process: from the storage of raw materials in outdoor silos, the transport to the daily silos, their filling, dosing, weighing and the mixing process through to the discharge in IBCs (Intermediate Bulk Containers). All processes run completely automated and meet the highest standards in regard to quality, performance and flexibility. With this customised concept design the requirements for a plant capacity of 80t/day in a 2 shift operation (16h/day) can be easily fulfilled. Given the large number of orders with a small batch size and a large number of components, this represents an outstanding achievement. In addition, the plant encompasses the contamination-free changeover of a variety of recipes which consist of a wide range of different component weights.

Precise weighing of components

"We derive an essential procedural benefit from Daxner's system design: Due to the pre-weighing of the components in the daily silos we can realize time savings which enables an efficient production flow", states Mr. Goran Milosevic – operations manager of AVO. 8 daily silos (large components) are fed by external silos, another 30 daily silos (medium components) are loaded by bag dump- or big bag intake stations. Underneath the daily silos, 20 scales are installed which are assigned to the daily silos according to the product characteristics. Corresponding to the specifications of the final product, one scale can be loaded from one up to four daily silos. The system ensures an accuracy of ± 50 g, based on a net weighing range of 500 kg. Due to the weighing accuracy, components with more than 5 kg are weighed automatically. Components with less than

5 kg or which require a higher precision are stored and managed in an automatic storage and retrieval system for small and micro components. In accordance with the job control, components are retrieved automatically from the automatic storage and retrieval system and then fed to the manual dosing station. These individual components are weighed operator-controlled into a trough with barcode-identification. Subsequently, the order-specific troughs return to the automatic storage and retrieval system for interim storage.

The IBCs in DCHD (Daxner Container Hygienic Design) are fed by 3 intake stations. There the prepared, palletized complete bags (bag commodity, buckets, cartons) are retrieved and order-related fed.

Innovative container transport system DCS

The key to higher efficiency of the plant design can be seen in the IBC transport system. Profound arguments for Daxner Container Systems DCS in conjunction with an Automatic Guided Vehicle system (AGV) are the following: higher number



Automated Guided Vehicle (laser-guided) with Daxner Container Hygienic Design DCHD

of batches, maximum flexibility and prevention of contaminations. In total, 60 IBCs are used which are transported by the Automatic Guided Vehicle through the whole plant. The empty IBCs are taken out from the conveying system and are positioned automatically below the corresponding scale by the AGV. These can be controlled via laser and positioned accurately at the discharge points to within ± 15 mm. For filling, the IBCs are lifted, afterwards docked by the Daxner Container Docking Station DCSC and finally filled.

After weighing the components in the weighing bin, the filling of the IBCs can start with high performance. Subsequently the automatically dosed components are collected, whereupon the IBC is positioned underneath the manual intake stations. There all small components are dumped as complete bags and/or as a subset from the automatic storage and retrieval system. Once the manual components are added, the IBCs are picked up by the AGV system, then conveyed with a lifting device to the level above the

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mixing lines and finally positioned with an electric fork lift truck on the Daxner Container discharge stations which are equipped with an IBC discharge frame including a flexible connection socket. A discharge aid with a dockable vibrating motor enables a residue-free discharge of the IBCs.

The production expansion also includes three new ploughshare blenders combined with the existing vertical- and ribbon blenders and the new mixing lines. The finished spice blends are finally filled in big bags and carried to the corresponding packing station.

Detailed technical solutions: Daxner Twin Screw & DeDust System

The concept design impresses most notably with its innovative details such as the Daxner Twin Screw System DTS for dosing and the Daxner DeDust System DDS for dedusting. "The major challenge concerning the screw conveyors was the large throughput and high accuracy", illustrates Ing. Ernst Mair, project leader at Daxner. In response to these specific requirements the Daxner Twin Screw System with rough & fine dosing was developed. The rough dosing is designed for a throughput up to 20.000 kg/h, the fine dosing for an accuracy of ± 50 g. Dependent on the size of the downstream scale, the twin screw system reaches an accuracy of ± 5 g.

"As the name already implies, the Daxner DeDust System enables the dedusting of the IBCs during the filling process. It ensures the selective aspiration of the circulating dust, whereby no additional products are aspirated from the production process", adds assistant project engineer Ing. Andreas Scheidlberger. The IBCs, which demonstrate detailed precision, have



Fully automated collection system with Daxner Container Systems DCS and AGV (Automatic Guided Vehicle)

a volume of 850 l and are designed in hygienic design. In the planning and development process, attention was paid to an easy-to-clean construction with rounded transitions and the omission of horizontal surfaces. DCHD are equipped with an extensive butterfly valve DN300 and a steep discharge cone.

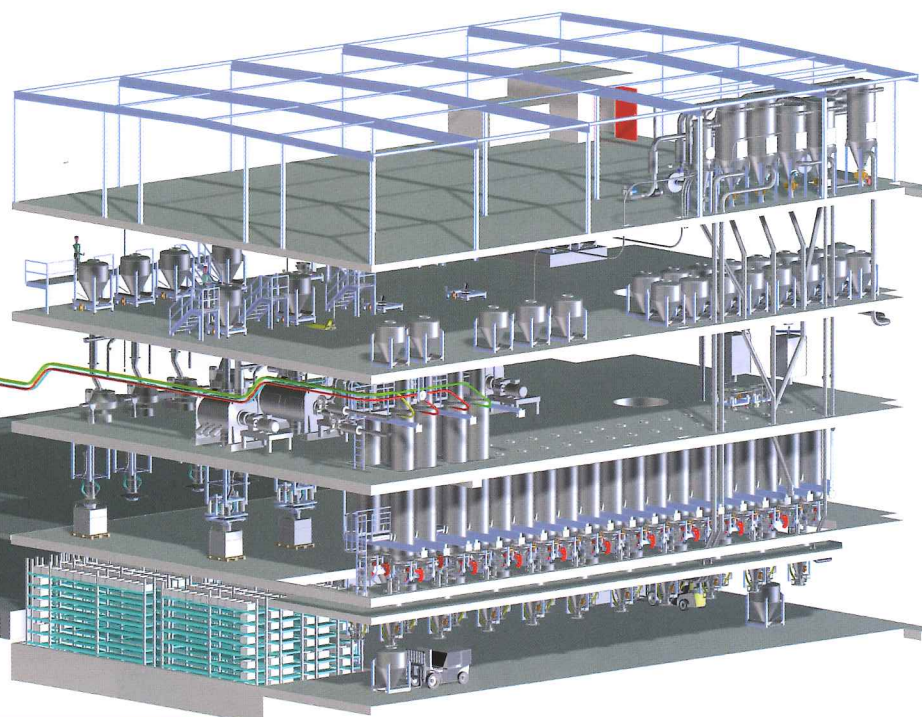
Successful project progression

"Besides the professionalism and the technical competence of Daxner's employees, we especially appreciate the cooperative and friendly communication which had a beneficial impact on our mutual collaboration", accentuates Mr. Goran Milosevic and summarizes:

"Meanwhile we can say for sure that we would again choose Daxner as our partner at any time."

The controls system of the company ESA, long lasting partner of Daxner, realizes an optimal interaction between process and controls engineering. ESA weight – a system which is included into the ERP-system – controls, monitors and documents all production processes. It coordinates the transport of the IBCs and guarantees a smooth takeover of the automatically dosed components. Besides its comfortable handling, it allows complete retraceability and parallel order processing.

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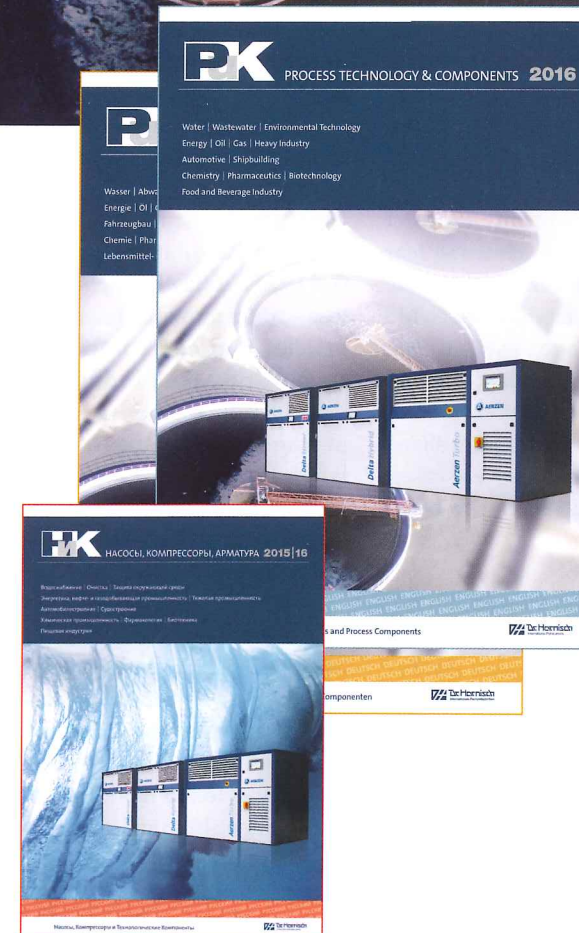


Daxner 3D-CAD Plant Design of AVO

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