

Technical Article

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Mixture of bouillon mass as a technical processing task **Homogeneity is a winner**

Instant soups and bouillon cubes are a convenient and fast snack, but the production demands complex process technology requirements. Not only are the ingredients numerous but also extremely different in terms of consistency and composition. An effective opportunity to implement this demanding mixing task provides the Lödige Ploughshare® Mixer type FKM.

From dry powder to sticky and partly liquid products: The ingredient list of bouillon mass such as soft and hard bouillon includes components of nearly every consistency. For various products, powder with a large amount of salt and sugar, colouring substances, flavour oils, spices, melted fats like palm and chicken fat as well as additional liquids need to be processed into a mixture that is as homogeneous as possible. This task is especially demanding due to the different solubility of the recipe ingredients in fat and water. Besides that, a defined swelling of dry starch components must be ensured during the wetting phases. And last but not least, instant soups and bouillon cube mixtures are about the perfect pouring and dosing properties of the product.

The challenge: The desired characteristics for every recipe and every batch must be produced quickly, precisely, and reproducibly within the shortest time possible. The process and the machine must of course meet all food technology and hygiene demands.

Ploughshare® Mixer type FKM for batch production

Using the horizontal Lödige Ploughshare® Mixer type FKM, these complex technical process requirements can be met. The mixer is preferably used for batch production. Depending on the production quantity and application, the model sizes available are designed for 300 litres for small batches and up to 8,000 litres for large-scale production.

The mixer works according to the mixing and fluidisation process developed by Lödige. Special mixing tools that are systematically arranged on a shaft produce a three-dimensional mixed goods movement, a so called mechanically generated fluid bed.

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Due to this intensive and, if needed, at the same time gentle product movement, solid or liquid small and micro components can be distributed extremely fast and homogeneously in a batch.

Lödige offers various liquid addition possibilities as needed. The respective optimal solution is designed according to the specific needs of the application and recipe. The amount of liquid can be between 1% and 30%.

At the same time, the mixer meets all requirements of "hygienic design", which food manufacturers require as part of their plant planning. Lödige is a member of the European Hygienic Engineering & Design Group (EHEDG) and develops innovative concepts for mixing systems corresponding with these guidelines. Essentially the Ploughshare® Mixers features are: an easy to clean design, manufactured entirely of stainless steel, surfaces in contact with product are at least $Ra < 0.8 \mu m$, a completely welded mixing unit with optimised shovel clearance from the wall, air-purged low-maintenance shaft seals, large inspection/cleaning openings, enlarged discharge opening(s) for minimised remaining material, drives and bearings featuring stainless steel covers, and where required a (partially) automated wet cleaning (Washing in Place WIP/Cleaning in Place CIP).

Process description

In case of a batch mixing process, the components are pre-weighed individually or together and then added into the mixer. After an optimised mixing time determined by scale-up trials, and after reaching the required homogeneity, the batch is emptied into the downstream bunker, container, big bags, or similar.

The mixer is mainly fed from above. Using smaller mixers the feeding can be done manually via a large feeding door. In case of automated production systems, the raw materials are supplied by upstream silos, scales, or similar dosing into the mixer via one or more feeding inlets. The mixer is discharged downwards. The mixing tools are designed in a way that the product is moved to the center of the drum where the discharge door is located.

Mixing times for dry recipes are between 1 and 3 minutes and for pasty bouillon mass between 5 and 10 minutes. One advantage of the Lödige Ploughshare® Mixer is that the mixing times vary insignificantly between the model sizes. The batch time is usually a combination of multiple process steps. Fragile or sensitive components are usually added at the end. Different rotation speeds are used as needed.

Lödige Ploughshare® Mixers in use at an African food manufacturer

Growth markets for these products currently include Asia, South America, and Africa. We're pleased that in 2018, a new Lödige customer in western Africa purchased our high-quality equipment from Germany.

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To increase their production capacities to a large degree, the company invested in sustainable machines from Lödige, which perform a range of mixing tasks. In this case, a decision was made during the first expansion phase to purchase 18 FKM mixers. This was Lödige's largest single order in over 80 years of the company's history.

Conclusion

Excellent mixing homogeneities with many enormously different individual components and under food-compliant hygiene standards: The mixing of bouillon masses places very special demands on the mixing technology used. The Ploughshare® Mixer type FKM from Lödige offers a practical and efficient solution for all batch sizes customary in the industry.

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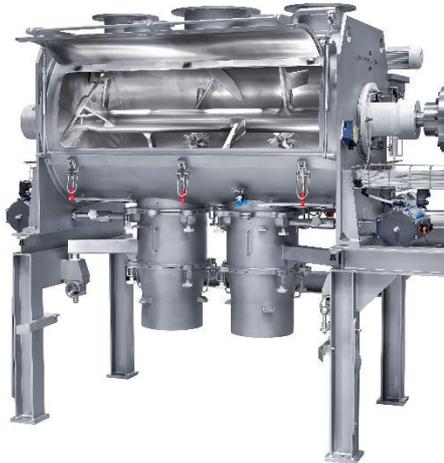
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Captions:



The ingredients of bouillon mass are numerous and extremely different in terms of consistency and composition. An effective opportunity for implementing this demanding mixing task is provided by a Lödige Ploughshare® Mixer type FKM.

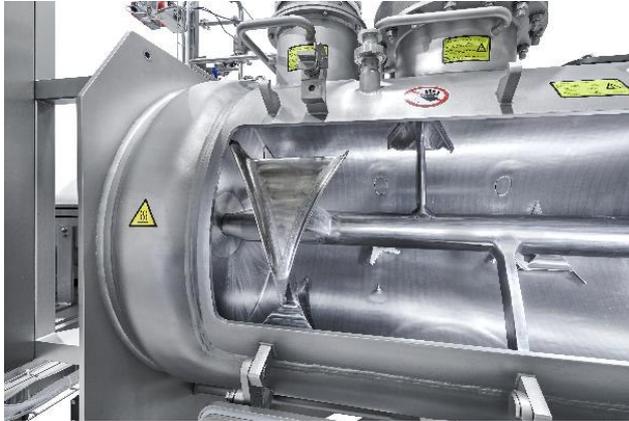


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