

AS EASY AS ABC – ACCURATE BATCH CONTROL

APPLICATION DETAILS

- Batch dosing of concentrated bread improvers, flavors and enzymes into dough mixes
- Sophisticated control system needs low pulsation, linear accuracy and rapid turndown
- SEEPEX pumps selected after comparison testing with other pump types

KEY SPECIFICATIONS

- Accurate dosing at rapid rate – less than 25 seconds per batch
- Minimal pulsation flow enables the use of accurate flow meters
- Variable media viscosity using one pump type

BACKGROUND

A.B. Mauri, a major producer and supplier of bakery ingredients, has produced a variety of bread improvers and enhancers that are highly effective, requiring very small amounts to be added to each batch.

To maximize the benefits of these products to bakeries, accurate batch dosing systems need to deliver precisely the right amount every time, minimizing overdosing, ensuring cost savings on ingredients and the highest quality of baked goods.

TASK AND TARGET

Although A.B. Mauri has considerable in-house experience in developing the products, the related processes and even the engineering of equipment, they wished to use an external engineering company with experience in bakery and other process equipment to develop a solution that meets the demands for accurate dispensing. Concept Controls Ltd., from Waltham on the Wolds, were approached, and shown some of the original systems, a number of which had performance limitations with the latest developments in ingredients. Traditional weighing and diaphragm pump dispensing, even with the best of metering control, can lead to significant variations in the actual additive level to each batch of dough. The specific requirement of this batch-system is a very limited time of less than 25 seconds for the delivery of ingredients per mix. A rapid rate of delivery is therefore needed for initial dosing, coupled with a high turndown rate to provide high accuracy. Accuracy and repeatability were therefore the most important goals to meet. A second distinctive feature of this application is the different viscosity of the ingredients.



SEEPEX metering pumps ensure accurate batch dosing of multiple, varying ingredients within 25 seconds.

SMOOTH, MINIMAL PULSATION

COST SAVINGS

MINIMAL PULSATION FLOW ENABLES ACCURATE DOSING

SEEPEX PRODUCTS

Dosing pumps in 2 different sizes

- Pressure: 1-5 bar
- Conveying capacity: 40–930 l/h

SOLUTION

During the technical research of pump types, and comparing peristaltic, lobe, double diaphragm and progressive cavity (PC) pumps, a clear leader emerged. SEEPEX PC pumps delivered accurate repeatable dosing of concentrated ingredients with minimal pulsation flow, essential for the use of accurate flow meters and the control systems required. The flow accuracy of $\pm 1\%$ is linear and directly proportional to engine speed, regulated by a simple speed controller over a very wide range. By coupling this high performance PC pump, the Orifice Plates, and a very high accuracy Endress and Hauser Coriolis flow meter, Concept Controls Ltd., in conjunction with their partner company PVSL Ltd., from Brierley Hill, are able to meet the challenging specification requirements for A.B. Mauri. SEEPEX MD metering pumps are also able to meet the demands of various viscosities, ranging from thin to highly viscous additives.

The result is an easy-to-apply dosing system, which includes bulk frame storage for IBC containers (normally in stores area) with buffer tanks to allow a practical regime for maintaining product stock. The SEEPEX pumps deliver the various products to a dosing frame mounted close to the mixers, and hence through the associated mixer lids and into each batch of dough.

The net result is a system that can deliver as low as 50 g into a product batch, and also extend to several kilograms, all within the 25-second window, and every batch can be metered to the nearest gram. The customer benefits from a very consistent product and the most modern process innovations.

BENEFITS

- Bulk ingredients in a concentrated form accurately dosed in a short time frame – 25 seconds



Inside view of SEEPEX MD dosing pump