

Automatic feeding systems for bread and roll production: Precise minor ingredient handling and excellent hygiene standards

High degree of flexibility

Documented and traceable quality

Extremely easy to use system

Excellent processing reliability

The requirements

Excellent production reliability and flexibility in the feeding of a plant for the manufacture of bread and rolls. Compliance with hygiene regulations and documented quality.

The Customer

A major North American baking company needed a completely automated bakery capable of producing many different varieties of high quality bread. This new facility has set new standards and defines the state-of-the-art bakery for the world.

THE SOLUTION



„This system is a future-oriented investment. We look forward to serving our customers with quality products for years to come.“

Worldwide, the implementation of the AZO CIM concept in Ingredient Automation is providing the leading companies in the baking industry with the flexibility and quality assurance required by today's market.

The Task

AZO's solution: Automated handling of all ingredients, both dry and liquid, with a system capable of weighing ingredients from 6 bulk silos, and minor ingredients and specialty flours from 15 holding bins, plus micro ingredients quantities from 30 g to 15 kg.

Separate AZO COMPONENTER® are used for the bread production line (18 ingredients) and for the roll production (13 ingredients). The AZO COMPONENTER® is designed for precise weighing of dry micro ingredients.

All ingredients under 500 g are weighed to +/- 1 g accuracy. Nine liquid ingredients from bulk tanks or drums are also integrated into the fully automated system. AZO's CIM-control system assures the consistent quality of weekly production of bread and rolls.

AZO SOLIDS Solution

Receiving and storage of raw material

The AZO Solution

Receiving and storage of different varieties of flour

All silos are fully equipped with compressed air clean filters, vibration bottom dischargers and rotary valves feeding two dust-free vacuum systems. All silos are mounted on load cells.

"Continuous inventory control is possible with AZO technology. The constant transparency of the stock of materials makes scheduling significantly easier for the purchase department."

General manager production



Reliable discharge with vibration bottom

Receiving and storage of bulk liquid ingredients

Minor liquid ingredients such as honey and molasses are received in drums. Bulk trucks deliver and unload yeast, whey, sugar and shortening into their respective tanks. The tanks are mounted on load cells for optimum product monitoring. Tanks are heated or cooled as required for the individual ingredient, and a CIP system is included for the yeast and whey storage tanks and associated piping.



Storage of bulk liquid ingredients in tempered tanks

"The automatic CIP cleaning system guarantees absolute cleanliness. The unique benefit: cleaning without dismantling."

General manager production

Safety screening of all flour varieties

After storage, all flours are screened before being conveyed and weighed at the mixers.

"Over and above the key issue of production reliability, safety screening also helps to loosen up the material and break up any clumping."

General manager production

Product pickup and safety screening of minor ingredients

Minor and micro ingredients are received in bags, drums, boxes or big bags. Central receiving stations feed all ingredients into the vacuum conveying system feeding the intermediate storage bins. An in-line screener safety screens all ingredients. The intermediate holding bins are fed by a dust free vacuum conveying system and are equipped with

compressed air cleaned filters, sanitary vibrating bin dischargers and a precise dosing screw for accurate feeding of the vacuum conveying and weighing system. A manual coupling system is provided for selection of the proper bin for filling. The vacuum conveying system makes this a safe error-free system since the ingredients are „pulled“ only into the pre-selected bin.

"We are especially proud of this: The ultimate in hygiene and ideal human working conditions."

General manager production



Cyclone screener for safety screening



Big bag discharge station and feeding hopper for the feeding of big bags and small sacs

Supply of ready-weighed large volumes, minor and micro quantities, as well as liquids

Vacuum weighing system for flour varieties

A conveying scale is located above each sponge and dough mixer. The scale is equipped with a multiport valve, electromechanical weighing, filters automatically cleaned by compressed air and vibration bottom dischargers. Trouble-free and consistent discharge of flour and all other dry ingredients is assured by use of product feeders.

„To meet the constantly increasing requirement for improved product quality and consistency, the weighing and feeding of all ingredients must be highly accurate and reliable.“

General manager production



Feeding of kneading machine with vacuum weighing system

Central weighing station for ingredients e.g. specialty flours and grains

The vacuum conveying scales convey and weigh the minor ingredients from the intermediate holding bins in precisely weighed quantities as requested by the process control system. Reliable vibration bottoms combined with frequency-controlled dosing screws provide the ultimate in system accuracy.

„Accurate weighing of ingredients is essential for meeting the level of product quality the market demands.“

General manager production



Weighing station for ingredients and grains

Totally automatic weighing of micro ingredients with the AZO COMPONENTER®

With the AZO COMPONENTER® each micro ingredient is individually metered, weighed and discharged by computer control with accuracy within 1-3 grams depending on batch size and system requirements.

Metering liquid ingredients

All liquid ingredients such as whey, cream yeast, shortening, sugar and minor liquids like honey and molasses etc. are automatically fed to the mixers by mass-flow meters in precisely the right quantities. The liquids are fed into the mixer in the required sequence through a mixer inlet manifold.

„Even all of the liquid components are automated and integrated into the overall process. A veritable masterstroke by AZO.“

General manager production

Simultaneous weighing of all ingredients is the only way possible to provide the precision weighing and fast batch times today's processes require. Minor and micro ingredients are supplied „just in time“. No pre-mixes are required making the system more flexible.

„The AZO COMPONENTER® provides automatic weighing of micro ingredients when they are needed.“

General manager production



Feeding of liquid ingredients



Feeding of the AZO COMPONENTER® via feeding hoppers



AZO COMPONENTERs®, the minor ingredients automation

AZO SOLIDS Solution

Everything accessed automatically and at the same time traceably documented

LN 211 0059 GB

Everything under control with terminals on site for process visualisation

It is very important to feed the ingredients at the right time and in the right quantities into the mixers. The CIM control concept with a programmable logic controller (PLC) assures this. Terminals with process visualisation provide complete information all the time. Operators always have the most current information at their disposal and based on this information can make changes if desired.

„Production is under control with CIM.“

General manager production



Storage of medium components

Training programs

The AZO concept provides training for system supervisors, operators and maintenance personnel well before the plant begins production. The user-friendly design of the system will please everyone involved. They will appreciate a dust-free, state-of-the-art working environment.

„The operators quickly adapted to the new automated system.“

General manager production

Advance training of the operators and supervisory personnel was a key ingredient in the success of this project.



Filling of feeding hoppers



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