Photo: Backtechnik

The plant made by Daxner International does not only convince visually, just as much expert knowledge is included in the technology and the intelligent control system.

Appropriate batching

Daxner International has delivered the individual and complete plant solution for the Romanian bakery Titan S.A. from the raw material receiving to weighing in the kneader.

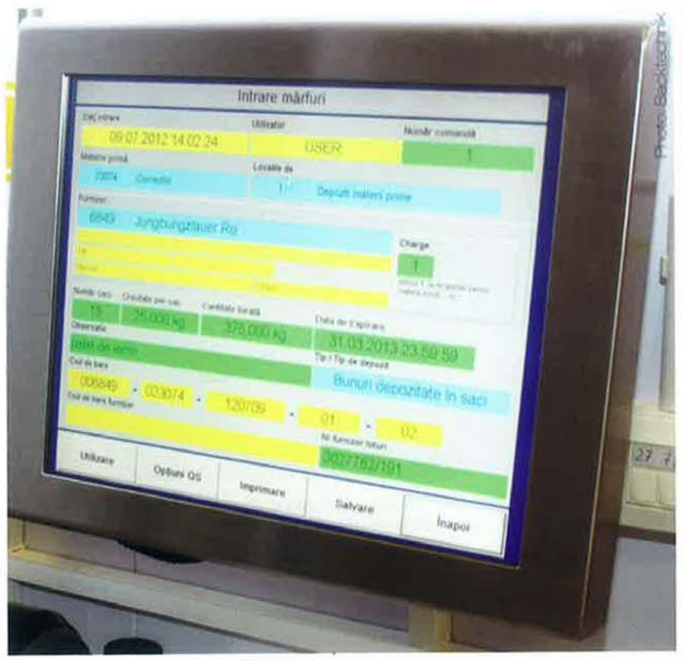

Photo: Backtechnik

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Left photo: One employee enters all raw materials into the warehouse management system of the raw materials warehouse and allocates bar codes that are scanned when the ingredient is transferred to the production process. Right photo: The 30-ton sugar silo and the three 50-ton flour silos are located outside the bakery. The flour for the production is delivered by a mill that belongs to the group.

There is no doubt that buns and sandwich bread are high-demand products overall in the world. Because the system gastronomy the final customer the quality requirements of on the soft rolls are very high. Standardized processes along the line production increase the quality as well as the product safety and help fulfil the high demands on the product. Daxner International has planned and installed the sequences and plant systems all the way to the weighing in the kneader for the Titan S.A. in Romania. The Titan S.A. bakery belongs to the Good Mills Group that, among others, owns 32 mills in Europe. In these mills alone, about three million tons of grain is ground per year. The group has a total sales volume of 1.1 billion euros and has 2,700 employees. The bakery Titan S.A. near the Romanian capital of Bucharest with its two productions also belongs to the group. The original production is a bit outdated but still very powerful in regard to the produced quantity of baked goods which is impressively proven by approximately 150 tons a day. In this part of production, gradual investments have kept or even increased the quality and quantity of the goods. The soft rolls and sandwich bread production is up-to-date, which was set into operation after only six months of construction time, in the spring of 2010. Since then, they have been feeding the Romanian market, although export also plays an important roll. Ten employees in three shifts each provide for a smooth process. The production is designed for 36,000 buns per hour and an output of 15,000 tons backed goods per year.

Raw material

Strictly defined raw material characteristics are the absolute precondition for the uniform production of buns for the system gastronomy. This does not only require an accurate specification of the quality delivered by the supplier but the parameters must also be checked at the goods receiving. All ingredients with their properties like temperature, charge size, supplier, date of supply and shelf life must be captured by the system. Therefore, each item receives its own identification in the goods receiving using a bar code with which it can be entered in the

Left photo: Two tanks provide for the sufficient oil quantity that is transported via a pump to the dough preparation unit and the kneader. Right photo: The small-quantity ingredients as well as flour and sugar must be sieved prior to processing to exclude pollution.

warehouse. If the raw material is requested from the production area, an employee reads the raw material out again and transfers it into the production system. The system automatically performs usual queries, e.g. „first in first out" or minimum order quantities, and with this, it ensures a smooth process. Large-quantity ingredients like flour and sugar are stored in outdoor silos of the bakery. Three aluminium silos with a capacity of 50 tons each have been installed for the wheat flour delivered by the mill that belongs to the group. The sugar silo is made of stainless steel and has a capacity of 30 tons. All containers are placed on weighing cells that continuously report the fill level to the system and also serve for goods receiving control. The oil, required for the production is stored in dedicated tanks. Two tanks each are connected to the conveying system. If a tank has been emptied, the system automatically passes over to the second tank and there will be enough time to provide the raw material from the warehouse. The most important reasons for

Left photo: The starter dough gets the time to develop in two maturity containers. The big cooled storage tank is on the left. Middle photo: Before the starter dough flows into the storage tank, it is cooled down to 5°C in a plate heat exchanger. Right photo: An extensive cooling system ensures that the individual ingredients are at the desired temperatures.

Left photo: At first, the yeast is dissolved and after that, it is pumped to the storage tank next to it. Right photo: While the flour is continuously filled to be mixed in the lower scale, the next batch can be weighed in the upper scale.

the selection of such an extensive warehouse management is, in addition to continuous availability, the traceability of the raw materials in the whole system. It must be known which raw materials have been processed for each batch. Only in this way, the customers' strict requirements on the company can be fulfilled. Among others, the bakery is controlled by the American Institute of Baking (AIB) that was founded as the technology transfer center for food processing companies and bakeries. Although AIB International is historically connected with the North-American wholesale and retail trade for baked goods, the institute currently serves all segments of the food processing, sales, gastronomy and food retail trade worldwide.

Starter dough and weighing

When planning the production, great importance was placed on to a highly-automated line which is reflected, among others, by the weighing process and the production of the starter dough. All high-quantity ingredients are automatically fed into the system. The small-quantity ingredients are prepared manually. It is not possible to start the dough without these ingredients because they have to be added to the dough before the kneading process and must be acknowledged. One part of the dosing system is the yeast dissolver with a capacity of 500 litres. After a short agitating phase, shorter than ten minutes, the liquid yeast is ready to be pumped into the storage container right beside it. Now there is enough time to start the automatic cleaning program to clean the yeast dissolver and to prepare it for the next use. The system receives the main ingredient of the starter dough, the wheat flour, from the external silos. At first, the specified quantity of flour is filled into a first scale. If the weight is reached, the flour is led to the second scale that is installed directly below the first one. While the starter dough is being mixed with the other ingredients, i.e. water, yeast, and oil, in the dough preparation unit, the first scale is ready again for providing the next batch. The dough is filled into two maturation tanks with a capacity of five

Flour, water, yeast and oil are mixed in the dough preparation unit and then are pumped into the maturation container.

Left photo: An extensive cooling system ensures that the individual ingredients are at the desired temperatures. Middle photo: Daxner International has also delivered the plant system for weighing the product above the Turkington kneader. Right photo: The tanks can be emptied via the outlets on the diverse containers.

Facts

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Production Manager:	Laurentiu Mihalcea
Employees:	40
Certificate:	AIB
Group:	Good Mills Group
Sale volume:	1,1 billion Euro/year
Employees:	2750
Ground grain:	3 millionen tons/year
Mills:	32 in Europe

tons each. At Daxner, the starter dough tanks are filled from the bottom up. In this way, the plant builder avoids dough deposits on the agitators and in the upper area of the fermenter. None of the three fermenters are filled with flour. This ensures the compliance with the hygiene standards because no flour dust occurs. At temperatures between 25 and 30 °C and a maturity period between two and eight hours depending on the operation, the dough has enough time to develop. In the Daxner plants, the starter dough is moved in specified cycles to intensify the process of maturation. After the end of the maturation period, the dough is pumped into storage containers. With this, the product goes via a plate heat exchanger that cools the mass down very fast to approximately 5 °C. An important point of the dough production is the temperature of the ingredients that is also decisive for the final temperature of the finish-kneaded dough. For this reason, an extensive cooling system has been integrated that cools the individual ingredients down to the specified temperature. For this purpose, some tanks are designed as a triple-wall structure to enable the coolant to circulate effectively. The storage container is designed in the same way to avoid the further development of the starter dough and to provide a stabile buffer for the production. The ingredients fed into the Turkington kneader are also weighed by a unit installed by Daxner International. In this case, the dough temperature is kept by cooled ingredients and temperature-controlled water. The storage tanks are cleaned using rotating cleaning nozzles. The waste water can be discharged via separate outlets. The pipes are cleaned by a pig cleaner. The pig cleaner is put into the system through the launcher and is pushed to the receiver by water pressure. To return the pig, compressed air is built up which moves it back to its starting position.

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Summary

The bakery Titan in Romania is definitely familiar with large-scale plants and line productions. This is shown by the view in the first bakery that is still, day by day, producing enormous quantities of baked goods for the Romanian market. However, the commissioning of the new production was a great challenge. For instance, the high level of automation that can be seen in the provision of the raw material and the weighing process, turned out to be a task still unknown to all the people involved. As an example, the personal commitment of the production manager Laurentiu Mihalcea should be mentioned who improved himself with diverse external training to pass his knowledge to his employees. The involved plant builders' commitment should also be appreciated. After the initial reservations, but with many training sessions and instructions, the employees are now able to configure the process runs via the control system themselves. Many detail solutions, not only at Daxner International, have drawn our interest, for instance, the removing of the backed goods off the trays and the loaf pan combinations or the swapping out of a large number of the switch cabinets and lines to a separate floor. The editorial team of the Backtechnik Europe will be happy to return to Romania to introduce you to further details of this interesting production.

Gregor Vogelpohl

Ehler Meyer from Daxner (left) and production manager Laurentiu Mihalcea (centre) collaborated closely during the installation and the commissioning of the plant. Christian Heimbach from Daxner is in the image on the right hand side.