

Focus on automation and quality improvement

THE SWISS COOP GROUP IS THE SECOND LARGEST RETAILER IN SWITZERLAND WITH 1,885 SALES OUTLETS AND AN ANNUAL TURNOVER OF MORE THAN 12BN EUROS. THE BAKED GOODS FOR THE GROUP ARE PRODUCED IN SEVEN BAKERIES OWNED BY THE COOP. NEW INVESTMENTS INTO LINES FOR FINE BAKERY WARES HAVE BEEN MADE AT THE BERN FACILITY



++ figure 1

++ figure 1

The production staff makes, for example, nut filled and almond filled croissants for all the Coop sales outlets in Switzerland. Each individual production facility specializes in the production of national products which complement their own regional range. The national products are distributed to the markets throughout the whole of Switzerland

++ figure 2

The apricot and glazing equipment is the latest development by DOJA T.E.C. Almost all fundamental components have been redesigned with the aim of controlling the amount of application and the texture of the glazes and icings even more precisely

More than 800 seasonal and regional specialty products are made in seven Coop owned bakeries; different types of bread, fine bakery wares, quiches, cakes and patisserie products. The flour used for all these products comes exclusively from Swissmill, the Coop-owned mill. The baking process takes place mainly at night and in the mornings. The bakeries are affiliated directly to the regional Coop distribution centers in order to minimize transportation efforts. In this way the first delivery of bread to the sales outlets takes place early in the morning.

The Bern facility covers the sales region, Bern which includes the Bernese Oberland, Emmental, Upper Valais, Fribourg and Biemme. About 500 people work in the Coop distribution center, Bern Brünnen which is located close to the highway. 120 people work in the bakery. The distribution center in Bern transports baked goods as well as dairy and meat products, fruit and non food products to 130 sales outlets in the region.

Master baker and pastry chef Klaus Zürcher is the assistant production manager. He has been with the company for 10 years



now and is looking forward to the new 9,000 sqm production area. Currently, the bakery has six silos with a storage capacity of 30 tons each (for flour) and 15 silos for special mixes and other ingredients such as powdered milk, coarse flour and salt. In the patisserie, there are two more silos (1 ton each) for sugar and flour. Also, there is an arrangement of storage containers for minor ingredients with a capacity of 250 kg each. The raw materials are automatically metered into Diosna mixers. "Automation and the improvement of the quality of the baked goods always had top priority for the investments", explains Klaus Zürcher. The daily production quantity is 15 tons of bread and 3 tons of pastry products. The annual flour consumption is 3.6m tons.

Focus on quality

The entire production encompasses four bread lines, one line for plaited products (hourly capacity is 1,400 pieces), two multi-function working belts and one fat frying area for 3,600 donuts per hour. Added to that there are other ovens with a total baking area of 388 sqm consisting of:

- + two baking lines of 90 sqm each
- + one baking line of 50 sqm
- + one Daub thermo-oil deck oven with five hearths of 19 sqm each (totaling 95 sqm)
- + rack ovens with a total baking area of 63 sqm

The latest equipment is a glazing belt line provided by DOJA T.E.C. Sondermaschinen GmbH, Dusslingen, Germany and one plant by Unifiller Europe GmbH, Lörrach, Germany. "The goal was the further automation of the patisserie", ▶

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++ figure 3



++ figure 4



++ figure 5

said Klaus Zürcher about the purchasing decision. The latest apricot glaze and icing plant has a re-designed housing which allows for an improved and much faster cleaning time. The internal heating system was reconstructed based on new figures and calculations. The temperature difference delta between initial temperature and desired processing temperature can be controlled more precisely and with that more efficiently with lower energy consumption. The temperature can be adjusted and read in three steps. The changeover from apricot glaze to cake icing is only a matter of a few minutes with this new plant. Due to the redesigned raw material reservoir and the new piping system, the changeover times have been reduced by two thirds. The pumping system for the glazes and icings is even more efficient. “This allows the processing of ingredients with high fruit content without any problems”, says Gianni Dore, managing director at DOJA T.E.C. As with the existing plants, this equipment is a material circulation system. This means that only the amount of apricot glaze or other icings that are to be applied directly onto the baked goods are used. The excess material is returned into the reservoir where it is screened and added to the circulation cycle again. “Another new development is our icing system with a waterfall-type applicator. With this new design, we can achieve a uniform coating for a belt width of up to 1,500 mm.” explains Dore. After the finishing, the products are moved from the glazing station onto the pick-up belt. Just as with all other transport belts, the speed of this belt is invariably adjustable. This is a beneficial feature if a final topping with almonds or nuts is required. Subsequently, the bakery items are removed from the belt either manually or fully automatically and deposited into the baskets.

++ figures 3–5

One of the latest investments is into the Unifiller gateaux line. The fundamental idea behind this investment was the automated production of different types of gateaux, such as Black Forest cake. Today, approximately eight months after the installation, the line is producing more than 18 different products

For cakes and desserts

The new Unifiller plant for filling, spreading and finishing can be used universally. It can be easily adapted to the shape and size of the different cakes and gateaux. After a really short changeover time, the equipment can also be used for other products such as desserts or cream slices, for example. Zürcher is pleased about the continuous product flow, for example, in the production of Black Forrest cakes. At the start of the line, a worker puts the cake bases onto the belt and up to eight people, at different stations along the line, handle the products.

The cake bases are moved onto a plastic belt to the first station. A photo cell identifies the cake base and its correct position before a liquid mixture of Kirsch and sugar is applied with pressurized air through a specific nozzle onto the sponge base. The jam is also deposited precisely to the nearest gram with the worker next to the line only having to spread out the jam evenly. The next cream layers are automatically applied after the employees have placed the sponge base onto a turning table. The Unifiller machines make sure that the cream is distributed onto the base uniformly, constantly and precisely to the nearest gram. After two layers have been applied and cherries have been added manually, the almost finished cake is moved to the next station where another machine spreads the cream onto the surface and to the sides of the cake. Finally, humans add the finishing touch by applying chocolate shavings and whipped cream.

Before the equipment was installed, the employees used to work on different tables spread all over the production room. At that time, the manual labor was highly intensive. The product had been handled too often, according to the production manager. The flow of operation was not streamlined. Today, more than 18 different semi-finished and finished products such as cakes, gateaux, cake slices and desserts are processed on the line that is operated in several shifts. De-

pending on the product, the changeover takes 15 to 20 minutes. The hourly capacity of the line is up to 600 pieces. Daniel Hornsteiner, Technical Support & Sales, Unifiller Europe GmbH, reports, "The line can be expanded or further automated without problem. For example, it is possible to tie more machines in on the other side of the transport belt in order to double the capacity." Unifiller machines can process any type of product whether liquid such as water or semi-solid such as a cream or paste up to a viscosity that commonly can be pressed manually through a pastry bag whereby the product to be piped can be either cold or warm, according to Hornsteiner. +++

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