

Mini-palmiers on a grand scale

NO. 2 BREAD FACTORY AT KASAN IN THE REPUBLIC OF TATARSTAN SUPPLIES MINI-FORMAT PUFF PASTRY PALMIERS TO SUPERMARKETS THROUGHOUT THE WHOLE OF THE RUSSIAN REPUBLIC. IN ORDER TO DO THIS THE BAKERY IS RELIANT ON A NEW PLANT FROM FRITSCH



+ The bread market in Kasan is extremely competitive. There are five large bread factories in total, as well as numerous supermarkets and small bakeries that make their own baked products. No. 2 Bread Factory is one of the market makers, and specialised in manufacturing rusk in the nineteen-sixties. Privatisation of the bakeries occurred in 1994, and with it the “rebirth of the business”, as Director Wladimir Potapow describes it. He has guided No. 2 Bread Factory’s fate since 1998. With the transition from a command economy to a market economy, the bakery’s product range has also changed. Although bread is still the main product, customers are increasingly demanding fine pastries, cakes and gateaux. That’s why in 1999 the bakery invested in the construction of a hall for cream products and gateaux. In addition, gingerbread, puff pastry and Danish pastries together with frozen dough pieces have also been produced since 2002. Today, around 600 employees manufacture 40 t/day of baked goods.

On a grand scale

Laminated doughs have been produced on an industrial scale since 2011. Potapow collected information about various plants at trade fairs; the contract was finally awarded to the Fritsch GmbH Company, Markt Einersheim, Germany. According to the Director, “The price and quality of the ‘Made in Germany’ plant were right.” The bakery invested a total of RUB 100m (approx. EUR 2.4m) in renovating the 2,500 m² hall on two floors. The raw materials store and flour silos together with the two double spiral dough mixers

No. 2 Bread Factory



Director Wladimir Potapow has managed the No. 2 Bread Factory since 1998. The bakery sells its freshly baked goods to about 150 customers in and around Kazan. Transport to customers is carried out by 30 of its own HGVs. The company also has its own sales network with 29 branches. At the Kazan site, 600 employees produce more than 100 different kinds of baked goods. A total built-up area of 12,000 m², including amenities rooms and offices, is available to the staff. The production volume is 40 t/day. There is also another production site in Joschkarla, where 40 employees manufacture around 25 t/day of sushki, rusk and gingerbread. +++



++ figure 1
A pump supplies fat to the plant



++ figure 2
The fat is continuously worked into the dough

from the Sancassiano S.p.A Company, Roddi di Alba, Italy, are situated in the upper storey. The dough is carried via a lifter-tipper into the feed hopper of the Fritsch fine pastry baking line, which has found its place in the lower, air-conditioned hall. The dough hopper is followed by a star-roll pre-portioner which transfers the dough to a roller frame. The dough sheet is then formed.

A pump ensures a continuous steady supply of fat at the same time. A feeder system using dies puts the fat onto the

dough sheet, and the dough is wrapped over it. The fat is now in the dough on the sandwich folding principle, and the first folding station follows.

The plant has a total of three folding stations. This results in a U shape at the head of the line. A Fritsch LAMINATOR 3000 after each of the folding stations 1 and 2 ensures the necessary dough sheet thickness. At the same time a satellite head gently rolls the dough to the required thickness. The third folding station (6 x 6 x 6 = 216 layers with 3 foldings) is ▶

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++ figure 3
The palmiers are folded in three stages

followed by the fine baked goods table, approx. 17 m long, with flour dusters, satellite heads, an intermediate table and a cross roller. The various processing steps turn the folded dough sheet into a smooth dough sheet. The dough is now moistened with water by nozzles and is sprinkled with sugar.

This is followed by a plastic roller positioned transversely, which carefully presses a total of 30 “longitudinal grooves” into the dough sheet, each sixth groove forming a cut. This converts the dough sheet into five production rows, each with five grooves, to prepare the dough to be folded into palmiers. The three-stage folding of the individual rows now follows. In this process, plastic strips/folding units turn the outer dough edges over along the “grooves”. Thus the dough sheet is folded inwards from the outside in three stages. At the same time plastic rollers carefully press the dough together after it has been folded, thus forming the typical palmier strand after the folding operation.

The five strands then enter the high-capacity guillotine, which ensures a uniform cut. The unbaked mini-palmiers are 20 mm long, 40 mm wide and 13 mm high; they weigh 10 g and are deposited onto baking trays fully automatically. A manually loaded tray conveyor belt ensures a steady supply of trays (800 x 600 mm). The trays move to the pastry transfer station via plastic chains driven by a geared motor with a frequency converter. The output is around 500 trays/h.



++ figure 5
After cutting, the palmiers are loaded onto baking trays (800 x 600 mm)



++ figure 4
A close-up of the folding process

Loading the rack trolleys

Next, the filled trays arrive at the fully automatic rack trolley loader. Here the filled trays are transferred from the tray conveyor belt, which is positioned at an angle of 90° relative to the plant, via a stacker and into elevator 1. As soon as a tray has been pushed into elevator 1, the latter is cycled downwards. As soon as the first tray reaches the lowermost layer in the elevator, it is in turn pushed over by a stacker into the following elevator 2. When the tray is in elevator 2, it is cycled upwards. When elevator 2, which also acts as a storage unit, is full and the uppermost position is occupied by a tray, the trays are automatically pushed onwards into the waiting rack trolley. An employee then exchanges the full rack trolley for a new, empty rack.

The hourly capacity of the fine baked goods plant with five production rows is 45,000 mini-palmiers, yielding 360 kg of finished products per hour. The plant is controlled via a touch-screen digital controller with 50 programs. This allows all the roller and belt speeds, fold widths and dough thicknesses to be adjusted. In addition to puff pastry mini-palmiers, the plant can also be used to produce hexagonal short-crust pastry biscuits, mini-snails, squares and sticks.

Fritsch specialists assisted the bakery on site during the commissioning. The Fritsch representation in Moscow is also closely involved in the project, and can access the plant in



++ figure 6
Filling the rack oven loader

Kasan via remote maintenance exactly like the parent company in Germany. The machine constructor also carried out the personnel training. The plant runs every day, and the baked goods are marketed in supermarkets throughout the Russian Republic. Director Wladimir Potapow explains that: "Our customers did not detect any difference in the quality of the baked goods after the changeover to the new line." The Director sees it as an investment in the future. The aim is to become the biggest manufacturer of mini-palmiers in the Russian Republic. +++

The capital city of Kasan

No. 2 Bread Factory started in 1934 in Kasan, the capital city of the Republic of Tatarstan in the Russian Republic. The town on the Volga with its history stretching back more than 1,000 years grew rapidly in the early 19th century, and is known today mainly for aircraft construction. For example, the two aircraft factories Kazan Aircraft Production Association and Kasan Helicopters



are among the town's biggest employers. However, the chemical and pharmaceutical industries as well as the petroleum extraction and natural gas production sectors also contribute to the prosperity of Kasan, which has a population of around 1.1m. The city's emblem is the Kasan Citadel. The fortress was included in the list of World Heritage Sites because of its beauty. Kasan will host the Summer Universiades, the World Student Games, in 2013. The World Swimming Championships are to be held in Kasan in 2015. +++

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