



Perfectly Co-ordinated

Baton is one of the most important bread types in Russia. The bread factory 21 in Moscow invested into an ultra-modern production line by Werner & Pfleiderer to automatically produce the bakery product in different variations.



The lines in the Moscow bread factory 21 probably are the biggest baton lines worldwide. The bread factory 21, also known as OAO «Expohleb», in comparison to the other bread factories is a relatively young company. The first



Nozzles in the pipe above the belt blow tempered air over the moist dough surface.

bakery products were produced only in 1976. Originally the company was planned as a production site for bread and pastry products and dimensioned for a daily output of approximately 38 tons. In 2005, the factory was taken over by the Grain Holding and a programme



In every line a modified dough divider V 700B by W&P Haton is used without hybrid piston but with a reduced oil consumption.

for the modernisation of the technique has been elaborated. The target was a maximum automation comprising the entire cycle from the raw material dosing to the bread loading onto lorries. The core of the production are the two baton lines designed, built and put into production by Werner & Pfleiderer. Each line consists of a dough divider, receiving the dough from a central linear kneading system, two conical round moulders with check-weigher, a pre-proofer, two long moulders, a final proofer and a tunnel oven. They have been individu-

ally adapted to the local conditions and are different in their layout due to the room layout. Whereas the processing lines of the first line are slightly offset, but placed in one straight line, the second was installed in a 90° angle to its oven. All line components are identical in spite of the different positioning, only the conveyor belts run differently. According to Ilja Kusnezov, managing director of the bread factory, only W&P was among the suppliers convincingly able to adapt the project into the narrow premises without having to cut back the functionality of the lines or the quality of the products.



The V700B cuts 6,000 pieces per hour, which are distributed via conveyor belts into two conical round moulders.

Without Separating Agents

The lines are working as it is typical for the traditional processing almost without separating agents. For this in every line a modified dough divider V 700B from W&P Haton is used without hybrid piston but with a reduced oil consumption. Every dough divider achieves with its six dividing chambers a capacity of more than 6,000 pieces per hour. After dividing, the dough pieces reach the conical round moulders positioned laterally on conveyor belts and during this pass a check-weigher. In Russia, the weight precision during the bread production plays an important role. A difference of more than 1.5 percent from the target weight is unacceptable. The indicated weights per piece on the check-weigher have all been below one percent during our visit. If a dough weight should nevertheless exceed the admissible standard, a corresponding signal is sent to the control system of the dough divider and



The conical round moulder is equipped with fan nozzles. The tempered air blows moisture off the dough surface and thus prevents that the dough sticks to the moulding cone which works like the other components of the line also consequently without separating agent.



The control display of the final proofer. All parameters can be adjusted and recalled in a functional and clearly arranged manner.



Lower than one percent: Weight exactness is important in Russia. The indicated weights per piece on the check-weigher have all been below one percent during our visit.

the dividing weight is automatically adapted. The conical round moulder is equipped with fan nozzles. The tempered air blows moisture off the dough surface and thus prevents that the dough sticks to the moulding cone which works like the other components of the line also consequently without separating agent. After a short pre-proofing, the round dough



After a short pre-proofing, the round dough pieces reach the long moulders via conveyor belts.



All conveyor belts are protected by a transparent plastic cover in order to avoid any influence of the room climate on the dough pieces.



In the long moulder, the dough pieces are reduced, coiled up and gently brought into the desired shape over a very long moulding distance.

pieces reach the long moulders via conveyor belts. To avoid any influence of the room climate on the dough pieces with regard to temperature or moisture, all conveyor belts are protected by a transparent plastic cover. In the long roller, the dough pieces are reduced to flat breads, then they are coiled up and then brought into the desired shape over a very long moulding distance.

Continuous Operation

The transfer of the dough pieces from the long roller into the final proofer is carried out by twelve pieces in one row. The particularity of this transfer: there is no cycle, but a con-



In the proofer, there is a constant climate which is continuously monitored by sensors.

tinuous movement of the carriers in the final proofer running synchronously with the belt speed of the oven. The reason for the flowing operation is a very high capacity per hour. Pulsing or step by step infeed into the oven would cost too much time.



During the transfer into the proofer, there is no cycle, but a continuous movement of the carriers running synchronously with the belt speed of the oven.



Two times two knives pulled at a chain each run above the four meters wide conveyor belt and apply exactly five incisions to every baton. This arrangement of knives was necessary to keep the belt length as short as possible.

To guarantee a uniform shape of the breads, the fall off the V-belt into the proofing bins has to be absolutely vertical. The dough pieces have to land precisely in the center of the moving bin so that they are not crushed or bent during landing thus losing their shape. This makes highest demands on the execution of the NGS infeed device as well as on the co-ordination of the entire line.

Baking Process

After the proofing time, the breads are transferred to the infeed belt to the oven. Two times two knives pulled at a chain each run above the four meters wide conveyor belt and apply exactly five incisions to every baton. This arrangement of knives was necessary to keep the belt length as short as possible. One single knife as usual would have caused at this utilisable width an extension of the intermediate

belt what was not possible due to reasons of space. The ovens are heating gas circulators with separately regulable top and bottom heat and five zones.

In the first zone of the oven on the first two meters a very intensive steaming takes place so that the crust of the breads does not crack even with this strong oven lift. Typical characteristics of batons are the perfectly smooth, shining surface without cracks as well as the very thin crust which has been achieved by the intensive heat transfer.

In comparison to the other offered tunnel ovens with comparable baking surface, the W&P oven consumes, according to the general manager, up to 20 percent less gas.

The bread factory 21 has also reached the target of a higher degree of automation. Both lines guaranteeing a daily capacity of approximately 110 tons are operated by only two persons.

AR / ranft@backjournal.de



The ovens are heating gas circulators with separately regulable top and bottom heat. They had to be exactly integrated into the existing rooms.



In the first zone of the oven on the first two meters a very intensive steaming takes place so that the crust of the breads does not crack even with this strong oven lift.



Final baking: Via a transport belt and a chute, the batons directly reach the shipping department.

Batons

Baton is a wheat bread with shining very thin crust marked with a uniform incision decoration. The pore structure of the crumb is very fine and homogeneous almost comparable to tinbread. The Russian bread speciality has a share on the Russian bread market of almost 40 percent and therefore is one of the most important foodstuffs. Traditionally, the bread is produced with long dough processing and without baking agents. 40 - 50 percent of the wheat flour is processed in a pre-dough with a fermentation time of four hours. The pre-dough is produced continuously and has a dough temperature of 28 - 32°C. Also the dough preparation with pre-dough, salt solution, yeast solution, sugar solution and dissolved margarine run continuously. With a temperature of 30 - 34°C the dough is processed relatively warm and is not completely kneaded. During the further processing via round moulder and long roller, the dough piece is stabilised.



Typical characteristics of batons are the perfectly smooth, shining surface without cracks as well as the very thin crust which has been achieved by the intensive heat transfer.