

Time for premium en masse

BAKING PREMIUM BREADS, BAGUETTES, BARRAS, CIABATTA, BOULE OR BREAD ROLLS HEARTH BAKED ON GRANITE IN A THERMO-OIL OVEN AFTER LONG PROOFING TIMES IN BOWLS AND IN A FINAL PROOFER IS NOT FUNDAMENTALLY NEW. HOWEVER, THE CAPACITY OF 8 T/H OR MORE PROBABLY IS. THE KAAK GROUP IN TERBORG, THE NETHERLANDS, PRESENTS THE NEW TECHNOLOGY



++ figure 1

The check-weighing system on the DrieM line controls weight accuracy online

“Artisan quality as it was meant to be” was the comment of a manufacturer after the presentation of Kaak’s new line. With this new concept, the Dutch bakery machine builders present processes and technology that could make premium the standard quality for hearth baked breads, baguettes, small baked goods etc. from the retail’s baking stations.

The heart of the process are peelboards measuring 3 x 1.3 m on which the made-up dough pieces move to the oven. According to Aart-Jan Hartman, a member of the Kaak Group’s management, the large-area proofing carriers have the advantage that haste is taken out of the line in spite of the high capacity. The movements are calmed, the development of the doughs benefits, and the products remain in identical positions relative to one another on the entire line from make-up to packing. The peelboards, which receive the dough pieces after they have been shaped and move with them through the multi-block final proofer for 60–300 min, are optionally fabricated from a continuous Teflonized V2A metal sheet or a continuous piece of blue plastic in accordance with all the rules of modern hygiene. Both variants require only a light flour dusting before being loaded. After the dough pieces have been transferred towards the oven by a scrabblers, the boards move under the plant and back to the loading station. On the way they are carefully brushed clean to remove any residues of flour or dough. A peelboard buffer in the system ensures that the operation proceeds with no gaps.

Dough make-up is taken care of by the Kaak Group subsidiary DrieM Dough Sheeting Technology B.V. in ’s-Hertogenbosch, the Netherlands, using its dough sheeting plants. The plants are supplemented by classical make-up machines from the Benier program when large round loaves are to be produced. This gives the line additional flexibility. Nigel Morris, Director of Sales and Development at DrieM, says: “Logically the thickness of the dough strand on dough sheet plants is limited. Thus a large piece weight of 450 g has a bigger surface area than a small dough piece weighing only 50 g. If there is a need to bake a hearth baked round loaf from the 450 g or greater, we recommend that the dough pieces should be allowed to run through one of Benier’s dough dividers and subsequent conical round molders, which shapes the dough piece. This together with the DrieM rounding unit gives us the possibility to make round products from 40 g to over 1,000 g on one production line. Altogether this results in a wide spectrum of piece weights, as well as of alternative processes.”

Both the dough sheeting plant and the classical bread make-up machine have inline weight control systems that are responsible for weight accuracy. At the same time the belt speed on the dough sheeting plant plays a decisive role. When the process is running, the dough strands are continually weighed over a defined length, and the controller intervenes and changes the belt speed if there is even a minimal deviation. As a result the dough strand is compressed or stretched to a



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++ figure 2

Kaak's new lines can be used for a large number of different products, and achieve hourly capacities up to 8 t/h

minimal extent, with the result that a uniform weight is re-established over the defined length.

Depending on how much space is available for the line, the DrieM deposits the dough pieces either directly onto the peelboards or deposits them onto peelboards running in parallel on a twin peeler belt. Peeling takes place with a step length of 1.30 m, because that's the exact length of the 3 m wide peelboards, and precisely this dimension also corresponds to the oven's step length.

The layout pattern of dough pieces created on the peelboard by the make-up plants undergoes no further change up to the oven exit. The formation is basically retained even thereafter, and changes only in the direction of travel when the baked goods pass through the cooling and freezing spirals after the baking process.

However, the next step is final proofing, for which the boards run through multi-stage Multiblock plants made by Kaak. They travel up and down several times in separately ▶

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++ figure 3
HMI offering line control from any position on the production line

controlled climate zones, so this process can also be controlled in very great detail via time, temperature and relative humidity. The plant itself is washable and thus at the latest level of hygiene. In combination with first-class raw materials with no E numbers and several hours of pre-proofing, the long final proofing time yields all the prerequisites for a flavor and structure that were previously only found with breads made in small batches and with a large amount of manual work.

Next the cuts on the surface of the dough pieces can be applied, optionally using a knife or water jet. The usual variant is the knife, either with the traditional knife bar or in



++ figure 4
The oven unloader transfers products to the spiral cooler in formations of max. 1275 mm width

combination with a robot that effortlessly incises even complicated patterns into the surface. A port that diverts the peelboards out of the system and back in again allows space for manual decoration.

As the oven, Kaak recommends a three- to five-deck thermo-oil-heated Hanseat from Daub Backtechnik GmbH, Hamburg, Germany, with a working width of 3 m and a step length of 1.30 m. Depending on the model, such a Hanseat 160 achieves an oven surface area of up to 280 m², preferably fitted with genuine granite slab belts. This allows the products not only to be advertised as baked in a stone oven, but also to be emphasized again in the marketing by mentioning the granite slabs.



++ figure 5
Kaak recommends a thermo-oil-heated stone oven, preferably fitted with genuine granite slab belts. Thus, the products can be advertised as baked in a stone oven and marketed due to the granite slabs

A scrabbler takes the delicate dough pieces from the peel-boards and transfers them to the oven's loading belt, which involved solving a very particular problem. For physical reasons, gaps form between the narrow individual 10 cm slabs as the granite slab belt runs around the large-volume axles at both ends of the oven. Daub uses precisely controlled transfer points to ensure that even small products do not fall between two slabs at the transfer point from the loader belt to the granite slabs.

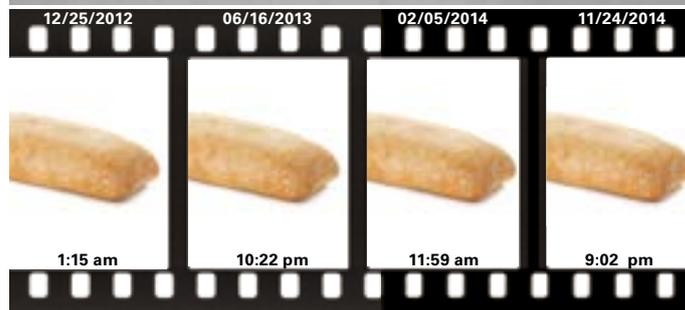
Each hearth is divided into several zones, the top and bottom heat is controlled separately in all the zones, and the oven has a steam inlet at both sides together with a steam removal vent in each zone. Single-level stone ovens from Daub or an MCS gas-heated stone oven are available as alternative options. The oven unloader transfers the products in formations with a maximum width of 1275 mm to the spiral cooler which operates with this same belt width, as does the downstream freezer, from which the part-baked goods move onward to the packing area.

The entire line from dough input to packing, including the control technology and component architecture, originates from Kaak and its subsidiary companies. The advantage of this is that the same type of controller architecture operates everywhere and the "human-machine interface", visible as the touch-screen, always works with the same logic, which considerably simplifies operation. The screens also display the plant in a three-dimensional representation in which the source is also indicated in the event of a fault, which enables the operating personnel to orientate quickly. The operating instructions and of course the recipe control are also stored.

Aart-Jan Hartman says: "There are two decisive factors that explain why this line produces hearth baked goods in a quality that was previously simply impossible on efficient industrial lines: time, time and again time, not only for the dough but also the time that is reflected in the calmness of the movements. The second factor is the way the line is built. Its construction is straight with a working width of three meters and with no cross-transfers. This enables us to avoid vibrations or impacts on the dough. All the components were of compact construction to achieve that, and as a result the entire space requirement remains limited."

The first plants of this kind, which are now being assembled in various European countries, will produce very different product ranges. The spectrum extends from a line for hearth baked breads with piece weights up to 1,000 g and flexible plants making both small and large loaves, to one that shapes an average of at least ten products in each case from ten dough groups, resulting in a total product range of more than 100 products. At the same time the belt width extends from 40 g round molded bread rolls and classics such as baguettes, ciabatta etc. to loaves weighing 850 g. +++

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