

New era

NO E NUMBERS, LONG RESTING AND PROOFING TIMES, ARTISAN QUALITY AND HOURLY CAPACITIES ON AN INDUSTRIAL SCALE – THE FRENCH BAKERY MACHINE BUILDER MECATHERM HAS ACCEPTED THE CHALLENGE AND HAS DEVELOPED A NEW PROCESS FOR WHEAT BAKED GOODS

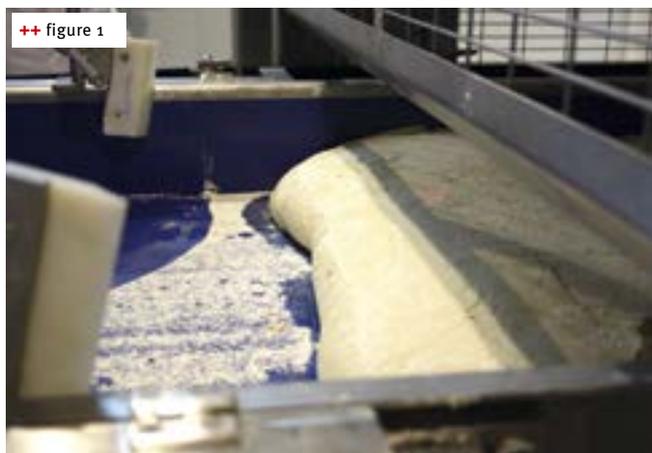


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+ Mecatherm S.A. in Barembach, France, calls it the High Quality System and is launching it for all bread rolls, sandwich baked goods, ciabatta, baguettes and small bread types up to a piece weight of 400 g. That's because it's not a question of the individual product, it's about the combination of process and technology. It's a question of doing a great deal for the dough development, not degassing during dough preparation, allowing optimized final proofing times, and finally baking on specially developed trays in a process that offers many control parameters. What makes it spectacular is the output rate of up to 5 t per hour of processed dough and unit costs for a 75 g, 75 % baked bread roll which, according

to Mecatherm's calculations and including packing and a 40 % contribution margin, are at the level of plain industrial products.

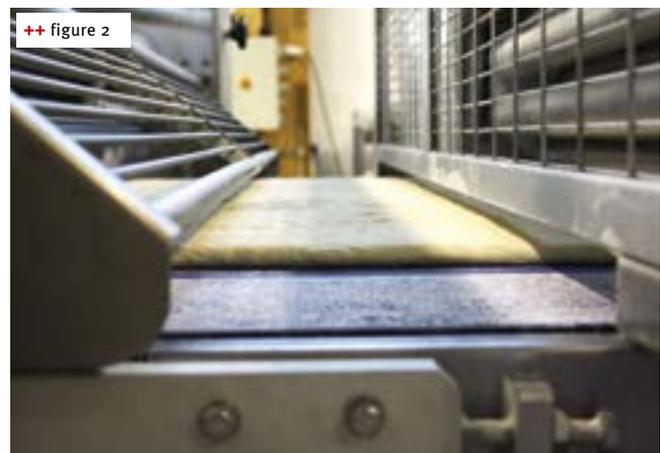
The basic recipe is simple and is impressive because of what is not there, namely baking improvers that require labeling and a large amount of yeast. This dough makes do with 1.2 % yeast and contains 2 % Philigerm Premium, a mixture of dried sourdough and enzymes from the French raw materials supplier Philibert Savours, which accentuates the rich flavor of the wheat germ. It includes at least 70 kg of water to 100 kg of flour.



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++ figure 1

This is how the dough "flows" out of the Mecaflow on the belt



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++ figure 2

The belt runs under the Multiroller without squashing the fermentation bubbles that are formed, and is cross-rolled and calibrated



++ figure 3



++ figure 4

++ figures 3+4

After cutting, the dough strands are spread apart and the expanded gas bubbles are clearly visible on the surface

The dough is mixed for approx. 8 min in the first stage and 5 min in the second stage, so the dough temperature does not exceed 24 °C. It then rests in oiled containers. 40 min later at the earliest the dough comes on to the make-up line, where it is again handled gently. Portioning takes place without pressure on a new version of the Mecaflow dough divider whose star rollers allow 10–12 kg of dough at a time to flow from the resting containers into a conveyor belt channel where the dough pieces combine to form a sheet. The channel is adjustable from a width of 75–110 cm depending on the

requirement. Gentle tapping on the surface levels out the dough before it slips easily under the first 16 rolls of a Multiroller, the cross-roll unit and the rollers of the calibrating unit. After that, a second Multiroller with eight rolls completes the gentle sheet forming process. Even before the calibrating unit it is apparent that the dough is developing the first fermentation bubbles, which are preserved to the end. Circular knives then cut it into up to 25 strips that are spread apart across a width of up to 2 m. Portioning is by weight, using guillotines. What then follows varies depending on ▶

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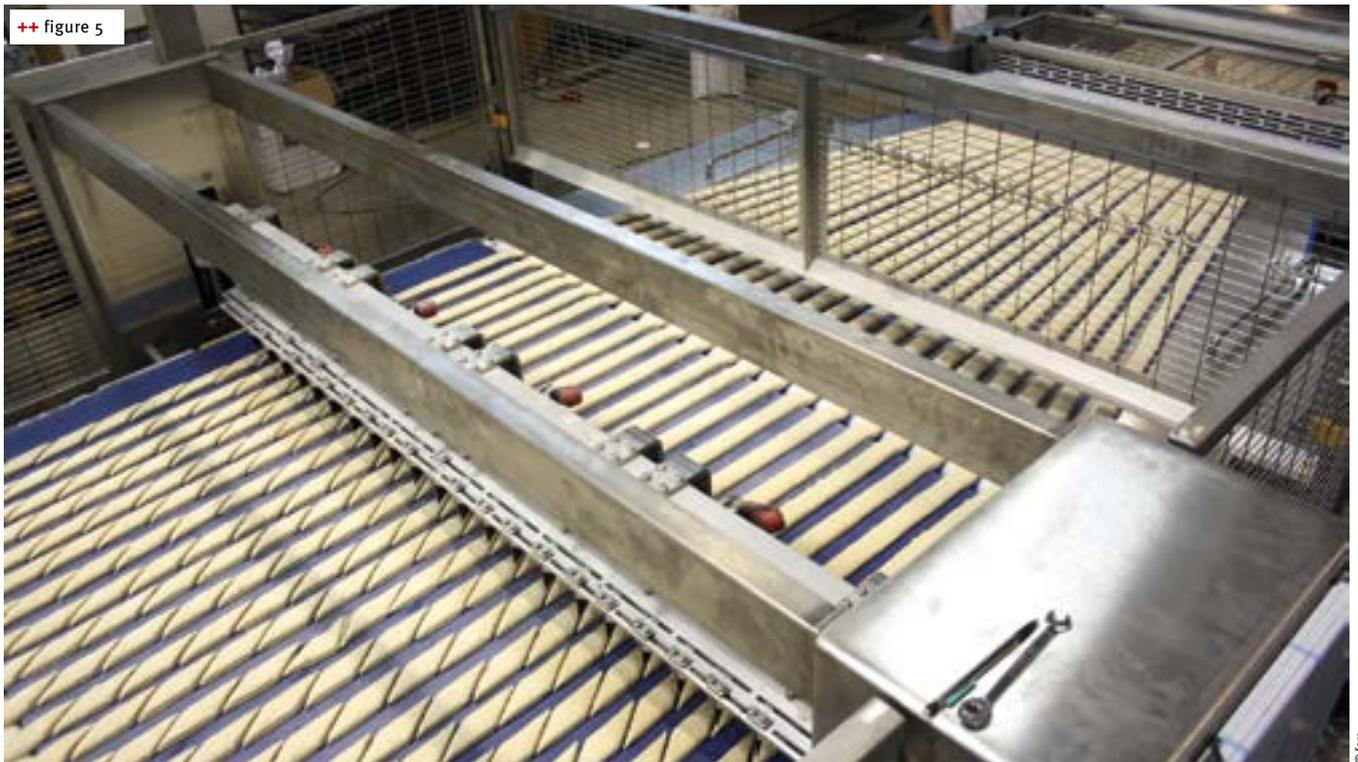
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++ figure 5
Spreading and cutting across a width of 2 m

the product. Either the dough runs through as far as the cutting station, or via a convoluting station and under pressure boards for long molding, optionally with side guiding, to ensure the tops of the bread rolls or baguettes appear well-rounded. Alternatively pressure boards can be used to give the dough pieces pointed ends.

The dough is not degassed (knocked back) during the entire make-up, which retains its gas bubbles and leads to an open pore structure in the crumb of the end product. The final proofing phase lasts up to 70 min, and the subdivision into a cold and a warm phase at 18–19°C and 26–27°C respectively ensures the development of flavor precursors which are later converted into aroma and taste in the oven. Water-cutting or knife-cutting systems are available for surface cuts. Of course manual cutting can also be carried out via a bypass. For this

the trays are moved sideways out of the line and carried back in again after cutting.

Proofing, baking and cooling take place – and even this is specific to Mecatherm – on indented trays specially developed for this process. According to CEO Bernard Zorn, this is evident from the secure handling and precise guidance of the dough pieces through the proofing cabinet and oven without needing to redeposit them in between and repeatedly realign them mechanically. Zorn says: “The dough piece is deposited once and is not touched again until it emerges from the oven. That benefits the quality of the end product and saves machinery on the line that needs maintenance and slows down the hourly output rate.” The indented trays that Mecatherm offers for this process no longer bear any resemblance to the perforated molds of the early automatic



++ figure 6
Depositing the individual dough pieces into lightly flour-dusted indented trays



++ figure 7
Automatic tray deposition

baguette lines. They are wide and unperforated, with the result that the bases of the products become flat and don't show any nubby pattern. There is plenty of space between the dark coated recesses for hot air to flow through, which quickly reaches the sides of the product in this way.

Baking takes place in a MEGA II oven with BBB, the special Bottom-Baking-Booster, which ensures that base and side stability is formed within 20 sec. Baking then proceeds with air flows and steam inputs matched to the product, until it is fully baked. Steaming times are comparatively long, to allow a lot of volume to develop. On the other hand the volumes of circulated air are kept small compared to conventional baguette lines, so as to remove as little moisture as possible. After baking for 12 min, the water loss is only just 8 %. A product of this kind will subsequently be baked off in the store in 3-4 min. After cooling for 15 min, the product then goes into the freezer, whose sequential automatic defrosting makes continuous operation the rule.

The whole line is designed for industrial use round the clock. Everything is easily accessible and easy to clean. The belts can be detached with quick releases and changed in less than 30 min, as can the individually driven adjustable pressure boards. The switchgear cabinet is suspended in the plant frame. All the cleaning procedures feed the dirty water directly into the drain.



++ figure 8

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++ figure 8

The end product has an artisanal look and the base doesn't show any nubby pattern

This plant is aimed by Mecatherm at pre-baked products for baking stations in the retail, irrespective of whether they are French baguettes, Spanish barras, German sliced bread rolls, Latin American Pan Francesco, Italian ciabattas or similar products. According to Zorn, the main market will be unit weights from 70 to 120 g. The line can effortlessly manufacture up to 40,000 sandwich baguettes each weighing 75 g, and with 50,000-60,000 the Barembach people are already aiming at the next model with lines originating entirely from a single supplier from dough division to handover for packing. +++

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