

Multi-tasking

THE WERNER & PFLEIDERER INDUSTRIELLE BACKTECHNIK GMBH COMPANY (WB IB), TAMM, GERMANY, IMPLEMENTED AN UNCONVENTIONAL SOLUTION AT THE COOP IN GOSSAU FOR A SPECIAL AND SMALL BAKED PRODUCTS LINE WITH PROOFING PLANTS, OVENS AND CONVEYOR TECHNOLOGY THAT ENABLES VARIOUS DIFFERENT BAKED GOODS TO BE PRODUCED SIMULTANEOUSLY



++ figure 1

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The 4 layer thermo-oil oven WP Megador with single board scrabbler in front of the lower section and ternary scrabbler on the mezzanine level

+ It really was millimetre work. The room needed to be surveyed accurately by laser, the transport and setup simulated on a computer, and everything constructed with the greatest precision, otherwise the oven and proofing cabinet together with the conveyor technology, board storage, moistening, seeding, spraying installation and everything else belonging to it would not have fitted into the Swiss Coop's production hall at Gossau. But it proved to be very successful!

The plant is now running with two shifts and supplies the group's supermarkets in eastern Switzerland. Something that is immediately noticeable during an on-the-spot visit is the proofing unit standing at right angles to the flow direction of the oven. On the one hand the restricted space is undoubtedly to blame for this situation, but on the other the arrangement favours the conveyor system operating with several levels.

This conveyor system consists basically of two conveyor circuits running around the proofing unit. They take the dough pieces on the peelboards from the make-up plant, feed them into the proofing cabinet, take them out again at its exit, and finally bring them to the oven. On the way they pass through

the proofing plant's loading and unloading stations, and various decoration stations or a station at which manual intervention is possible. Finally they deliver the loaded peelboards to the scrabbler, which transfers the dough pieces onto the oven belt. Afterwards the peelboards travel back, are brushed clean, and are returned into the process cycle or are held in intermediate buffer storages. The two circuits run over and under one another, and at four points it is also possible to insert or remove peelboards coming in from outside or exiting at that point.

The light and laser detectors at all the critical points in the system are important mainly for the correct sequence of operations. For example, scrabbling does not take place until three peelboards are in place. The detectors also report congestion.

The dough preparation unit is the responsibility firstly of an IndustrieRex from the König Maschinen Gesellschaft m.b.H. Company, Graz, Austria, which produces small baked goods such as bread rolls, spelt rolls or bread rings, and secondly a dough sheet plant from the Fritsch GmbH Company in Markt Einersheim, Germany, to make up special breads, e.g. twisted long loaves. Both plants deposit the dough pieces onto special



++ figure 2
The peel board turning machine switches from face down proofing to face up baking automatically and is recipe controlled

peelboards (see box), the König plant always loading the 580 x 780 mm boards longitudinally, the Fritsch dough sheet plant both longitudinally and transversely, as required by the product and then scabbled off at the oven.

The boards are fed into the two make-up plants standing in parallel, either directly from the process or from buffer stacks integrated into the conveyor technology. At the same time, turntables ensure that the boards for the Fritsch plant are supplied or carried away in the required direction. A board ►

Peelboards

Peelboards specially fabricated for the Werner & Pfleiderer Industrielle Backtechnik GmbH Company and whose properties were defined after the completion of a comparison study by the Wädenswil University of Applied Sciences are used in Gossau. The study focused on the relationship between the board and the dough piece and included the following questions: How strongly does the dough adhere to the surface? How much flour dusting must be applied? Do the dough pieces slip if the surface is too smooth, thus confusing the layout plan? Other questions included the load-bearing abilities of the boards, e.g. durability, rigidity, resistance of the surface to water and acids, and of course their hygiene capabilities. A total of 14 different board types currently on the market were studied, including solid plastic boards, film-covered boards, teflonized boards, polystyrene foam boards etc. According to Dieter Knost, WP IB's Technology Managing Director, "The results were not only very revealing, they also helped us to develop a type of peelboard whose surface requires only a minimum of flour dusting while at the same time allows the dough pieces to have good release properties without them slipping and are robust and extremely cleaning-friendly. We now have this ideal type of peelboard produced for our plants and for our customers, and also have no problems in fulfilling special format requirements with them." +++

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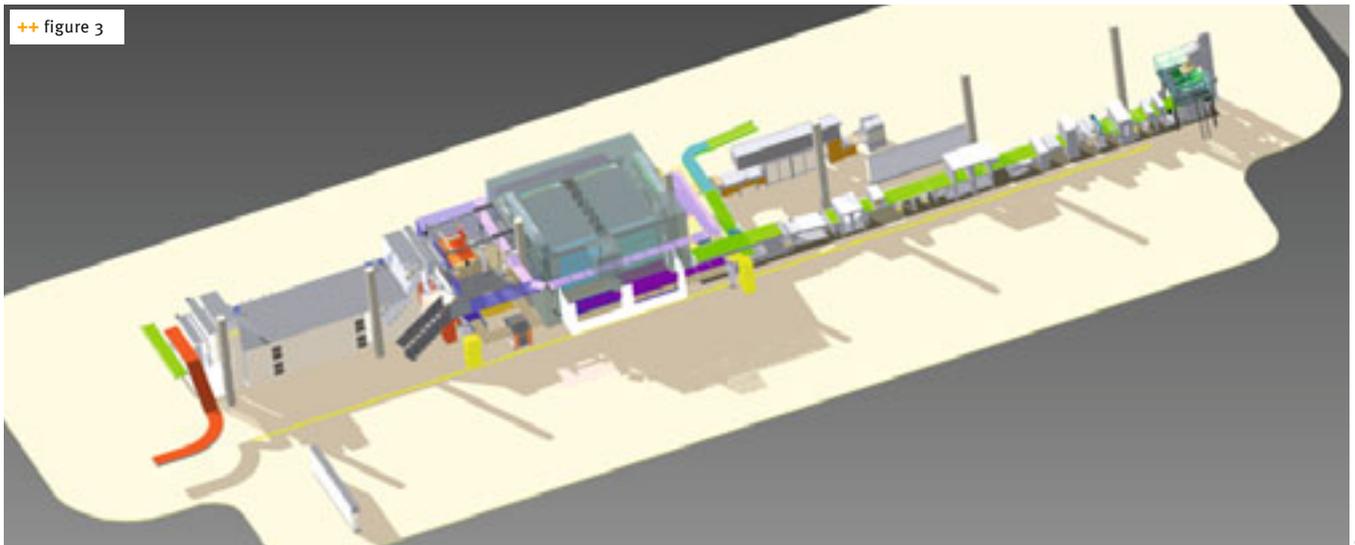
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++ figure 3

The CAD model of the multipath production system at the early stage of conjoint development between client and supplier

turner comes in handy for the bread rings; these come out of the König plant with the join at the top but should pass through the proofing unit and the oven with the join at the bottom. The board with the rings moves in, a second board descends from above, and the two boards turn together so the rings continue their journey in the correct position.

The proofing unit into which the loaded boards are fed actually consists of two parallel but independently controlled plants, each with twelve levels on each of which there is space for three peelboards side by side and seven behind one another. The peelboards always assemble in front of the proofing cabinet in threes, which are pushed in together. To prevent the peelboards bumping hard against one another in this process, they are gently slowed down beforehand. Flaps protect the atmosphere inside from unwanted equality with the room atmosphere. On one proofing cabinet the peel-

board exit is at the top of the rear wall for onward transport on a belt conveyor system, and on the other it is at the bottom on the back wall for decoration by hand.

As a rule, one proofing unit is assigned to the König work-ups and the other to the Fritsch dough ribbon plant. Track points in the transport circuits ensure that they can also be changed to and fro at any time.

After proofing, moistening, seeding and a shower from the fresh egg spray unit or manual decoration, a scrabbler transfers the dough pieces, which have become sensitive as a result of the proofing, onto the 100 m² hinged steel belt of the 4-deck Megador TH oven from WP, whose baking performance is ensured by heating with thermo-oil. As a rule its lower two hearths are assigned to the König plant and the upper two hearths to the Fritsch plant. However, as with the proofing unit, the entire oven can be supplied by just one of the two lines. +++



++ figure 4

Fourfold entrance to the final proofer which runs simultaneously running in two layers for the highest production flexibility

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