

Success Story: Bäckerei Konditorei Staib GmbH & Co. KG, Ulm

Entire production concepts from a single source

Special challenges - Special solutions

One main product was a wet shaped, moist wheat bread. It was to be processed largely automatically via a conveyor belt, but without separating agents such as wheat meal or wheat bran, as this would result in undesirable reductions in product quality. For the same reason, the customer also wanted to avoid scraping the products from boards, in which the knife edge would also always deform the products slightly. The products (250 to 1,000 g) are therefore to be deposited on Teflon foils after manual shaping. These foils must be fed reliably into the oven with the products on top, removed after baking and be separated from the products (before the spray device or any post-baking process). A MIWE athlete is responsible for safe transport; it inserts its knife edge under the edge of foil, while an extending knife edge upstream of the spraying conveyor separates the products from the foil by opening a gap through which the foil can slide downwards.

The system was to be dimensioned so that the scrapers fitted the hard roll or fine product system on one hand (conveyor belt width of 600 mm), and on the other hand that it could serve the planned 15m² of baking area per heating circuit optimally. That resulted in the uniform scraper size of 600 x 1000 mm and an oven surface of 2 by 2.4 metres; three of these ovens are combined to a heating circuit. The feeding conveyor matches the size of the oven, and thus can hold two of the foils mentioned (1000 x 2400 mm each). In order to maintain both maximum flexibility and optimal capacity utilisation, the entire system is focused on permitting both automatic and manual operation from multiple feeding positions. The process flow can be controlled both from the automatic and the manual station.

The scrapers were designed specifically for the customer's requirements;



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This family-owned company operates over 40 branch outlets. The company has a variety of concepts (‘Staib’s gute Stube’, (Staib’s palour), ‘Brot Bar’ (bread bar) and ‘Daily Bread’) for bringing its wide range of products to the point of sale. The company also supplies a range of large-scale customers. The product range include a wide variety of bread, hard rolls, pretzels, fine baker’s wares, cakes, tarts, snacks and pizza. Other fields of application include breakfast and lunch products.

■ The project: Replacement of an existing production facility with a completely new building. The company wishes to retain its basic concept of daily production of fresh goods. Retain or improve existing product quality while maintaining the company’s proven production processes, but with a substantial increase in automation. Harmonise the different product requirements, batch sizes and production process to create a coherent overall process flow, while retaining the desired flexibility. Achieve maximum energy efficiency (for existing conveyor systems as well).

they are lighter than usual, with a special reinforcement, but robust enough to be able to handle the bread reliably. The scraper cloth is secured to with hook and loop fasteners on both sides to special profile rails, and can be removed quickly and easily for cleaning.

Improving the product quality, especially of Kaiser rolls, was a high priority. They were previously baked in rack ovens, and were to be developed consistently for baking in stan-

dard ovens. That was implemented successfully via integration in the deck oven process.

In the dispatch area, a pneumatic points system routes various product types into various receiving routes: Rolls are removed manually from a round receiving table; bread loaves run directly onto a receiving conveyor, from which they are removed to bas-

kets after counting.

A high-performance concept which went beyond individual bakehouses was particularly important for the customer, for efficient recovery and use of any excess heat. A standard similar to the passive house standard was the ambitious goal. A large photovoltaic system on the roof of the production hall plays an important



part in this. Two MIWE eco:nova units (with separate circuits for flue gas and steam) and one MIWE eco:box collect the waste heat from the ovens, a MIWE eco:recover on all refrigerating units is responsible for recirculation of the useful waste heat. Ring pipes were laid for the hot water circuits, which typically occur at three temperature levels (40/45 °C, 60 °C, 85/90 °C). As heat is not produced and used at the same time, high-volume heat storage facilities had to be installed (3 x 15 m³ buffer storage tanks). The different temperature ranges can be blended or cascaded as required. All hot water is reused in production: for service water, for dishwashers and for defrosting (via MIWE eco:defrost) or proofing heating (MIWE eco:proof) in the refrigeration or proofing systems. Excesses can be fed into the floor heating system as required. Combined cooling systems are used to save energy in the refrigeration blocks for bread/hard rolls and for fine baker's wares. Only the flash freezer is operated separately with its own refrigerating unit due to the different performance and temperature range. In the refrigeration block for bread and hard rolls were equipped with (identical) combined systems consisting of three intelligently controlled refrigerating units each. When designing this combined system, the main priority was to ensure that energy



use was as efficient as possible and maximising reliability. Each of the two combined system can start each room on a separate evaporator series. Even if one assembly fails, the other can still supply refrigeration power. The second assembly only starts when an extremely high performance is required, based on a sophisticated logic. A high-tech activation and deactivation logic in every assembly also ensures that only exactly the energy currently required is provided. The frequency converter in master machine 1 provides stepless fine adjustment without any overhead. Machines 2 and 3 are activated in accordance with set rules, if the necessary power requirement exceeds the performance of machine 1 (or 2). This concept permitted a sig-





nificantly lower nominal power than a version with separate refrigerating units only.

The scope of supply

MIWE is responsible for the entire manufacturing process, from the handover of reprocessing (e.g. in the hard roll system). We delivered all transfer, transport and loading technology (centred around the MIWE athlet) including a moistening system and oven equipment (2 x 9-oven MIWE ideal units, one of which with a pre-baking station to 380 °C, 2 trolley ovens MIWE thermo-static plus HKZ 300, and 2 x 5-oven deck baking ovens MIWE ideal for pretzels and long rolls). They also provided all refrigeration technology (in multiple blocks for fine baker's wares, the bread and hard roll range, confectionary and snack finishing) consisting of multiple automatic proofing machines MIWE GVA, a blast freezer MIWE SF, multiple

normal and deep freeze chambers MIWE NK, TK and SK and a dough conservation unit MIWE TLK, as well as the combined refrigeration system. We also supplied the entire heat recovery system (ovens: MIWE eco:nova, MIWE eco:box; refrigerating unit: MIWE eco:recover) with the corresponding combined energy system.

What convinced the customer?

- ▶ The concept and technology for the entire air conditioning and energy flow from a single source, eliminating interface problems.
- ▶ Comprehensive solution expertise and the willingness to take care of certain details.
- ▶ Powerful individual components, which support quality-oriented baking.
- ▶ Impressive overall energy concept, which helps minimise energy costs.