

Successful Production Line Upgrade

The major bakery concern, **Resch&Frisch** from Wels in Austria, has equipped one of their continuous production lines with a **Vulkan Euroback multi-level conveyor oven** from **Heuft** und **conveyor technology** by GBT.

Stefan Schütter

The Heuft Vulkan Euroback TVTP 25.72/5 used by Resch&Frisch is 7.2 meters long and has a 90-square-meter baking area distributed to five levels.



Photo: BT / Stefan Schütter 2018

The baked goods from Resch&Frisch stand for pleasure. For that reason, production places great value on high quality and does not compromise where production technology is involved. This desire for quality is why Plant II decided to replace a ventilation-conveyor oven that had been part of Line 2 since 2000 with a modern thermal oil oven in 2016. “Our past experiences

with thermal oil were good and we had already made plans to expand our water boiling system using thermal oil oven capabilities. However, the challenge we found in this was the problem of working on an existing, entirely overburdened line that was used by all three shifts. Our solution was to build a new hall at first and then install the new oven there, along with customized conveyor technology and a transfer system

Abstract

Resch&Frisch have replaced a convection oven on a continuously operating line with a modern thermal oil oven with conveyor technology from GBT. While accomplishing this, the new modules have been designed so that they provide performance reserves for the future.



1 The line's input interface for the new modules from GBT and the oven from Heuft can be found at the baking chamber's exit.
2 The oven is currently being supplied by a six-line baking system. However, the transfer system has been designed to operate as an eight-line system.

including the proven loading and unloading machines from GBT. The last stage was to connect the line to the interface once it had been prepared”, explained Christian Kaser, manager of Plant II.

Quick Replacement

The line modules before the oven were replaced at the interface between the baking chamber up to the entry to the oven with components from GBT. Specifically, this involved the conveyors, a newly developed transfer system and a customized spraying system for the mature, baked dough products and the proven loading and unloading technology. In this, the spraying system has been provided with separate covers both above and below the belts, so that the mist will only land on the dough products and not on the conveyor belts.

At the same time, GBT installed the loading technology, the spraying system indicated above for the oven-heated baked goods and the conveyor belts for the discharge conveyors with controlled emer-

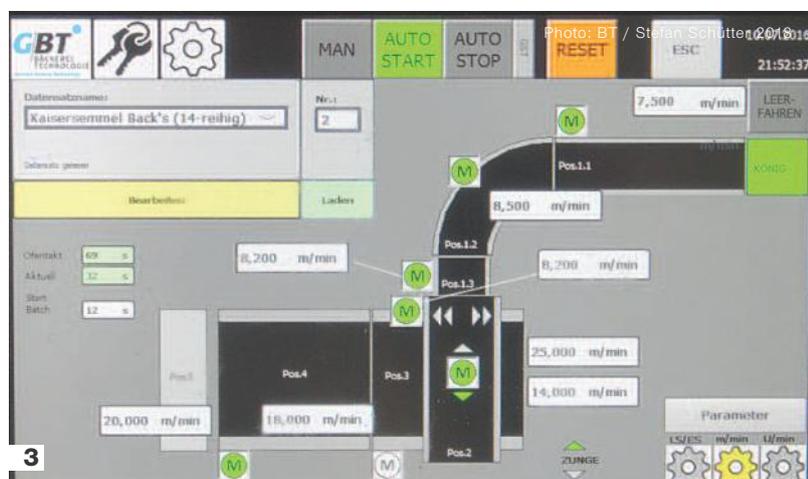
gency removal after the oven. The next station after the second interface, the entry into the cooling area, was the already existing cooling spirals. These systems are followed by the flash freezing and the packaging systems and then the associated frozen storage warehouse.

On September 21, 2017, the last dough products finally crossed the old line and, on September 26, the trained technicians from GBT and Heuft were able to start the first baking tests using the new line.

The interface tests were not initially conducted, however on September 27 (the next day), the repurposed line produced the first products ready for sale. Only two days later, the products were approved by the Resch&Frisch management.

Flexible Baked Goods Line

Line 2 will be used for baked goods weighing between 33 and 360 grams. In this, the selection



3 The speed of all transfer belts can be adjusted individually so that they synchronized ideally with each other.

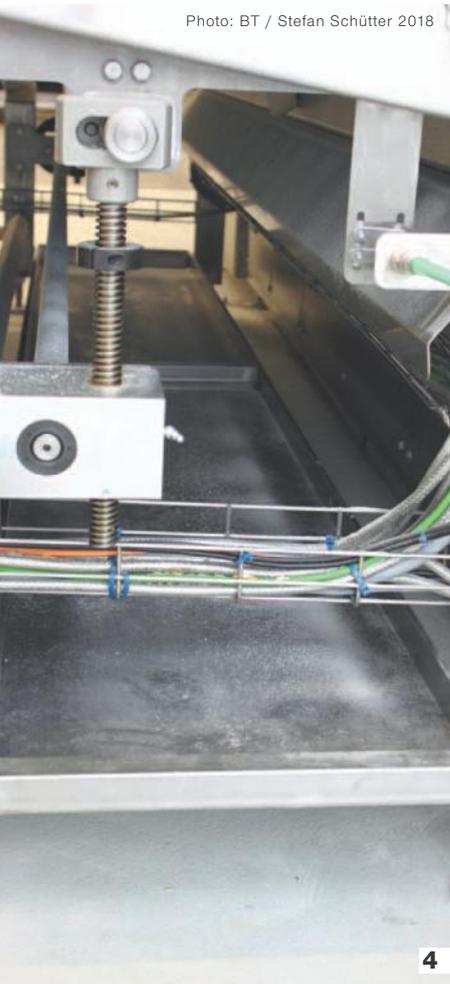


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4 The entire system has been equipped with catch plates, so that flour or dough remnants cannot fall on the floors. **5** The transfer system loads the loading system's processing table with six lines in three stages. **6** The requirements documentation provides a precise list of all baked goods in order to ensure that everything baked will be distributed ideally in the oven. **7** The saturated steam in the oven is sufficient to guarantee the close proximity of the steam heads to their targets.

extends from classic rolls to ciabatta. So that even the small dough products with a comparably low weight can be easily moved into and out of the oven, the GBT loading machines have been equipped with special sensors at the transfer edges and there is a mere four millimeters between the loader's belt and the oven's hinged conveyor. "With any other manufacturer, we would have had problems with the conveyor technology that we would have had to resolve ourselves, but the modules from GBT work seamlessly."

The line coating can be flexibly set for rounded lines using a header or for rectangular dough products using a dough conveyor system. Overall, the line is currently processing 30 different baked products. It achieves the highest throughput with the Jour ciabatta at 19,000 units per hour. However, because the new oven and loading system was designed for a maximum working width of 1,200 millimeters, the line can be re-equipped to use a third, reserve processing path. Increasing the throughput merely requires replacing the six-line system with an

eight-line model. Whereas there had previously been three 90 degree angles between the line's supply conveyors and the collection conveyors for the loading system, only two stages are now required using the wider header.

The construction of the new hall can also be expanded in order to create more space for a second line. This line would then supply the oven with dough products directly from a dough belt at the front, whereas the rounded dough products would be conveyed to the header with a 90 degree curve in the conveyor belt.

Continuous Baking

With the staging system at Resch&Frisch, the oven is baking continuously because the GBT loading system is supplying all of the heating elements and the conveyor runs continuously using the staging system. At the end of the baking time, the baked goods are automatically transferred to the unloading system at the oven's outlet. Baking in batches would also be possible using the staging system and an existing oven conveyor. "With the Vulkan Euroback, the investment expenses were somewhat higher than the previous gas-heated oven, however the thermal oil system allows us to achieve energy savings of roughly 30 percent in continuous operation."

The Vulkan Euroback also operates only with a latent baking atmosphere, because a turbo option has not been built into the system. "Certainly, there are reasons for circulating the heat using adjustable fans for creating a crisp crust for freshly baked breads. However, this is not required for our smaller products manufactured using a

freezing process.” The dehumidifier integrated into the oven offers the benefit for frozen baked goods that the dehumidification of the baking chamber can be controlled quite precisely. “The Vulkan Euroback from Heuft is based on mature technology. Ultimately, I could not allow a prototype to be integrated into an overtaxed line. The line must run so that I can rely on them. When I am producing six days per week, the technology employed must also fulfill the industry standards.”

Best Baking Results

The new oven has been equipped with a hinged plate conveyor belt.

“I cannot find any differences in our 80 percent pre-baked and frozen products because of the flooring between the batches from the Vulkan Euroback and those produced by our stone oven.”

However, the gentle heat carried by the thermal oil ensures the lowest possible baking loss. This is an especially important issue for frozen products, so that there will not be any problems with the crust splitting later. “In addition, we can also work with fully baked dough products without any problems. The oven has enough force that it can develop a good volume. Because the fully baked products are comparably sensitive, gentle trans-

fer edges between the loading system and the oven or other modules are absolutely essential.” For that reason, the loading system operates with extreme sensitivity. The balance counter weights in both columns ensure this for the vertical travel path. It draws the dough products gently in three steps, which are appropriate to the continuously operating oven that works with the same number of steps. Correspondingly, each heating element in the multi-level oven has been equipped with temperature zones that are 2,400 centimeters long and separated from each other by a system of aprons. The heat from the top and bottom can be adjusted for each level.



8 The edges at the tip of the loading system allow safe, gentle transfer of the dough products to the oven's hinged conveyor. **9** The solid universal joint for the GBT loading system is only one indicator of its robust, durable construction according to industry standards. **10** The Vulkan Euroback's hydraulically tensioned hinged conveyor operates at a high level of operational safety. **11** For easy access to the oven's heating elements, for maintenance and cleaning, the loading system will move to a base position at the top of the vapor apron. **12** The circulation pumps for the thermal oil system have been mounted on the easily accessible back of the Vulkan Euroback.

Well-planned Details

“Solving problems together with our suppliers is important to us. For that reason, we like to work with specialists in each respective area. With GBT and Heuft, we have selected exactly the right partners for the project”, summarized Kaser. To keep the maintenance required by the conveyor technology low for example, AC motors from SEW-Eurodrive or shaft-mounted motors were used for ease of accessibility. In addition, locking bolts were used for safety. The oven’s circuitry cabinets are supplied with cool air from the production hall’s ventilation system, instead of ventilating each cabinet independently in order to minimize contamination. Centralizing the ventilation systems in this manner will also reduce the maintenance efforts and make supervision easier.

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Revenue 2016: 130.2 million euro
Employees: 1,600
Plant II flour consumption/week: 125 tonnes
Exports: Germany, Italy, Switzerland, Slovenia, Slovakia, Czech Republic,

Netherlands, Denmark, Croatia, Luxembourg and Belgium

Own bakery cafés: 46 in Upper Austria and Salzburg. Also, direct sales to about 200,000 households in Austria and Bavaria as well as an online gluten-free business throughout Germany.

Certifications: AMA quality seal, organic seal, AIB, SQMS



Photo: BT / Stefan Schütter 2018



Photo: BT / Stefan Schütter 2018

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Photo: BT / Stefan Schütter 2018

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Photo: BT / Stefan Schütter 2018

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13 The hinged conveyor moves Kaiser rolls through the three zones in the multi-level oven in 13 minutes. **14** The Kaiser rolls will be sprayed with a thin mist of air and water during cooling to ensure they have an attractive glaze. **15** The unloading system transfers the baked goods to another conveyor using a large machine that helps them dehumidify.