

## **MIWE** impulse

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Satisfying customers. Would any forward-looking company not make this its number-one business goal? Satisfied customers value their product. Satisfied customers gladly come again. Satisfied customers bring new customers. Satisfied customers are therefore the best way to ensure a successful future.

At MIWE, we've been measuring the satisfaction of our customers for years. Satisfaction is an important indicator of how well we're doing our job. We now have a variety of tools that allow us to measure the satisfaction of our customers. One of them is the number of prospective customers who learn about us through a recommendation. Recommendations from other customers have always been and always will be the most valuable expression of customer satisfaction.

Going by how many customers recommend us, MIWE customers are definitely satisfied customers. Of all the enquiries we receive from businesses that are interested in our products, two responses to the question of how they learned about us are the most common by far: "Through a recommendation". And: "I'm already a MIWE customer". Happily, this holds true not just in our core markets of Germany, Austria and Switzerland. In the US, France, Russia or Britain, and even in smaller markets like Azerbaijan, Malaysia or the Congo, recommendations by other customers are at the top of the list.

If so many businesses around the world are so happy to recommend us, I think we have every reason to be optimistic about the future. Especially as we continue to work on making even more customers satisfied and inspiring them to recommend us directly. By providing effective, perfectly integrated systems. By offering solid engineering and expert skill in all processing technologies. And by providing a highly available, global service team.

MIWE impulse also generates many enquiries. As always, I'm confident that this issue, which focuses entirely on industrial bakeries, offers a wealth of material that will inspire you to learn more and contact us.

We're always there for you.

Sabine Michaela Wenz



One for all - all for one

Investments reduced by 6 %, 7 % fewer maintenance costs per year and 35 % less energy consumption each day. The numbers speak for themselves. In many bakeries, refrigeration is the primary method of ensuring the highest product quality and flexible processes.

However, "refrigeration" is an umbrella term for many different proofing and refrigeration components that all have one thing in common. They regulate moisture and temperatures, sometimes even processes, in the sub-zero range and above-freezing range up to 40 °C.

Specialised components range from a simple storage cell (such as the MIWE TK deep-freezing unit) to dedicated freezer systems (such as the MIWE TLK dough preservation unit) to all-round refrigeration systems such as the MIWE GVA e+ automatic proofing

The type of components you select for your bakery depends on your specific product range and the processing sequences you choose. However, in a typical configuration, several components are installed at the same time, and it is just as typical for each of these components to have its own refrigeration unit. This makes the design process relatively simple, but it is highly unsatisfactory in terms of energy efficiency.

Each refrigeration unit must be designed with its maximum load in mind, even if it is foreseeable that most systems will operate in this peak power range only occasionally, never continuously. For example, an automatic proofing machine only consumes maximum power during the freezing process, whereas it draws only a fraction of this power during proofing or stiffening.

With this type of multiple-system solution, all the individual maximum loads add up enormously – and so do the connected loads, and therefore the costs of energy.

When our developers looked at this problem, they knew there had to be a more intelligent solution. After all, at MIWE, part of our mission is to promote economical use of energy and to do everything we can to help our customers cut their energy costs – while simultaneously pursuing our other objective: To systematically ensure optimum quality of baked products.

This was the reason why our developers dismissed the solution that simply combined the individual refrigeration units into one central cooling system. Although this step alone might have had some positive effects (saving space, for example), it would have done nothing to solve the main problem. All the potential maximum loads would still have to be added together to ensure a reliable design. There would be no way to reduce the connected loads.

The only way to explore the problem more deeply and further optimise energy efficiency of bakery refrigeration systems is by employing more than just in-depth knowledge of refrigeration technology. It is also necessary to know about the technological needs of bakeries, understand the processes of a company and carefully analyse data such as

> "I liked the professionalism from the first meeting onward, from planning right through to implementation. It was definitely the right choice."

> > Günter Wagner, Bäckerei Wagner, Ruhstorf/Germany

MIWE combined cooling systems are the intelligent choice for maximum safety and low energy costs



The centrepiece of a modern, energy-saving combined cooling system requires little space.

the load cycles of the individual refrigeration systems based on the company's daily and weekly plans. The refrigeration specialists at MIWE have precisely this kind of special expertise. They know and understand how, when and where refrigeration is used in your bakery.

Armed with this expert knowledge, MIWE refrigeration planners are able to create a refrigeration requirements profile for any bakery and its very specific requirements. Based on this profile, they can create a tailored combined cooling system that delivers the exact amount of refrigeration needed by an individual refrigeration point at all times. Equipped with reserve capacity and an intelligent control system, this combined system carefully supplies all refrigeration loads with the necessary amount of refrigeration at the right time - without the usual overhead for connected loads.

We usually design these combined systems with semi-hermetic reciprocating piston compressors. To ensure optimum system availability, we always use several compressors that are mechanically tailored to the loads and are frequencycontrolled.

"The combined cooling system has much more power than systems with single units and gives us greater operational reliability thanks to its redundant design. I'm very happy with the refrigeration system, especially with the TC control system, which has the best user interface on the market."

Marcus Staib Bäckerei Konditorei Staib GmbH & Co. KG, Ulm/Germany The system is designed so that even if one compressor fails, it can still reliably supply all refrigeration points – in terms of reliability, a huge advantage over multiple individual systems. In those systems, if one refrigeration machine fails, the entire system comes to a temporary halt (unless you have MIWE remote ...). With the MIWE combined cooling system, you can simply continue production.

Operating costs are also decreased because the combined system uses only exactly as much energy as the individual refrigeration units require. Compared to solutions with multiple individual systems, maintenance costs are also lower because fewer compressors are usually used and there is only one condenser for each component. In addition, because loads are optimised during operation, the compressors are actuated less often. At the same time, they run longer and under constant operating conditions (oil pressure, system pressure), thereby reducing mechanical wear accordingly. Installation is easy (the compressors are delivered fully assembled on a frame) and they require much less

space than multiple systems. With optimised runtimes, the central control system allows the heat recovery system to do its job optimally.

A MIWE combined cooling system also makes recovering heat from bakery refrigeration even easier and more efficient because all you have to do is install a MIWE eco:recover in one location directly at the combined cooling system. Since at least one compressor is always running in a combined system, energy recovery becomes more even.



The potential energy that can be saved with a combined cooling system depends on many factors – it can be less than expected, but it can also be much higher than predicted. The figures on the left are based on the system shown at the bottom right, which is shown in simplified schematic form on page 4.

Now you're probably wondering "So how much can I save"? The amount of money you can save with a MIWE combined cooling system depends on a range of factors, including the number of refrigeration loads that you need to integrate, the type and quantity of baked products that you produce, and the processing sequences that you use in your bakery.

As a result, it is difficult to give a general figure. However, in general, the potential savings increase with the number of refrigeration points affected and the output of the individual refrigeration machines. This means that the MIWE refrigeration network pays off more quickly wherever the energy costs for refrigeration are greatest.

There's an easy way to find out exactly how much you can save with your refrigeration system: Ask our refrigeration experts. With their wealth of experience, they know what's most important about a combined cooling systems and can use some basic information about your production scenario to give you an estimate of how much you can save with your refrigeration system.

Remember, The Three Musketeers didn't wait around to make a decision, they seized the opportunity right away.

The combined cooling system not only looks good, it makes the investor happy every day thanks to clearly quantifiable savings (see above).



Thermal oil-

*OY* ...

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MIWE variobake Would you like to bake on a flueraises the bar gas circulator as if it were a therfor systems mal oil baking oven and still have all the flue-gas characteristics at your disposal? Many bakers have wanted this for a long time. It could bring a whole new world of freedom and flexibility to your bakery. It would also allow you to bake products with fine differences in character...

> Would, could? Forget about these hypothetical statements: MIWE variobake is here. This technology, which is now available in the gas-fired MIWE ideal e+, allows you to control the temperature behavior and baking characteristics of a baking oven system more freely than ever before. For example, it lets you bake products in the MIWE ideal e+ as if it were a thermal baking oven. Or a real wood oven

Why not

Or even a traditional flue-gas circulator. So how does it work, you're asking? It's simple: MIWE variobake allows for much finer and more flexible temperature adjustment in the baking chamber than ever before. Two components play an important role in this new control process: A modulating burner that allows for much finer control than a conventional sinale-stage burner. And then there's the Touch Control MIWE TC, which uses intelligent logic to automatically adjust the power setting of this modular burner to the exact setting required by the temperature cycle.

So how does this allow you to model the baking behavior of a thermal oil circulator on a flue-gas circulator? Flue gas and thermal oil have very different thermal properties (we explained these physical properties in

# ... flue-gas characteristics?

# have both?

detail in issue XV of MIWE impulse and will gladly send you a copy). Thermal oil can absorb (and release) 2,500 times as much energy as flue gas. It therefore stores much more heat energy and is much less "flexible" than flue gas in terms of its thermal properties. In a thermal oil circulator, products are baked with much smaller temperature variations than in a flue gas circulator. The temperature at the time of loading is much lower (about 20 °C) than that of the flue-gas circulator, and the temperature curve is much flatter.

However, the thermal behavior of thermal oil cannot be implemented in a flue-gas circulator using conventional burner systems and control systems. In order to model the flat downward slope of the temperature curve of the thermal oil baking oven, a single-stage burner would have to be switched on at regular intervals for counter-heating purposes.

Because of this large number of switching intervals, the burner would be quickly pushed to its limits, and not just mechanically. Because of this incomplete combustion, every time the burner was started, concentrations of harmful substances would be injected into the system. More importantly, every time it was switched on, the single-stage burner would blow heat into the system at full power - too much heat for baked products, even if the switching intervals were as short as possible. Single-stage burners operate in two modes only: ON (= full power) and OFF (= no power). Twostage burners are not much different, they only have one additional

A classic becomes an innovation: With MIWE variobake, you can create products with any type of characteristics you want in the gas-fired MIWE ideal e+ .

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Baking bread in a thermal-oil heated oven. This is now possible in a flue-gas baking oven, the MIWE ideal e+.



Steam slide valve open partially closed closed

> setting (partial load). Therefore, conventional burners can only approximately model a specific temperature curve by constantly switching between full power and off. This would be like having a car with only two speeds: Full throttle or idle.



You would be able to drive the car, but maintaining a certain speed, and not to mention acceleration and deceleration, would be incredibly tough to control.

By contrast, the thermal output of a modulating burner can be controlled according to specific needs and is flexible. In other words, it is continuously adjustable and computer-controlled limits can be programmed. The modulating burner can be finely controlled like an accelerator pedal. As a result, the temperature cycle can be followed very smoothly. The burner output does not "overshoot" the actual demand (or exceed a level that would damage products). Equipped with an intelligent control system such as the MIWE TC, a modulating burner can exactly follow temperature curves that are atypical for flue gas (that protect the product). This was not possible until now.

This is exactly what we've achieved with the MIWE variobake in the new MIWE ideal e+ deck oven.



Typical baking process for bread in a traditional deck oven. The MIWE ideal e+ has always Now it can do even more.

Steam slide valve partially closed

The control system models the exact curve of a conventional thermal oil baking oven, such as the curve used with the MIWE thermo-express deck oven, and simulates the slower sink rate by counter-heating the burner in a targeted, high-precision fashion. However, the MIWE variobake models more than just thermal oil baking, it can also simulate the temperature curve of a wood oven. Obviously, products will not have the distinctive aroma of those baked in a wood oven

MIWE variobake is also a winner when it comes to energy efficiency. Thanks to slow, high-precision counter-heating during the baking process, heating time is reduced and energy is saved. The careful adjustment of power also protects the material and minimizes harmful emissions

The system has now been successfully installed in many bakeries and is well out of its initial testing phase. We'll dispense with further words and cite one example that pretty

much sums things up. After installing MIWE variobake, one of our customers more than doubled its baguette sales.

You'd like to double your sales too? Then you'll be pleased to know that in future all new gas-fired MIWE ideal e+ ovens will feature this new technology. You'll also be happy to hear that your MIWE ideal can be retrofitted with MIWE variobake as long as you have the MIWE TC control system.

It's easy to use. Generally all you have to do is enter a thermal oil baking program (or its exact temperature curve) in one of the 8 program sections of the TC control system. In this way, even complex temperature curves can be easily modeled. As always, our experienced master bakers and dough experts are only too happy to offer their assistance

Our ultimate goal is to help you bake better products and increase vour sales.

Energy snoop

detects potential

*The new* It's one of the basic principles *MIWE eco:control* we follow when optimizing energy efficiency in bakeries: Heat that energy savings is recovered must be used as directly as possible; otherwise it will dissipate into the void and never get used.

> That's why a good energy efficiency concept for a bakery should always include a detailed analysis of loads. or "drains" as experts call them. How much heat is being used at which temperatures and when

(during the day, during the week, over the course of a year)?

During the planning phase, these analyses can be performed using baking plans and information about how production is organized. But neither is written in stone. With new construction projects, baking plans and production organization plans are just targets that can change at short notice once the business is operating. To ensure that recovered energy is optimally



used over time, you need a tool that allows you to clearly identify and easily control heat levels and flows of the loads in your business.

One such tool is MIWE eco:control, which logs and displays detailed information about the heat potential and corresponding behaviors in the individual accumulators.

This log can be used to quickly identify surplus energy and any bottlenecks, trends or even errors, and take measures that ensure optimal usage of the potential energy available. With its control function, MIWE eco:control distributes energy flows to loads based on demand and always sends these flows where they are currently needed.

In this way, MIWE energy tackles one problem after the other. The final result for you is maximum cost savings. ■

It might not look like it, but even a non-expert can easily read this graph, which is used for measuring performance as well as improving energy efficiency.

Highlighted in pink: You can clearly see that each of the three recovery groups (refrigeration: 45°C / steam: 60°C / flue gas: 85°C) is working in its optimal temperature range and is therefore providing the entire temperature spectrum for various loads according to their needs.

Highlighted in light blue: Low drain rates are proof of excellent tank insulation.

Highlighted in yellow: Here, the temperature is only dropping in the lower area of the tank, especially in the flue-gas accumulator and in the steam accumulator. This means that there is significant energy surplus, which can be used to improve the efficiency of other loads until all temperature curves successively drop in an even fashion.



19.07.2013 08:49:00 20.07.2013 04:54:00 21.07.2013 00:59:00 21.07.2013 21:05:02 22.07.2013

Temperature accumulator 3 flue gas upper

Temperature accumulator 3 flue gas middle

Temperature accumulator 3 flue gas lower

# Full steam ahead

The right amount of moisture is essential for a high quality baked product. This applies equally to dough making and refrigeration, but it's even more important when it comes to the baking oven. Injecting and removing steam correctly is just as an important factor in creating perfect products as correct temperature adjustment. We recently looked at conventional steam technology by examining our MIWE thermo-static thermal oil wagon oven and developed a completely new patentpending system that combines the advantages of optimum steam output and optimum steam quality: MIWE atmo-jet.

#### *First, a little steam theory*

When bakers inject steam, they are systematically introducing large quantities of water vapor into the baking chamber. One liter of water at a pressure of 1 bar and a temperature of 100 °C is sufficient to produce about 1,700 liters of steam. Therefore, with several liters of water, even large baking chambers can be quickly and evenly injected with steam.

Every bakery apprentice knows the purpose of this: At 100 °C (and above), the hot steam condenses into tiny droplets on the 30 °C surface of the dough pieces. This condensate keeps the surface of the dough piece moist and elastic as its volume increases as a result of oven spring, thereby preventing tears in the product. At the same time, the rapidly condensing steam transfers large amounts of heat to the product. About 20 ml of water condenses on a 1 kg loaf of bread. Approximately 45 kJ of condensation heat is released - roughly 30%

of the amount of heat required for baking the bread. Finally, the moisture on the surface promotes the formation of dextrin, which has positive effects on appearance (shine) and taste.

So far so good. However, not all steam is alike. Therefore, it is not only the amount of steam available or the recovery rate that determines the effectiveness of a steam device, but the quality of the steam that it provides, along with the speed and evenness with which this steam is distributed in the oven system.

For bakers, the ideal steam is saturated steam. This is created when water is heated to the boiling point and more energy is added until the water turns into steam. This evaporation (or saturated steam point) depends on the temperature and pressure and is plotted on a "saturated steam curve". Strictly speaking, saturated steam represents a delicate balance between evaporation and condensation. This is what makes it so valuable for bakers. Saturated steam immediately condenses in the form of tiny droplets on cold surfaces (such as a dough piece in the oven).

If you heat steam beyond the evaporation point, dry steam appears, followed by **super-heated steam**. This steam has gaseous properties and could easily be described as water gas if this term were not used for a totally different kind of gas (synthesis gas). Super-heated steam has a higher temperature (at the same pressure) and a lower density than saturated steam. It is excellent for running steam turbines and transmitting steam over long distances. However, it is not good for baking ovens because MIWE atmo-jet – the new steam technology for the MIWE thermo-static

MIWE atmo-jet: The new steam technology for the MIWE thermo-static.



it condenses very slowly and because of its high temperatures, it very quickly transfers an undesirably large amount of energy directly to the product.

For the sake of completeness, we should mention **wet steam**, the type of steam we're usually referring to when we talk about (water) steam: This is the visible mist of evaporated water droplets that you see when you're cooking (after a short saturated steam phase) or on the spout of a boiling kettle. In wet steam, parts of the gaseous water have already condensed back into water droplets. As a result, it is not very suitable for baking as the condensation is supposed to take place on the dough pieces and not beforehand.



#### Steam and thermal oil

Ovens heated by thermal oil generally tend to overheat the steam. This is because the high energy content of the thermal oil continues to heat up the steam as it enters the baking chamber, especially if it remains there for a long time. With thermal oil systems, it is especially important to provide not only sufficient saturated steam, but also to ensure that it is quickly and evenly distributed throughout the baking chamber so that it can immediately have its full effect before it over-heats.

This is precisely where MIWE atmojet comes in. At the heart of the new technology is compressed air. However, its main purpose is not to convey the steam in the baking chamber, as you might imagine. Instead, the compressed air is mainly used to break down the water into extremely tiny droplets via a system of jets as it enters the steam generator. In the steam device, this fine mist settles across the surface of the steam generator (and not just in certain areas, like with conventional water jets). In this way, the entire surface of the steam generator is moistened and utilized much better (which also translates to less water consumption). This rapid process of evaporation produces saturated steam with much greater pressure in the baking chamber when compared to conventional systems. Our series of tests showed that baking chamber pressure increased by two and a half times (with the same amount of steam). In this way, the steam is available in the baking chamber in fully pressurized form so that it can produce its positive effects before it risks overheating



The amount of steam during the first few seconds is crucial. As much steam as possible must condense before it overheats. As the graphic shows, MIWE atmojet produces steam much faster with approximately 2.5 times the pressure.

by remaining in the chamber too long.

Of course, MIWE atmo-jet also uses compressed air to quickly remove the steam from the baking chamber when the flue is open.

As a result, the baking chamber is no longer affected by the current weather conditions and external pressure conditions.

MIWE atmo-jet is now available for all models of MIWE thermo-static and can be easily retrofitted, if you already have this oven system in place. If compressed air is already being used for other purposes in the bakery, it can also be easily used with the MIWE thermo-static. It's also totally food-safe. We completely remove the pneumatic oil, which is often added to the compressed air as a fine spray, using a breathing air filter. In other words, you supply the compressed air port, we do the rest.

And even if you aren't currently using compressed air in your bakery we can install MIWE atmo-jet for you. All you need is a low-volume compressor. We'll be glad to help you select a compressor and design your specifications.

Still uncertain? Give it a try! With MIWE atmo-jet, you'll finally have enough saturated steam. That means you'll have everything you need to bake even better products. And as you know, that means one thing for you: Even better business. ■

Here are the results: Perfect crusts, perfect shine. Delicious!



## Success stories

MIWE energy in practice



When MIWE unveiled its comprehensive concept for energy efficiency in bakeries at IBA 2009, we were very much alone in the field. That's just how it is when you're a pioneer. Since then, one or two other companies have jumped on the bandwagon. Some of them have not been very original and simply copied us by using the word "energy" in their product names or by brazenly knocking off our energy calculators. However, fancy names and marketing gimmicks are not proof of actual competence. The only way to prove expertise is by demonstrating successfully completed projects and smooth ongoing projects that keep the promises that were made.

As the company with the most extensive experience with improving energy efficiency in bakeries, we have many such projects under

" I would again decide for MIWE. A system of this size can only be designed with experience and highly developed technology."

> Peter Görtz Bäcker Görtz GmbH, Ludwigshafen/Germany

our belt. In fact we have such a wide range of successful projects that we can only present a few of them here.

#### Twenty-three baking ovens – two chimneys

They were looking for a solid, modern solution for energy recovery in their new bakery, fail-safe systems



and the highest possible rate of recovery. In short, the best overall concept available in today's market. This is a summary of the requirements listed by Bäcker Görtz GmbH in Ludwigshafen, Germany. The concept had to include 20 new MIWE roll-in e+ rack ovens as heat supply systems, as well as three existing rack ovens.

Launched just four years ago: The MIWE energy island at IBA in Munich. "We not only achieved the savings they quoted to us, we actually exceeded them by far."

Oliver Platt Bäckerei Evertzberg, Remscheid/Germany

With approximately 6,200 kg of dough per day, about half of which are wheat buns and rolls, which have a significant steam potential, the MIWE eco:nova was the only



option for an energy recovery system. Two of them (type 960, the largest available model) now recover the waste heat from the entire battery of rack ovens. This is why the entire system requires only two chimneys for flue gas – a huge cost advantage for bakeries. After analyzing the customer's baking calendar, MIWE predicted that the customer "The implementation planning process was smooth and easy. MIWE also handled planning of the chimney systems and integration of the local heating system."

> Oliver Platt Bäckerei Evertzberg, Remscheid/Germany

would save 505 kWh of energy per day. In fact, the energy savings were about 900 kWh. To a minor extent, this was also the result of a roughly 20% increase in production volume after the system was installed. However you look at it, one thing holds true: We deliver more than we promise.

#### Recovering energy from an array of baking ovens

At Evertzberg GmbH & Co KG in Remscheid, Germany, the challenge was somewhat different. There, in addition to four MIWE roll-in e+ deck ovens, a tube coil oven and a thirdparty thermal oil deck oven needed to be integrated into the energy recovery network.

Here too, the company needed a reliable overall concept and wanted to keep the number of interfaces to an absolute minimum. Also, there could be no reduction in production area. No problem for the MIWE energy planners. They simply hung the three MIWE eco:nova (two 640 models, one 480 model, one each for every oven system) from the ceiling. With an output of 7,500 kg of dough per day, which includes 6,000 kg of bread and 1,500 of wheat buns and rolls, the bakery now saves about 865 kWh a day, whereas we had predicted only 710 kWh. ⊳

Centre image: At Bäcker Görtz, over 20 baking ovens manage with only two chimneys.



No space for future-proof energy recovery? The MIWE eco:nova doesn't have to be installed on the floor – at the Evertzberg bakery it was simply hung from the ceiling.

#### Complete system concept – ready to bake in ten hours

Six new MIWE roll-in e+ rack ovens and two new MIWE ideal deck ovens are the centerpiece of the project at Bäckerei Konditorei Bolten GmbH in Duisburg, Germany. Here too, the company mainly wanted to achieve maximum energy savings and be able to prove it

"The systems provided by MIWE feature a wide range of options for displaying and monitoring heat quantities and temperature cycles. This can be displayed via a touch screen, via building controls systems or over the Internet."

> Tim Schenkel Bäckerei Bolten, Duisburg/Germany

(so they could apply for government subsidies), but the Bolten bakery wanted even more:

A complete thermal system concept with buffer tanks, fresh water modules and intelligent control systems, as well as an impressive solution for the chimney system and the entire hydraulic system. Of the two concept options proposed, the bakery opted for the one with the MIWE eco:nova 960 as it would centralise the chimney system. Later enhancements can be integrated without adding any further openings in the ceiling. One could call it a "plug'n bake" scenario.

After conducting a full analysis based on the baking calendar and load data, we ensured that the customer would save 335 kWh per day. In fact, the customer achieved 340 to 490 kWh a day, and that was with a much higher water temperature than originally planned. The nicest thing about all this: It took just ten hours to uninstall the old system, install and launch the new oven systems and get the MIWE eco:nova up and running. Everything went smoothly (thanks to the 3D planning of our engineers).

Imagine saving 400, 800 or even 900 kWh per day – it you do the math, it's easy to see how much this would lower costs in a bakery. But MIWE energy not only helps large-scale operations save money, it also helps absolutely any bakery that bakes, refrigerates or freezes products.

The crucial advantage of MIWE is our thorough analysis of the products and processes in a bakery. No doubt, this can take time during the start-up phase, but it's the only way we can reliably forecast the actual monthly savings possible for you. After four years and dozens of successful projects, we're proud to report that the savings predicted in our projects were always achieved and usually even exceeded. Out of principle, our forecasts are conservative and cautious. But the result is that our customers usually save more energy in their daily operations than we originally promised. Our systems pay off even earlier than expected.

Unfortunately, this is by no means the norm for projects everywhere. We know of systems that cost up to half a million euros that had to be uninstalled after only six months because they ended up using more, not less energy than originally expected and even promised.

> " In our new facility, we have three times the baking area than we did before. At the same time, we now use much less energy."

Marcus Staib Bäckerei Konditorei Staib GmbH & Co. KG, Ulm/Germany

As you can see, it definitely pays to stick to reliable and dynamic partners with proven experience if you want to improve the energy efficiency of your bakery. As you know, there's someone we can recommend with confidence...



We promised 335 kWh per day, and they actually save 340 to 490 kWh. The entire system, including baking ovens, was installed and launched in just 10 hours. That's MIWE for you.

# Batches better than lines

For many bakeries, a tunnel oven can turn out to be a dead-end choice.

MIWE has a more flexible alternative for those who want to upgrade: Automated batch production for high throughput. For many years, tunnel ovens were considered the best baking oven system in the industry for upwardly mobile businesses. No other bakery concept, no other oven system seemed to be nearly as effective in handling firm increases in sales and throughput. In fact, production line concepts and tunnel ovens are a serious option when the goal is to bake similar kinds of products with similar baking requirements in large quantities, preferably in mono mode and around the clock.

However, many bakers cannot (and do not want to) meet these criteria. For bakers who maintain a full range of products and like to leave room for flexible modifications, the obligation to meet certain sales targets is not appealing, as it would lock them in for many years if they opt for a rigid production line concept. Nor are they attracted by the limited flexibility this decision would mean for their product range and business organization.

For example, businesses that install systems with a capacity to produce 100,000 pretzels a day are committing themselves to actually selling this amount every day and every year, even long after new trends and changing eating habits have called for totally different product ranges or bakery concepts. When it comes to large oven systems, ensuring full capacity utilization over a period of many years is what really counts when assessing the longterm payback. Of course, a production line concept usually allows bakers to produce similar types of products, but every modification costs time (since usually not only



the baking oven but the whole production line must be unloaded first) and therefore eats away at the original amortization assessment. Also, the flexibility of line concepts is highly restricted because the baking process is implemented in a rigid line. Even if belt speeds change and individual zones can be individually controlled, a tunnel oven does not serve as a flexible universal oven.

However, it is precisely this flexibility that forward-looking bakeries are looking for. Who can predict which seasonal, regional or suddenly trendy products might mean the business of a lifetime for a bakery in a few years from now, and who can tell which products they will need and which batch sizes will be required? We have observed that product ranges are now tending to get broader, while batch sizes are getting smaller, especially at large in-store bakeries.

In the past, we have not been surprised when customers who originally had their eyes on a production line concept (that is, a tunnel oven) did a critical assessment and thorough analysis of their opportunities for growth and ultimately opted for a more flexible concept: Highly automated batch production with a MIWE athlet loading robot and a deck oven system like the MIWE ideal (flue-gas) or the MIWE thermo-express (thermal oil). The hourly output possible with these products is only limited by the timed cycles of the MIWE athlet and easily meets the needs of many bakeries, especially since this output can be dramatically increased by doubling systems.

If you know exactly which types of products you're going to be baking in the next 15 years (and that your customers will be buying these products in sufficient quantities), a production scenario with tunnel baking ovens is hard to beat... Here are some examples. With a combination of the MIWE athlet and a 36-oven MIWE ideal and a baking time of 50 to 60 minutes, up to 1,440 1 kg loaves of bread can be baked in an hour. At 20 production hours per day, this would after all mean a daily output of nearly 30,000 loaves.

The scenario is similar for baguettes. At 300 g each and an oven deck load of 80 loaves and a baking time of 25 to 30 minutes, up to 3,200 loaves can be baked per hour in a 12-oven system. This comes to 64,000 baguettes in a 20-hour day. Or let's take Kaiser rolls, for example. At 70 to 80 a for each roll, 320 rolls per oven and a baking time of 15

...but if you want to maintain flexibility in every respect,

a future-proof batch production to 20 minutes, 9,600 freshly baked automatic batch production with MIWE scenario will better suit rolls are produced per hour on solutions is that these high throughvour needs.

- that means almost 200,000 rolls per day. Of course, the quantities specified here are just reference points; real hourly output depends on the type of product (and loading scenario), item weight and required baking times. Depending on your individual situation, output may be less, but it can easily be more. Our baking technology experts will be glad to calculate the hourly output you can expect for your particular product and will also tell you which baking oven system and number of ovens will best meet your needs.

a 13-oven MIWE thermo-express

No matter what the situation, high throughput is always guaranteed. However, the great advantage of

put rates are possible for ONE product, but are not absolutely necessary for long periods or all the time. There are several advantages to this.

With our deck oven system, each oven is a baking chamber in itself and features its own control system, which can therefore bake any product with a fully customized baking program. Usually, three ovens are consolidated into one group with a common temperature. This creates flexibility with respect to the future (since the new or modified products or new batch sizes can be easily integrated into the system at any time) as well as in terms of daily organization.

Do you want to have a different product range on Monday than on Saturday? Do you want to implement



a second, manually operated docking station alongside the automated main line? No problem. ▷



#### Automation



With the unit control system, you can feed two different products and freely select ovens. This also allows for different daily or weekly plans. If a tunnel oven is designed for 2000 kg bread per hour, but for whatever reason, the pre-processing delivers only 500 kg, then you have a problem. The intervals between the products quadruple and the baked products turn out too dark. Because there are no baked goods with a "cooling" function, the baking oven is at risk of overheating. Uneven products are usually the result. Even with multi-hearth tunnel ovens, spaces must be added in order to maintain quality. What if you had this kind of supply bottleneck with an automated batch system? No problem.

If you are planning to use only certain parts of the system, with automated batch production you can simply switch off unneeded groups of hearths. This saves valuable energy. In a tunnel oven, if one hearth fails, the entire line fails. With the automated batch system, if a single oven fails (which rarely happens with MIWE products anyway), or individual oven groups or heating circuits are purposefully switched off, you can simply continue baking in the other ovens – simply choose the desired usage scenario on the controller of the MIWE athlet, and you're back in business.

And let's not forget automation. At the heart of the entire system is the central control system. It monitors the pre-heating time of the ovens, it chooses the necessary baking programs, it controls the MIWE athlet loading robot and ensures that products are inserted and unloaded in the right oven at the right time. It can follow an existing baking plan, but manual control is also possible (if you have permitted this in the control system).

When it comes to pre-processing and proofing systems, all the standard technical options are open to you with automated batch production, whether you need a basket proofing chamber, a board proofing unit or a conveyor-belt proofing unit or a totally different system. This also applies to the removal side. You have a full range of options here, including everything from spraying to a cooling line to a froster coil. Plenty of options.

And did we mention that an automated batch system requires much less floor space than a tunnel oven? So given these facts, don't you think that automated batch production based on the MIWE concept is a more effective alternative for your specific needs?

Regardless of your requirements, our engineering team is looking forward to hearing from you. ■

- *Fair dates*
- ANUGA Cologne / Germany 05.-09.10.2013
- IBIE Las Vegas / USA 06.-09.10.2013
- Südback Stuttgart / Germany 19.–22.10.2013
- Serbotel Nantes/France 20.–23.10.2013
- Alles für den Gast Salzburg / Austria 09.–11.11.2013

### Euroshop Duesseldorf/Germany 15.–19.02.2014

- Gulfood
  Dubai / VAE
  23.- 27.02.2014
- Europain
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  08.-12.03.2014
- INTERNORGA Hamburg/Germany 14.–19.03.2014

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