





# MIWE impulse

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*What traineeships mean for your baking processes*

The “production technologist”, Germany’s latest occupation requiring formal training, breaks down the boundaries of specialist disciplines and widens the focus to take in entire processes – something we at MIWE have been doing for a long time. That is why we are one of the first companies to offer this training.

Traditionally, the occupations requiring formal training are characterised by a certain specialisation. The electrician masters electricity, the mechanic mechanics, and of course the baker baking. However, such narrow, pigeon-holed divisions of labour have long since ceased to apply in most of the world. As you yourself will be well aware: If you want to be a successful baker these days, you simultaneously have to be a business administrator, a marketing manager, a computer technician, a business logistics expert, an energy boffin and a staff trainer – just to mention a few of the more important requirements.

In our industry of bakery equipment construction, things are no different.

More and more often, “narrowly” qualified employees who undertake no responsibility beyond their own pigeonhole find themselves helplessly confronted with an increasingly complex world. We were among the first to introduce formal training as a “mechatronics technician” and “mechatronics technician for refrigeration technology”, bringing together the closely-related mechanical and electronic aspects of modern plant engineering right from the beginning of the traineeship.

For the same reason, we were happy to contribute when the Education Committee of the VDMA (Verband Deutscher Maschinen- und Anlagenbau – German Engineering Federation) was developing the new job specification for “process technologist”, which was finally adopted by the German government on 1 August 2008. Immediately afterwards, we took on Lorenz Scheller as our first trainee for this job specification (and only the second in the whole of Germany!).

The production technologist learns how to comprehensively analyse, develop, implement and safeguard complex production processes from the ground up. The typical “I’m all right Jack” attitude of the compartmentalised and blinkered way of thinking has no chance here, since the production technologist grasps everything he or she does as a whole, and is responsible for making it work across all areas.

In addition to the manufacturing of production equipment (including configuration, installation, maintenance and operation), the production technologist’s field of activities also includes production ramp-up, meaning the start-up of the production equipment after pilot or pre-production runs; and “the implementation of processes”. This means nothing less than the configuration and ongoing maintenance of entire production processes.

Production technologists know their way around classic manufacturing processes and innovative production

technologies and know how to use them to the best advantage. Adherence to quality standards is an extremely important aspect of this. Project work, an organisational form inherently designed to overcome compartmentalized thinking, and oriented towards achieving common goals, plays an important role even at the training stage.

Why am I telling you all this? Because we are convinced that it is only when exact, thorough knowledge of the processes in the bakery coincides with thoughtful, comprehensive mastery of our manufacturing processes that solutions will arise to make your life as a baker truly easier in the long run. Thinking in terms of the big picture and working in close contact with our customers is what allows us to develop products and services to support both your business and ours into the future.

**Looking beyond narrow confines, finding the one right path in the multitude of possibilities, and interweaving complex disciplines – future generations will have to learn these skills more than ever.**

Sabine Michaela Wenz

# Intelligence...

*Quantum leap  
in bakery  
refrigeration*

**The use of the MIWE TC in bakery refrigeration brings quality improvements that will really warm your heart. We show you all the possibilities of the new control system.**

A new control system in refrigeration – that's all well and good, you will probably say.

Everything will be simpler, maybe a little bit more colourful. Absolutely right. But the the real advantages of the new MIWE TC in bakery refrigeration lie elsewhere: In the quality increase that can be attained.

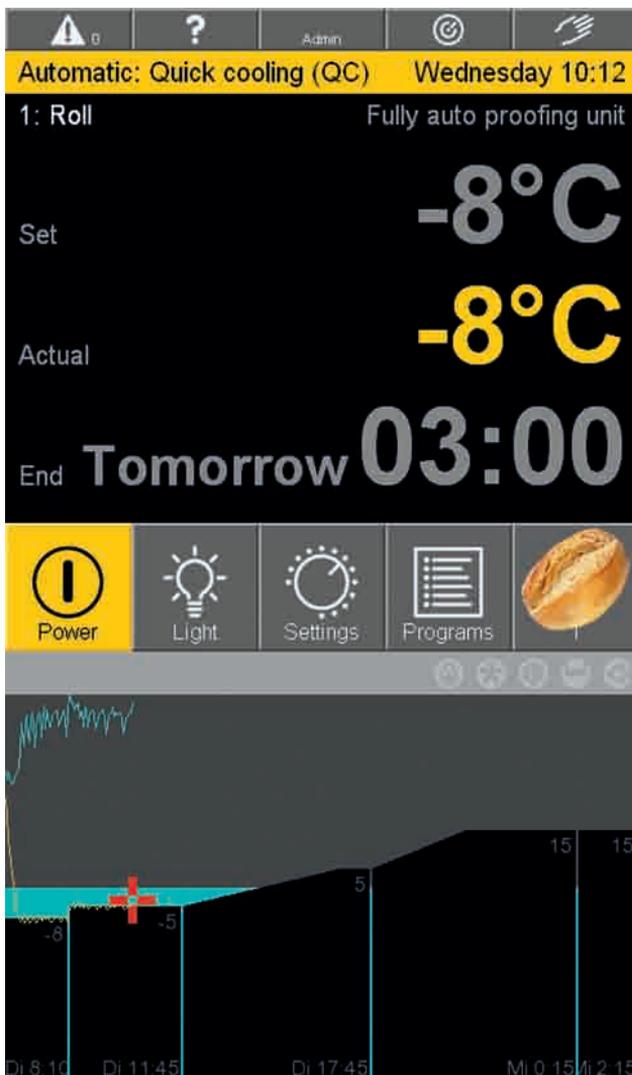
In the flexibility which allows you to achieve every fermentation process curve. And in the energy consumption, which can be considerably reduced by means of the MIWE TC.

There is no question about it – you will also get more comfort with the MIWE TC. The large, clearly laid-out touch screen display is very easy to use and allows programming of up to 99 different programmes each with up to 8 different phases which can be variably programmed. With the MIWE TC, you can always see at a glance which section your climate control programme is in, as the curve is graphically displayed with the current process status clearly indicated on it.

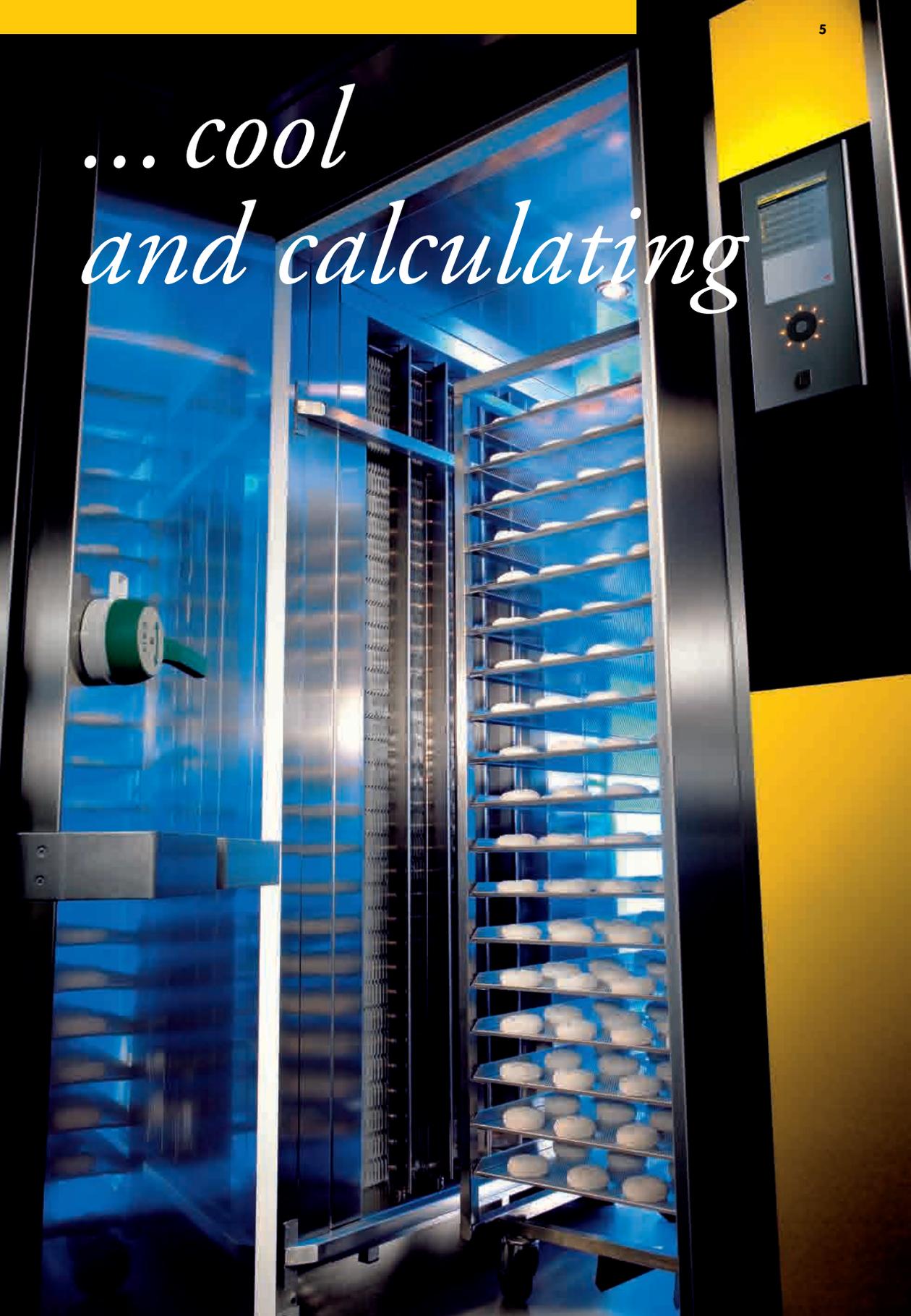
This easy handling is not the only advantage, however; there is also the precision with which the MIWE TC actually processes your temperature and humidity specifications. The new control system is considerably more powerful, enabling us to integrate much more precise sensors into the MIWE TC and also to process that

**The MIWE TC is used wherever its strengths best come into play; that is, in any systems that operate according to precisely regulated temperature-humidity curves. This is particularly the case with the fully automatic MIWE GVA proofing unit, the MIWE GV proofing retarder, the MIWE GUV proofing interruption unit, and the MIWE SF flash freezer (illustration right).**

**Due to its completely new system engineering, the MIWE TC is only available for new systems.**



*... cool  
and calculating*





#### The energy package

- ▶ **Quality improvement:**  
Extensive reduction of product dehumidification by means of the precisely regulated "Delta T"; restorative humidification at another stage is no longer necessary
- ▶ **Energy-efficient, infinitely adjustable control of the refrigerating machines / compressors using frequency converters**
- ▶ **Further performance optimisation in extremely high ambient temperatures**
- ▶ **Energy-saving: Fewer and shorter defrosting cycles thanks to reduced build-up of ice on the evaporator**
- ▶ **Even greater optimisation of refrigerant flow allows improved power output**
- ▶ **Highly efficient humidity and temperature control precisely following the target curve**

higher measuring precision with great computational accuracy. That alone allows units with the MIWE TC to achieve considerably better climate control accuracy.

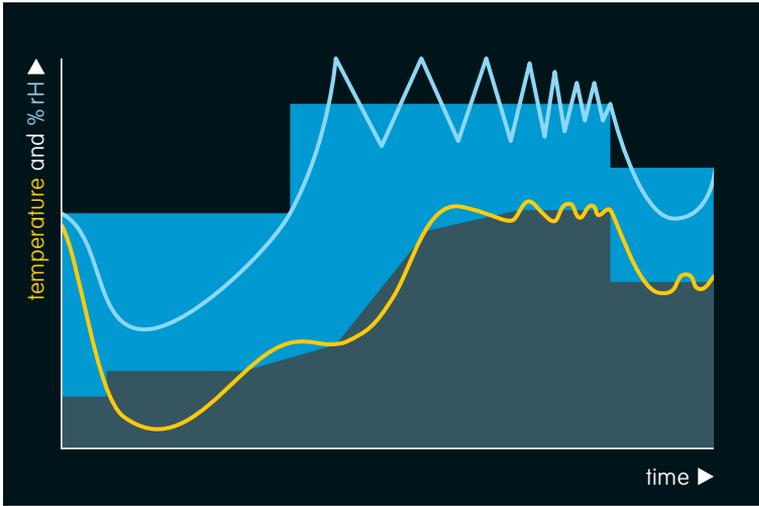
The refrigerating unit is even more climate-accurate if you decide on purchasing the MIWE TC with our "energy package". This way, you have the unique possibility of adjusting the temperature difference between the evaporator and the ambient air, the oft-quoted "Delta T", with maximum precision according to the requirements of each climate control programme or product. For example, you can set a higher temperature difference for flash freezing and a lower temperature difference for long fermentation – and you can do this individually for every single programm section. Thanks to this energy package, the refrigerating unit follows your target curve exactly, without any undershooting or overshooting, so much so that some users have asked whether the unit is actually working because the actual process curve follows the target so closely.

The adjustable "Delta T" has two basic effects: On the one hand, the evaporator always works in its optimum output range. It is under less strain and, as a consequence, the entire unit requires less energy and has a longer service life. Even more important is the consequence for your products: The lower the aforementioned "Delta T" between the evaporator temperature and the room temperature, the less moisture is withdrawn from the products. This withdrawal of moisture, however, is exactly the problem of many refrigerating units, one that is usually "solved" with complicated

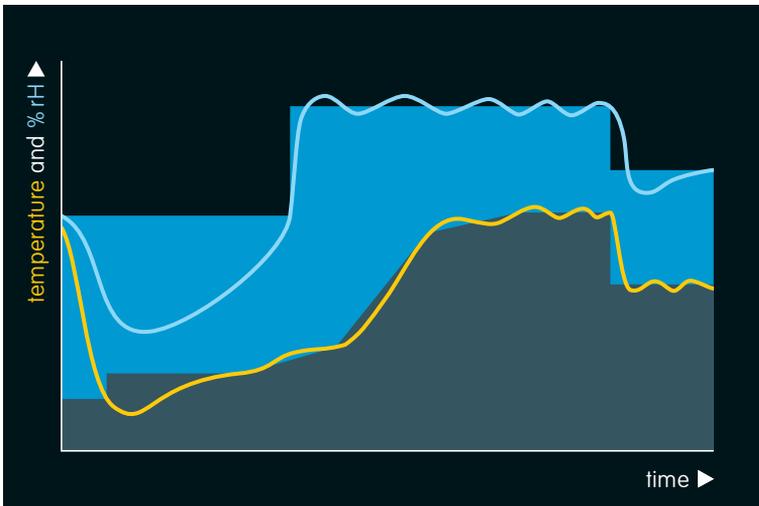
air conduction or inconvenient re-humidification. MIWE refrigeration specialist, Werner Degen, puts it in a nutshell: "Why should we spend so much time and energy rectifying dehumidification damage if we can prevent the damage occurring in the first place?" And it virtually goes without saying that less product dehumidification also means less "humidification" of the evaporator, which in turn means reduced defrosting expenses.

The gain in quality that can be obtained this way with the MIWE TC and the energy package is significant. Master baker Jörg Winkler, who was among the first bakers to use the new MIWE TC in practice, has been producing soft rolls in unprecedented quality ever since. "The quality has considerably improved. The crust, moisture and taste are persuasive. An important step to set ourselves apart from the competition."

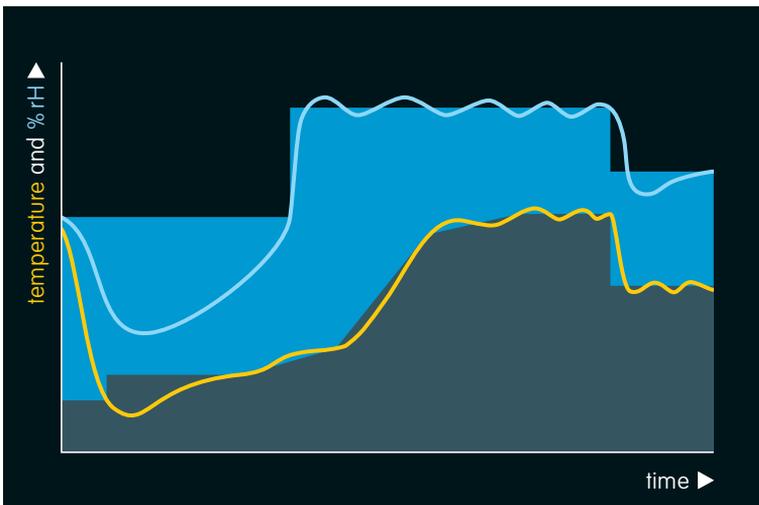
And the investment is well worth it even without the energy package. These days, products are more and more often processed in the low positive temperature range, and fermentation times are generally longer. This saves energy, benefits product quality, and, at the same time, requires a higher accuracy of temperature and humidity control. With the MIWE TC, you can attain this without difficulty. There's also the variety of dough preparation methods: The eight process sections, each with up to twelve control parameters, can be combined in any configuration on the MIWE TC and can also be applied multiple times in succession (with the exception of proofing interruption). All current and all future (!) dough preparation methods



Conventional control system with considerable deflections in the actual process curve.



MIWE TC: Considerable improvement due to the convergence of the target/actual curves.



MIWE TC with energy package: the target/actual curves for temperature and humidity are almost congruent.

■ Humidity target  
— Actual process curve for humidity  
■ Temperature setpoint  
— Actual process curve for temperature

Making your life as a baker easier: Convenient programme change with the tap of a finger (left top), integrated position timer (below), manual mode with perfect control (right top), and ...



can thus be implemented in the simplest manner possible. To our knowledge, no other system on the market currently offers so much flexibility.

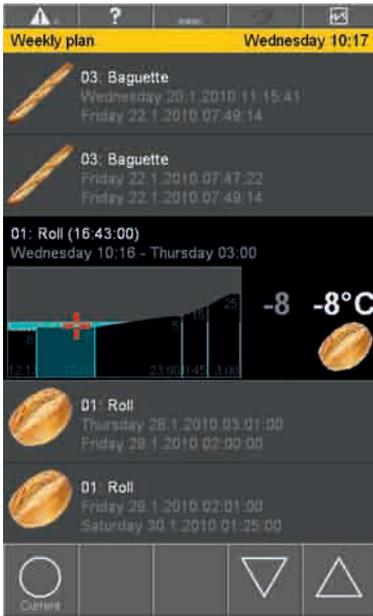
Have we mentioned the practical position display yet? Thanks to this feature, you can start an individual

timer for every loaded trolley (up to a total of six) and for every process phase so that no trolley can be forgotten – for greater peace of mind, especially during proofing and flash freezing.

Of course, the MIWE TC can also be adapted to different utilisation profiles in bakery refrigeration, something you may already be familiar with from your baking ovens – the MIWE TC has its own user administration feature that allows you to create user groups and individual user authorisations. Whether you want to operate your unit in your own individual way manually, in a normal overnight mode (that is, in one-day operation), or in weekly operation with a weekly schedule: In all cases, the MIWE TC will support you in an intelligent manner, regulating who can do what.

With regard to weekly operation: The weekly programme of the MIWE TC offers not only a clearly structured weekly planner with an overview of all planned functions and processes

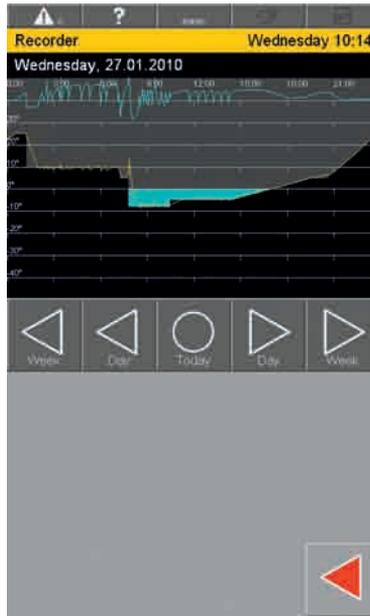




in the future, but also a retrospective overview, effectively providing a process history. This also applies to all programmes, error messages and switching operations.

Since baking processes are time-critical, the MIWE TC can be optionally provided with remote monitoring, which safeguards your processes even more intensively by allowing not only quicker reaction times, but also a better overview of the possible causes of faults. Our use here of Ethernet and the TCP/IP protocol known from the Internet will hardly surprise you; in this way, the whole world of these well-established industry standards is at your disposal.

One final point concerning process stability: MIWE refrigerating machines, and especially composite plants, retain their own intelligence even when the MIWE TC is used. This means that if the MIWE TC should ever defy all expectation and break down, the operation of the machine will simply continue.



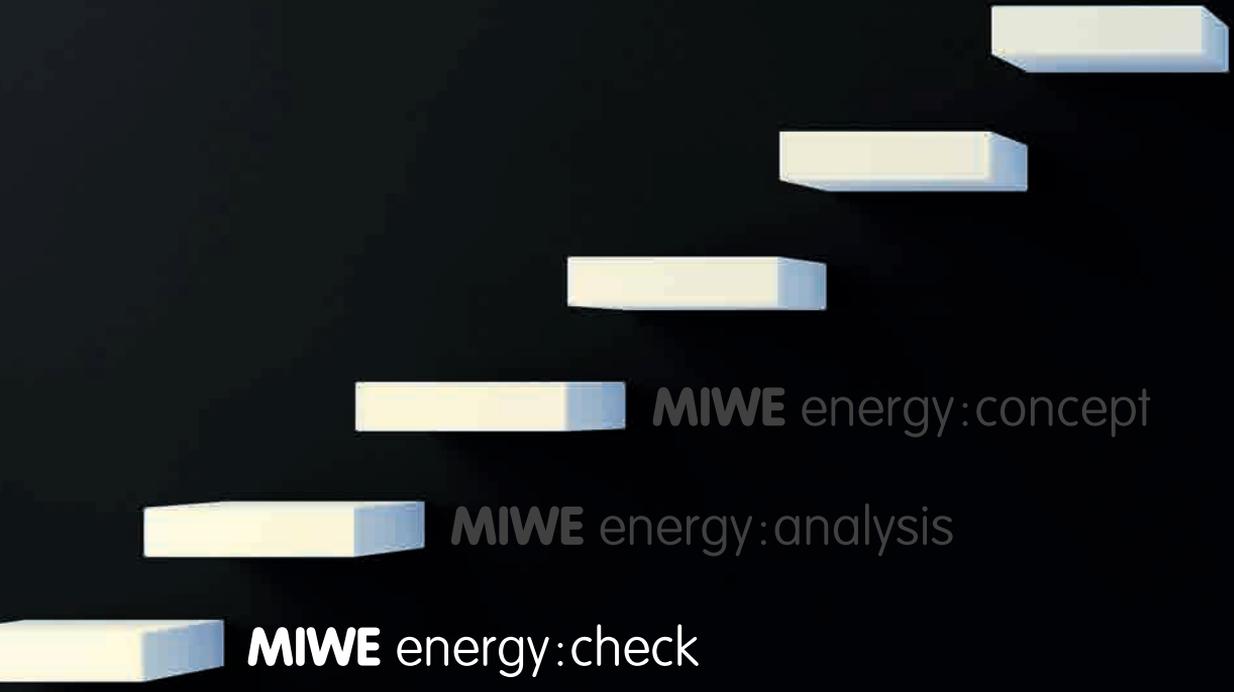
... weekly overview with scroll up/down function (left top) and a detailed recorder, which simultaneously archives (right).

Meanwhile, an expert at MIWE will already be working to remedy the problem, provided you have booked the corresponding after-sales service.

Which is just the way it should be. Because ultimately, it's all about making your life as a baker easier. ■

**High-speed remote servicing and assistance are already a reality for MIWE thanks to state-of-the-art networking.**





MIWE energy:concept

MIWE energy:analysis

MIWE energy:check



# *Hidden riches*

**Have you ever thought about how high your energy costs actually are? Including gas, oil, and electric power?**

Has it ever occurred to you that a large portion of the heat that you need every day to make your baked products disappears unused through the chimney? While you regularly pay high sums for heat elsewhere,

for example to heat your premises or water?

Many bakers are now considering heat recovery systems. And they would like to have answers to two questions: how much energy is there actually in my bakery? And how can I use that store of energy in a sensible, cost-saving manner – without harming the quality of my

*The costs of energy are on the rise again.  
This alone is reason enough to think  
about heat recovery in your bakery.*

*Getting started is really easy.  
We show you how.*



# *in your bakery*

products or the stability of my processes? A concrete recovery or energy composite system is often not yet their prime concern, but rather they are looking for a realistic estimation as to what potential is available and which general solution is feasible at what expense.

We developed the MIWE energy:check for precisely this purpose

– as a basis for bakers to decide on their further course of action.

Without obligating customers to a purchase, MIWE energy:check is affordable and provides answers to the most urgent questions, such as: what does the energy balance sheet of my company look like? Where is my energy consumption and CO<sub>2</sub> balance in comparison

**Energy-saving starts with getting all the facts “on the table” – by compiling and querying all the relevant parameters. This is the task of the MIWE energy:check.**



Introduced first at iba 2009, MIWE energy is in step with the demands of the age.

This comprehensive approach leaves nothing out – whether energy optimisation, heat recovery, combined heat and power, or alternative energies (e.g. biogas – right).

with the industry average? Where can I recover energy in my bakery and to what magnitude? And which consumers can I feed with this recovered energy? In short: Is an investment in an interconnected energy system worth it in my case?

The MIWE energy:check is easy. On our website, you can enter some energy-relevant data for your business (a brief description can be found at the end of this article). We evaluate your data personally and individually and send you a written energy exposé for your business. In this exposé, you will find a comprehensive comparative energy balance sheet showing you your present energy use and which options for savings promise the best results in your case. Sounds good? That's because it is. It's well worth taking the trouble of entering your operating data. We need this data so that we can get started and ob-

tain a realistic idea of the energy situation of your business. For the MIWE energy:check, you should have on hand all the data that relates to your energy consumption and costs. This data could include the statements from your public utilities from the past year, for example. Or the specifications of your baking ovens, refrigerating units, or washing machines. "Is that really necessary?" a few bakers have asked us. The answer is easy: Yes, it is. Because we believe that quickly installing a heat exchanger based on supposition and good faith is neither honest nor fair towards our customers.

And for three good reasons. Firstly, heat is only ever supplied in the bakery when the heat source (for example the baking oven or, more precisely, the burner) is actually in operation. To find this out, it is not enough to specify when you start baking and when you turn off the baking oven again. It makes a considerable difference whether



the baking oven is used continuously during this operating time or whether there are long breaks between the individual baking procedures in which the burner does not provide any energy for heat recovery.

The matter becomes even more complex when steam is utilised as well (as is usually the case with the MIWE eco:nova). This is in principle very practical since a considerable amount of energy can be recovered in this manner.

The problem is that the amount of available steam depends on the products you are baking. Wheat buns and rolls deliver a lot of energy, while Danish-style pastries or English pies deliver relatively little water-based thermal energy. This is why we always ask which and how many products you bake during the MIWE energy:check. Only in this way we can determine approximately how much energy can be recovered from your system in the first place.

Secondly: Even when the amount of recoverable energy in your business can be estimated with great precision, that is only the first step. You do not want to keep the recovered energy stored permanently in hot water, but rather you want to use it. Therefore we need to find out which energy consumers in your business come into question for the recovered energy.

These could include, for example, a crate washer, or the heating of process water, or central heating of the production facilities, adjacent buildings, or the proofing chamber. Also keep in mind that the energy consumers are often in operation at different times from the energy sources. And that both suppliers and consumers have completely different temperature levels. Baking is done at night, while the crate washer might run in the afternoon. The amount of heating required in the summer will be completely different from the one in the winter. The waste heat from the refriger-

The energy:check is easy:

Go to the Internet site:  
[www.miwe.de/energy](http://www.miwe.de/energy)

Click MIWE energy:check

Create your own user account. Then follow the instructions on the website.

Enter your company's consumption data (at current levels of consumption) in the form. You should have on hand all data relating to your energy consumption and costs, such as your public utility statements from last year, or the specifications of your baking ovens, refrigerating units, or crate washers. You can enter this data bit by bit and regularly save the unfinished entries until you are done.

When you are finished, send your data off.

You will normally get an answer from MIWE within four weeks.





MIWE

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## Products

**Baking Ovens**  
**Refrigeration Systems**  
**Automation**

### Energy

MIWE energy components

energy : check

energy : check form

Process the access

Logout

### Control Systems

### Service

## MIWE energy check

### Production data

Please give us information as accurately as possible. The more accurate your information is, the more accurate the result will be.

The fields marked with an asterisk (\*) are mandatory fields.

How many baked products (dough weight before baking) do you produce yourself per year?*	<input type="text" value="0"/>	t
of which is bread	<input type="text" value="0"/>	t
- of which are half-baked:	<input type="text" value="0"/>	%
of which are small baked products	<input type="text" value="0"/>	t
- of which are half-baked:	<input type="text" value="0"/>	%
of which are fine baker's wares	<input type="text" value="0"/>	t
- of which are half-baked:	<input type="text" value="0"/>	%
Which amount of dough pieces or frozen pieces do you purchase per year?*	<input type="text" value="0"/>	t
Which amount of dough do you bake yourself outside of the bakehouse per year?	<input type="text" value="0"/>	t
Which amount of dough do you supply as dough pieces/frozen pieces per year?	<input type="text" value="0"/>	t
How many hours do you produce per day?	<input type="text" value="0"/>	h
How many days do you produce per year?	<input type="text" value="0"/>	
How many employees do you have in production?	-- Please choose	
Number of supplied branch outlets?	-- Please choose	
Turnover per year (in thousands)?	<input type="text" value="0"/>	€

### Consumption data

Please give us the respective information for 2008

	Oil	Gas	Current	Cold water	Hot water	Flour*
Consumption 08	<input type="text" value="0"/>					
Costs 08	<input type="text" value="0"/>					

How do you heat...	Area m <sup>2</sup>	Type
... Your bakehouse:	<input type="text" value="0"/>	-- Please choose
... Your adjacent store:	<input type="text" value="0"/>	-- Please choose
... Your adjacent private house:	<input type="text" value="0"/>	-- Please choose
... Your adjacent rental apartments:	<input type="text" value="0"/>	-- Please choose
... Other :	<input type="text" value="0"/>	-- Please choose

Which energy form are you using for hot water generation? -- Please choose

How high is your daily water consumption?

Hot water use

Alternative sources of energy

Baking ovens

Do you use a thermal oil boiler?

Refrigeration technology

Do you use combined heating and power plant?

Is energy: check completed?\*

no

ating unit might produce warm water with a temperature of 40 °C, but the crate washer might need at least 80 °C! For the MIWE energy:check, we ask as many details as possible about potential energy consumers in your bakery (and elsewhere on your premises) so that we can give you an idea of where the saved energy can be sensibly used again. Because you need a circulation system that works stably all year round.

And thirdly: When visiting our existing and prospective customers, we now and then come across a previously installed recovery system that does not earn a cent, but rather quite the contrary – it constantly costs money. There are many reasons for this: A pump was connected incorrectly; too little energy is recovered for the intended application and the energy supply constantly has to be supplemented by oil or gas at great cost; or a combined heat and power plant is running around the clock (because combined heat and power plants are supposedly an instrument for printing money) while, next to it, the freely available residual heat from the baking oven disappears senselessly up the chimney.

In short, not everything that claims to be "heat recovery" will actually recover any money. Yet that is of course ultimately the most important goal: to use your heat recovery system to make real savings on energy costs and to reduce your CO<sub>2</sub> emissions. For this reason, we like to be fairly thorough at the beginning and ask for all da-

ta needed for the energy balance sheet of your business. The small effort you make is worth it, because the solution we suggest is geared towards the actual situation in your bakery. And because we also have first-hand knowledge of your equipment and processes. And finally, because we as experts can not only guarantee that your new interconnected energy system will save money, but also that the stability of your processes and the quality of your products will not be harmed.

All that remains is the question of costs. For the processing of the MIWE energy:check, we normally ask a one-time fee of EUR 160.- (not including value-added tax). Compared with the resulting benefit, this is an offer that's hard to beat. Your MIWE specialist consultant, however, might know a way for you to save even this small outlay. Just ask your consultant next time you see each other for a passport for the MIWE energy:check. ■



**Left page: Excerpt from the extensive MIWE energy:check.**

**At home or in your office, you can collect and save your data at leisure whenever you want. When you are done, you can send us your data at the press of a button for analysis.**



*Bakers' academies:  
Where craftsmanship  
rises  
to new heights*



**Baking is an art that requires solid capability. Whoever wants to be a master of his or her business or improve his or her skills in specialised areas of baking will find the best conditions in Germany:**

**The seven regional technical schools of the sixteen regional guild associations are united in the “Akademie Deutsches Bäckerhandwerk” association (“German Bakers Academy”). In addition, all the regional associations together maintain the national technical school “Akademie Deutsches Bäckerhandwerk Weinheim” (German Bakers Academy in Weinheim).**

Like the regional technical schools, the national technical school is a non-profit institution. The objectives of the educational institutions have been clearly written down in their respective charters. Here, two goals are prominent: further training for the bakery trade and its related professions and the promotion of artisanal food production.

In addition to the master craftsman’s traineeship (which is also offered at Weinheim), the regional technical schools conduct company-independent apprentice instruction (“Überbetriebliche Lehrlingsüberweisung”, or ÜLÜ), which is known as a company-independent traineeship elsewhere in Germany (“Überbetriebliche Ausbildung”, or ÜBA). Furthermore, the schools offer training courses on specialised topics relating to all things which constitute a baker’s bread and butter. And these days that is a great deal. The course topics range from special recipes, seasonal and regional baked goods, and the handling of special grain varieties (whether organic, gluten-free, or ancient wheats) to “front-of-house baking”, baker’s catering, food photography, manage-



Agile hands during a stollen seminar in Weinheim.

ment development, efficient bakery organisation, marketing for bakers, and sales training. There are good reasons why most schools have started offering the master craftsman’s course in combination with a “business administrator for trade” traineeship.

Sometimes, the different schools help each other with courses and instructors. In Weinheim, where the “academic” activities are coordinated for the entire country, specialised training is conducted for the professional purchasers of the German Federal Armed Forces, as well as federal-govern-

The teaching bakery in Weinheim.



German baking art is in demand: Course participants from India, Australia, and Nigeria are not at all uncommon.



**Akademie Deutsches Bäckerhandwerk Weinheim e.V.**

**Im Waldschloss  
Gorxheimer Talstraße 23  
D-69469 Weinheim/Bergstraße  
www.akademie-weinheim.de**

**Director: Bernd Kütscher;  
Four permanently employed  
specialist teachers, plus about  
two dozen adjunct instructors**

**Approx. 2,800 course participants p.a. (no apprentices).**

ment-funded organic baking courses, which are also passed on to the regional technical schools. We lately had the opportunity of visiting two of these educational institutions for MIWE impulse: the academies in Weinheim and Lochham, which respectively baked the Swabian and Bavarian

pretzels that feature in our report elsewhere in this issue. You will find an overview of all the regional technical schools on the website of the German Bakers Academy ([www.akademie-baeckerhandwerk.de](http://www.akademie-baeckerhandwerk.de)) under the menu item "Portraits der Fachschulen" (portraits of the technical schools).

Something which is garnering much attention from the school principals is the proportion of foreign nationals among the students, which has become quite impressive. Highly-rated German know-how is clearly in demand worldwide. In Weinheim, 15% of the students are now from other



countries. These prospective master bakers come above all from Japan, Ireland, Iran, Brazil, and South Tyrol – many of them come shortly before Christmas when the German bakers generally have no time for training courses.

“The bakery trade has still a lot of potential,” says Academy director, Bernd Kütscher (Weinheim), looking ahead confidently. “We simply have to focus on producing good food-stuffs with our own hands from first-class raw ingredients and selling them emotionally. We communicate the complete range of expertise required to do this, from recipes to marketing, right up to management qualifications, which are particularly in demand.”

Arnulf Kleinle, principal of the Bavarian Bakers Academy (“Akademie des Bayerischen Bäckerhandwerks”) in Lochham (near Munich) agrees: “For us, it is important to keep the baker’s qualification at a high standard and, in the end, the quality of the bakery products as well. From the start, we want to attune the course participants to the motto “Want more”.

It’s a recipe that has turned out well. A course participant wrote in the guest book in Lochham: “From your time in Lochham you take away with you not only the title of master baker, but also a bit more life experience and personal maturity.” Better praise would be hard to imagine. ■

**The perfect mix of theory and practice: Course participants full of concentration in Lochham (top). Here, not only were combined courses (master craftsman/business administrator) conducted for the first time in 1999, but specialised courses too – like e.g. baking with ancient grains – have been firmly established since 2009. Bottom: Sales training in Weinheim**



**Akademie des Bayerischen Bäckerhandwerks Lochham**

**Bayerische Bäckerfachschule  
Josef-Schöfer-Straße 1  
D-82166 Gräfelfing**

**[www.baecker-bayern.de](http://www.baecker-bayern.de)**

**Principal: Arnulf Kleinle;  
Three permanently employed specialist teachers, and about 15 adjunct instructors**

**Approx. 1,500 course participants p.a. (of which 1,000 are apprentices).**

# *The "pretzel test"*

*We compare six fermentation and baking methods*



How do fermentation methods and oven systems that are actually quite different affect the pretzel? We wanted to know exactly and asked qualified and impartial experts for help: Master baker Arnulf Kleinle, the principal

of the Bavarian Bakers Academy, provided us with all his know-how and his teaching bakery in Lochham near Munich for an entire day – for which we would like to take this opportunity to say thank you very much!

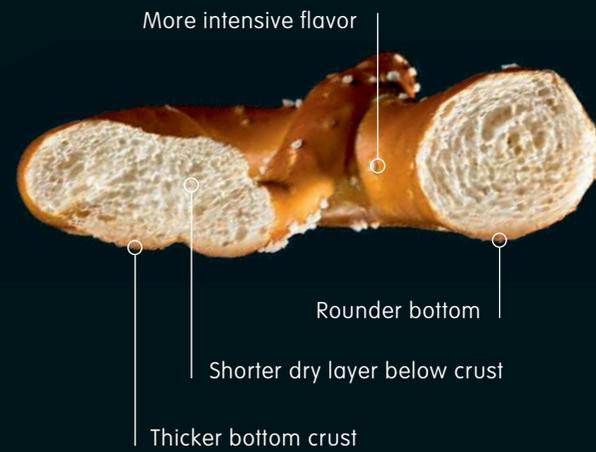
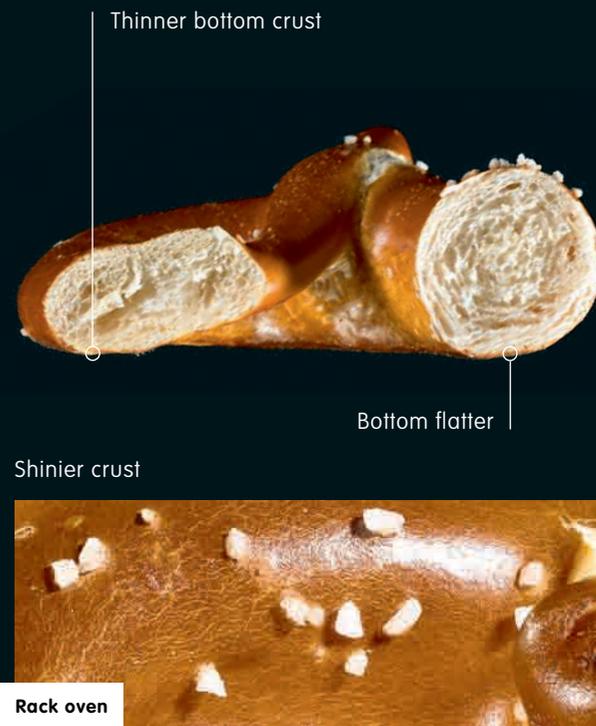


For our comparative baking test, we compared the three most-used dough fermentation methods and two baking oven systems – the MIWE roll-in convection baking oven, and a MIWE electro as a representative of the deck baking ovens. The recipe, however, was the same in all cases (see page 22).

The subject of the test was a real Bavarian delicacy, as you would expect for a Bavarian academy: the Munich pretzel (you will find more information on the regional differences of the pretzel elsewhere in this issue). The following six fermentation and baking methods were compared:

- 1** Proofed (without lye bath) and frozen; rack oven
- 2** Proofing interruption (–18 °C); rack oven
- 3** Proofing retarding process (–5 °C); rack oven
- 4** Proofed (without lye bath) and frozen; deck oven
- 5** Proofing interruption (–18 °C); deck oven
- 6** Proofing retarding process (–5 °C); deck oven

Our comparative baking test showed that markedly delicious and attractive pretzels can be baked with the different fermentation methods on both baking oven systems, even when the same basic dough is used, as was the case in this test. ▶





2

Not as "wildly" cracked



Arms more closely joined



3

Surface "smoothed over"



Clear tray mark



5

Rustic crust surface



Wider bottom



6

"Relatively smooth" surface



Dry layer below crust not as short

Crumb more open



Our comparison of the different processing methods is also available as a 70 x 100 cm poster. To request, simply mail back the enclosed reply card.

In individual cases, both the recipe and the process still offer a variety of special optimisation possibilities, of course. The proofing-interrupted pretzel demonstrated the least differences between the baking oven systems, but also the least noticeable wild cracks in the crust, which are actually standard for the Bavarian pretzel (and for the Munich pretzel in particular). If we take these cracks as our yardstick, the baked-on-deck proofed and frozen pretzels come closest to the ideal type, closely followed by the baked-on-deck and proofing-retarded pretzels. Due to the direct and intensive heat transmission to their bottom, the pretzels baked on the stone generally tended to crack more than the pretzels baked in the rack oven, which were evenly treated with hot air on all sides. The different temperature transmission could also be seen in the altogether rounder pretzel bottom, browned more intensively and further into the crumb, and thus also crustier and more aromatic.

If bakers want an answer to the key question of which pretzel they can bake the quickest, the pendulum swings marginally towards the proofed and frozen pretzel, which also boasts simple organisational handling thanks to its long-term storage horizon – this is surely an important reason why airlines like “Lufthansa” have invested a lot of time in optimising this production process for their specialised purposes.

In the case of our comparative baking test in Lochham, the pretzels were frozen without being dipped in a lye bath; that is to say, they were not dipped in lye until just before baking. In practice, proofed and frozen pretzels that are not lye-dipped have the advantage of keeping longer. A lye concentration of up to 4 % is permis-

sible according to German food law requirements. In practice, a concentration of 3.5 % has been proven to work well.

And finally here are some practical tips:

- ▶ Before baking, the pretzels should be stiffened in front of a fan. On the one hand, the pretzels then keep their form better when dipping in lye, while on the other hand, the dry dough surface prevents the lye from penetrating deeply into the dough pieces, which promotes a thin crust and above all a gentle crispness.

- ▶ Both the lye concentration and the immersion time are of vital importance to a good taste.

- ▶ After the lye bath, the pretzels should not be allowed to rest too long before going into the baking oven.

- ▶ For improved taste and visual appearance, don't be sparing with the pretzel salt.

- ▶ Pretzels were originally baked only with open draft. Due to different dough fermentation methods and consumers' preferences, today's pretzels are baked first with closed draft and then finished with open draft for better development.

- ▶ Especially in rack ovens, pretzels should be baked with a little steam to improve development.

- ▶ No steam in the oven is good for the shine of the crust. With steam, the pretzel's volume increases, but the shine decreases. ■

**Right: After all that effort, a hearty Bavarian smoked beer tastes twice as good, as willingly confirmed by H. Späth, R. Klopp, and A. Kleinle (from left to right).**



Munich pretzel according to the recipe of the Academy of Bavarian Bakery Trade in Lochham:

2,300 g wheat flour  
Type 550 (100%)

363 g wheat sour TA 200 (16%)  
Process refrigerated!

25 g liquid malt (1,1%)

75 g olive oil (3,3%)

60 g baking ingredients (2,6%)

100 g yeast (4,3%)

50 g salt (2,2%)

1.060 g water (46%)

---

4.033 g pretzel dough

Knead: 6 + 4 min.

Dough temperature: 23 °C

Dough proofing: none

Press proofing: 8 min.





Teilen und Formen

Stückgare

*A Visit to the Bavarian Bakery Museum in Kulmbach*

# “Today do I bake, tomorrow I brew”

**Brewing and baking are closely related crafts. Both use the same raw materials, grains and yeast, resulting in noticeable parallels in the production processes, and, in both cases, the end results have counted among humanity’s basic foods from the very beginning of human history up to today. It is thus right and proper that specialised museums have been dedicated to each of the two crafts under one roof at the Mönchhof in Kulmbach, Germany.**

In its final stages of expansion, the museum is intended to house four departments comprehensively covering the food and beverage crafts and industries in (northern) Bavaria, under the inviting motto “Culture and Enjoyment Under One Roof”: additional specialty museums for spices and for sausage and meat products are in planning. The “Bayerische Bäckereimuseum” (Bavarian Bakery Museum), which had its grand opening in the autumn of 2008, is naturally the one of particular interest to us and our readers.

The museum (like the adjacent brewery museum) is an independent institution, even though it is generously supported by local industry. It belongs to a support association that rents the exhibition rooms from the Kulmbacher Brauerei brewery. Its foundation was assisted by funds

provided by the EU Leader+ Community Initiative, among other sources. The bakery museum flies the Bavarian flag, and does so with good reason and with official blessing. The experts for the “Bayerische Landesstelle für nichtstaatliche Museen” (Bavarian State Office for Private Museums) extensively investigated the collected exhibits and the exhibition design, before concluding that the museum was of significance for all of Bavaria and may therefore be called the “Bavarian Bakery Museum”. ▷

**Headline: Short passage from the Fairy Tale “Rumpelstiltskin” (Brothers Grimm).**



Top: Historic coat of arms of a baker.

Below: The museum in Kulmbacher Mönchshof.

Left: A look into the fantastically designed exhibition.





**The recipe:**  
take an excellent, dedicated  
exhibition design ...

“Experience baking culture” is the overall motto of the museum. The comfortably spacious and also extremely varied and attractive presentation approaches this topic in two interwoven ways. Taking a “logical” process-oriented approach, the main route follows the grain’s path from the meadow through the mill and the bakehouse to the baker’s shop and the breakfast table.

Within this basic layout, exciting excursions into the bread-baking cultures of historical epochs can also be found, such as the meaning

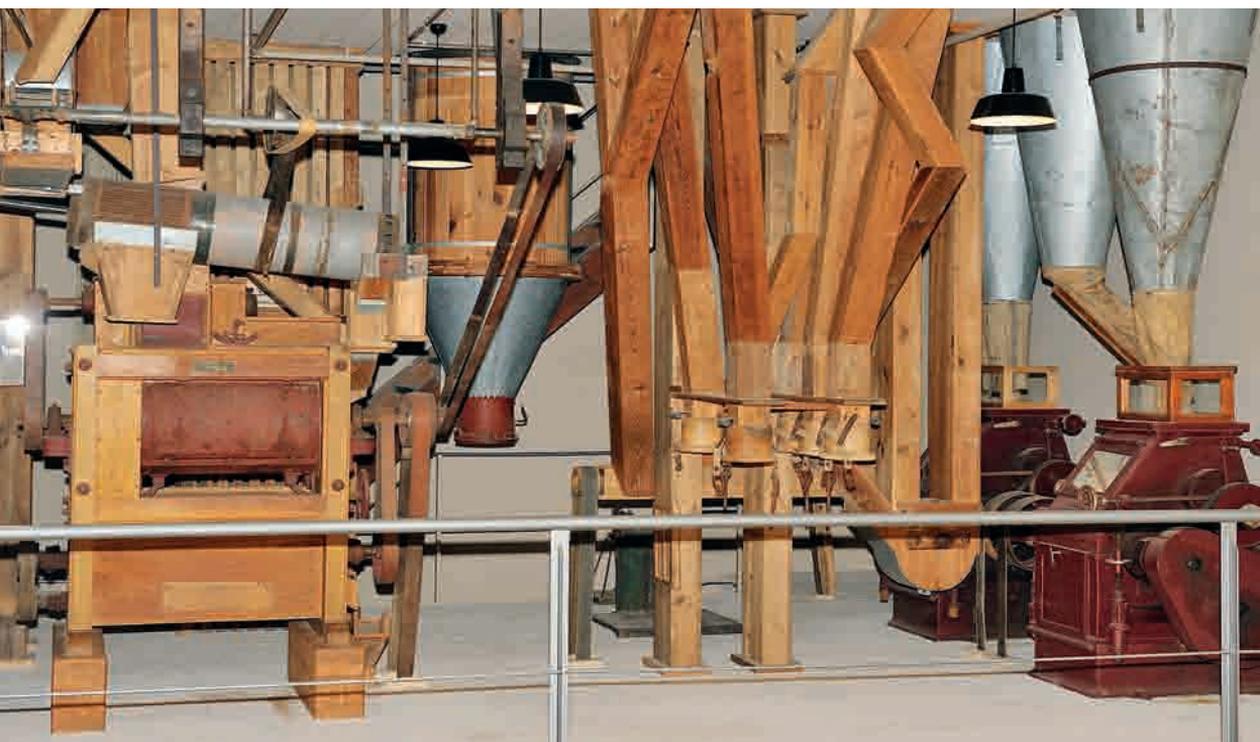
of bread in the Egyptian death cult, the “bread and circuses” (“panem et circenses”) of ancient Rome, or the effects of artificial fertilizer and the steam machine on the supply situation of people at the times of industrialisation. However the visitor also learns more about eating habits over the course of time, like bread-baking cultures in far-away countries or the role of bread in customs and religion.



This museum is by no means a dry and boring series of things in glass cases. Careful staging of the exhibition pieces, clever selection of



... which doesn’t leave out “panem et circenses” (right); a complete baking hut from the 17th century (centre) ...



pictures, and a wealth of interactive audio stations make the tour into an experience full of fascinating variety. In addition to its many small exhibits, the museum also has a multitude of true-to-original reconstructed structures and equipment.

Right at the start of the tour, there is a baking hut from the 17th century (from Bärnhof in the Kulmbach district), closely followed by the "Neidsmühle" mill of Thurnau manor, non-functional but set up imposingly and true to the original over three whole stories and excellently explained in terms of its functional units. The museum also contains a completely reconstructed historical bakehouse, as well as a small corner bakery shop, rebuilt in the museum exactly as it was left by "Becken Gretel" (Baker Gretel) in Neuensorg when she died in 1984 at the age of 84. Younger visitors in particular might be surprised to learn that until very

recently, all the basic items needed in people's households were available from such tiny stores – mouse-traps, flytraps, scrubbers, shoelaces,

... and which boasts a mill from Thurnau manor extending over three floors, its workings explained perfectly, ...



...with exquisite details (left: gingerbread mould from 1872) ...



... and which creates a nostalgic atmosphere with the complete corner shop of "Becken Gretel" from Neuensorg; a design that also presents utensils of the recent past (right: baking pans) ...

school notebooks, and, last but not least, a small range of baked goods.

But it's not just equipment, tools, and structures of the bakery trade that are on show; the museum also covers the response that bread, the vital stuff of life – and its lack in times of famine – has received in art. Thus the drawing "Bread" by Käthe

Kollwitz, who eloquently put hunger into pictures, can be found alongside the audio play of the same name by Wolfgang Borchert.

And since a real live bakehouse with a hot oven (a black MIWE condo, by the way) awaits at the end of the tour, visitors can experience directly how good fresh baked bread tastes.



Sigrid Daum, the director of the museums, knows very well that good exhibits and baked goods alone would not entice visitors to Kulmbach. "It's not enough to just open the museum in the morning and close it in the evening."

She has therefore created a number of tourist packages and actively advertises her treasures at tourist trade





which is certainly an important and worthwhile plan in a time in which more and more children and young people have no idea how bread (or beer) is made. In 2008 alone, Sigrid Daum welcomed more than 60 different groups from child care centres and schools to the bakery museum.

"We not only offer tours that are geared towards children, but also events on individual themes that are related to what is currently being taught in their lessons," Daum explains. "In addition to theory, practical hands-on experience is also in demand and that is precisely what we can offer. The children knead dough and bake their own bread. They experience how hard the grain needs to be ground with mortar and pestle to become flour. They love it and it's a lot of fun for us, too!" As if they wanted to prove Ms. Daum's claims, a group of children was having great fun

... but in which a modern MIWE condo also gains recognition – and not just whenever the former head of the Kulmbach bakers' guild serves large, flavoursome ham in dough to his colleagues meeting at the regular's table.

If a museum lives this way and every possible interest of the visitors is satisfied (below: Increasing industrialisation / mechanisation from the middle of the 19th century on), ...

fairs or with travel agencies. Her many activities have already born fruit: about 40,000 visitors come to the museums at the edge of Kulmbach every year – the neighbouring Plassenburg castle registers considerably few visitors even though it is one of the most imposing fortresses in Germany and is the most visible landmark of Kulmbach for miles around.

Her next step will be to establish a pedagogical centre at the museum,





working with dough in the museum foyer under the supervision of a museum instructor. The museum was hosting a child's birthday party.

Herbert Hofmann, a retired district administrator and acting chairman of the board of trustees, outlined to us the museum's future direction. The aim is for the museum's calen-

dar to include more seminars on nutritional, religious, social or economical topics for school classes, academic conferences or association meetings. According to Museum Director Daum, bakers like the exhibition especially because they find equipment and machines that they still worked with during their training or that their parents used in their own business. And because they probably sense that Sigrid Daum has set herself an ambitious goal:

"Our main objective is to strengthen the position of bakers in society, to support their justified pride, and to give their craft a first-class calling card," the museum director explains. And as if proving how well the museum succeeds in its intentions, on our way out we ran into Heinrich Schnirring, the former head of the Kulmbach bakers' guild. He was in the process of putting three large hams in bread dough into the MIWE condo. It would be ready just in time for the meeting of the village elders at the regular's table in the large foyer in the evening. His whole face was beaming. We talked a bit about the baking of yesteryear and today. And can you guess which ovens Schnirring has been using all his life? ■



... if nothing is overlooked, neither baking utensils (left), nor historic hearth doors (top), nor even stencils for the decorative powdering of sweet delicacies, then ...

... you'll be rewarded with visitor numbers of which the imposing neighbouring Plassenburg fortress can only dream.





*Pretzels, Part 2*

# *Globetrotters with local flavour*

Pretzels are popular all over the world,  
but are not exactly the same everywhere, not even in Germany.  
In this article, we investigate the subtle differences.



In southern Germany, they are an absolute favourite – right after the breakfast roll (for which the net value added turns out somewhat higher since it requires less work). But they have also been long at home in northern Germany and have been successfully conquering the market of the eastern German states for years.

Their fan base is growing even beyond the borders of Germany. Bakers travel to Germany from far-away Japan to learn how to make them. In the United States it's hip to dip them in mustard and other sauces. In short, they're well on their way to making a successful career as culinary cosmopolitans. We're talking about the looped, usually salted snack made from lye-dipped dough: the soft bread pretzel.

It has earned its high popularity with good reason.

For one: the soft pretzel is a round-the-clock baked good which, in well-run hotels and households, makes its first appearance on the culinary stage as early as breakfast time. People in a hurry can grab a buttered pretzel as a snack from the baker on their way to work.

According to local folklore, the first

pretzel of the day in Munich is eaten at breakfast together with a white sausage. At lunch, one more or less luxuriously topped "Brezn" can easily replace an entire meal. And in the evening, a pretzel makes a splendid addition to the dinner breadbasket – to go with a proper "Radi" (a salted radish cut into curlicues) for example, or with a fresh wheat beer or a proper "Mass" (a litre mug of beer).

Which brings us to the second advantage of the pretzel: it's a great culinary pleasure alone, but it can be combined with a lot of other delights without either side suffering a loss. For example, it can be topped with cheese; or cut and served as a sandwich without losing its unique character and becoming a mere foundation for cold cuts. Whether only butter, with salami, ham, cheese, with and without condiments – there are virtually no limits to its flavoursome versatility.

Master baker Günter Franz, a native Swabian from Augsburg in the Swabian part of Bavaria and now an instructor at the German Bakers Academy (Akademie Deutsches Bäckerhandwerk) in Weinheim, told us the story of a Hanoverian baker who was walking down the street in downtown Augsburg shaking his head, finding it incredible that almost every child in a stroller was holding a pretzel.

A further argument for the pretzel thus comes into play – unlike a bread roll, it is perfect for the hands of the smallest of children and for "having a nibble on", even if a person's age does not yet allow them (or no longer allows them) to open their mouth very wide. Connoisseurs of baked goods can

Before enjoying these delicious treats, you need the "stuff that good pretzels are made of".



name yet another advantage of the pretzel, namely that it combines a whole range of eating sensations in one tiny package, from the crunchy arms (the Bavarians call them "Brazeln", from old Ecclesiastical Latin "bracitellum", meaning "little arm") to the moist, open crumb of the belly of the pretzel. This applies only to the Swabian version of the pretzel, which brings us to the subtle regional differences.

Even if most consumers are not aware of it because – whether out of habit or a lack of alternatives – they always go for the type of pretzel they know best, the pretzel (the history of which we reported on in detail in the last issue of MIWE impulse) occurs in many different local forms nowadays. In this article, we will deal with the two most different and yet well-known types of the savoury soft pretzel, namely the Bavarian and Swabian varieties. In this task, we were thankfully aided by two specialists who understand the respective regional specialities like no others: Günter Frank, instructor at the German Bakers Academy in Weinheim, baked the Swabian pretzels for us, while Arnulf Kleinle, principal of Bavarian Bakers Academy in Lochham near Munich, baked the Bavarian "Brezn" as part of the comparative baking test reported on elsewhere in this issue.

The essential difference between the two pretzels lies in the cross-section of the belly and of the "Brazeln" or arms. The Swabian pretzel typically has tapered, considerably thinner and consequently crisp and thoroughly baked arms, balanced by a well-rounded middle part with a moist, somewhat open

crumb, which is cut before baking so that it tears in a more controlled manner. Its Bavarian counterpart, on the other hand, is twisted from a rope which is more uniform overall and is usually not cut.

During baking, especially in a deck oven, uneven cracks usually appear in Bavarian pretzels, adding to the rustic charm of their appearance.

The form of the Bavarian pretzel is generally round and the three spaces created by the classic pretzel shape are usually quite even in size. The Swabian pretzel, on the other hand, often has two smaller spaces formed by the arms and a large space on the belly of the pretzel. It is often more oval and its crumb is generally baked through more evenly due to the more uniform dough rope cross-section. This more uniform rope cross-section means that the Bavarian pretzels can be better cut through along the entire surface than in the case of the Swabian version, where the thinner, crisp arms usually break during cutting. A classic "buttered pretzel" is thus usually a Bavarian pretzel.

The differences, however, start much earlier than that, namely in the re-



**Even if true masters can turn them out at a staggering rate – the pretzel knot cannot be learned overnight.**

**If the knife is drawn, then they're going to be ...**



cipe, especially in the addition of fat. In Germany people often poke fun at Swabians for their supposed stinginess, but it is not at all evident here; they enrich their pretzels with between 3% and 5% and sometimes even up to 8% fat (relative to the total flour quantity), while the Bavarians usually only add 1.5% to 3.5% fat. Some even still use lard as their shortening for reasons of taste, even though that means their "Brezn" can no longer be enjoyed by strict vegetarians or observant Muslims.

... Swabian pretzels. As a result, the Swabian pretzel is "moister" with a somewhat more

open crumb due to its high fat content and is "softer" overall than the more markedly rustic Bavarian pretzel, which, if it wants to be a credit to its name, should snap nicely when broken. The Swabian pretzel or "Breze" sometimes also has more yeast than the Bavarian version, but otherwise the ingredients and their processing are very similar. Both pretzel variants can be made with and without a sponge; adding a sponge means a longer process and thus a better aroma and longer-lasting freshness.

Outside Bavaria, the Swabian pretzel is the variant usually found in



bakery shops, but marked differences also exist within Bavaria – and with this we now return to Günter Franz and Augsburg. In contrast to the Bavarian pretzel offered in Augsburg, the people of Munich prefer a more “authentic” pretzel shape with a more uniform dough rope and arm ends that have been shaped into knobs. “The Munich pretzel is really extreme,” observes Franz, “and wouldn’t sell at home in Augsburg at all.” Among experts, it is the subtle differences that count.

One special feature in the production of the pretzel is – for both types

of pretzels – the cooling sequence after the final proof which halts the proofing process and results in a hardening of the dough structure. This reduces risk of the pretzel losing its shape during the subsequent lye bath. It is the caustic soda lye used in this lye bath (usually in a 3% to 3.5% solution) that lends the dipped baked goods their typical brown colour and intense flavour.

This solution reacts with the dough surface, breaks down starch into dextrin, changes the flour proteins, and thus results in an intense Maillard reaction during baking. ▷

**The Bavarians must make do without the cut – they have more “muscular” arms instead.**





Baked to perfection in the deck baking oven, like here in MIWE electro.

In the bakery, pretzels are usually “cold dipped” in the lye bath, which produces less caustic fumes than in the case of a hot or boiling lye bath. During humid weather, the soda lye tends to change the colour of the crust more slowly. Experienced bakers thus leave their pretzels somewhat longer in the oven at such times, turning down the baking temperature as required.

Even though twisting robots have mastered all kinds of pretzel shapes in large quantities, no baker can avoid learning how to hand-twist a pretzel during his or her vocational training. The instructors at the specialist academies have broken their usual silence and revealed to us that many bakers need several months to master the routine of twisting. However, with time and practice, master bakers can twist up to 1,000 pretzels an hour by hand, thus providing the modern robots with respectable competition.

There is one thing that pretzels do not like at all, no matter where they

come from and how they are made: lying around and waiting for customers. Soft pretzels quickly lose their specific character and should thus always be eaten when absolutely fresh, up to a maximum of an hour old.

This is yet another instance where fresh baking really comes into its own, whether in the shop or in the catering trade, and as is well known, MIWE users are always perfectly placed to take advantage.

No matter whether you take the easy way and include purchased frozen goods in your product range, or you want to set yourself apart from the crowd with products from your own production (and deep freeze them already proofed or keep them on hand using proofing interruption or retarded proofing) – for all cases and for every shop situation, you will find a MIWE baking oven in which you can bake oven-fresh pretzels within sight of your customers and have them craving the taste:

By convection with the top pretzel baker MIWE aero (which can fit 24 pretzels on a 60 mm x 80 mm baking tray), the classic method on the oven deck of the MIWE condo (usually with a 60 mm x 80 mm baking tray), or make a bold statement with the new MIWE cube:fire, whose 60 mm x 40 mm baking tray has room for 12 pretzels.

For larger volumes, the MIWE roll-in and MIWE electro are also available as required.

So there’s really only one question left that you still need to answer: Which do I like more, a solid Swabian or a rustic Bavarian? ■



## ■ *Fair dates*

- ▶ **euroshop**  
Duesseldorf / Germany  
26.02.–02.03.2011
- ▶ **Gulfood**  
Dubai / VAE  
27.02.–02.03.2011
- ▶ **Internorga**  
Hamburg / Germany  
18.–23.03.2011
- ▶ **Serbotel**  
Nantes / France  
20.–23.03.2011
- ▶ **intersicop**  
Madrid / Spain  
24.–28.03.2011
- ▶ **Bakepol**  
Kielce / Poland  
02.–06.04.2011
- ▶ **Scandinavian Bakery Fair**  
Copenhagen / Denmark  
15.–16.05.2011
- ▶ **Fooma**  
Tokyo / Japan  
07.–10.06.2011
- ▶ **Modern Bakery**  
Moscow / Russia  
10.–13.10.2011
- ▶ **Südback**  
Stuttgart / Germany  
22.–25.10.2011

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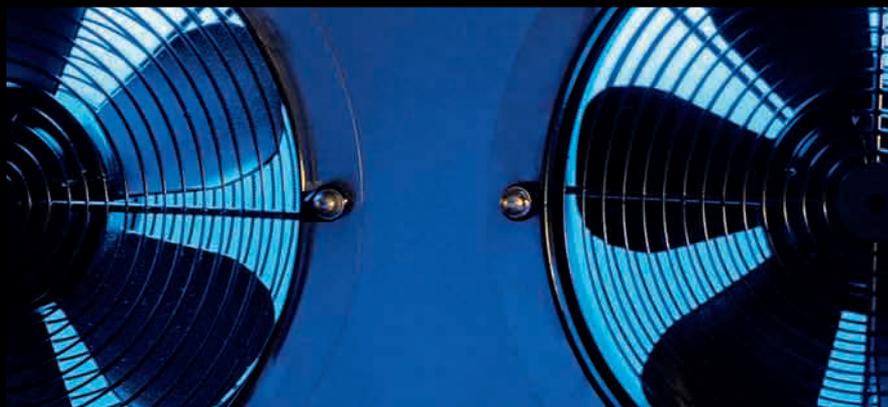
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