MIWE impulse

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At the beginning of the 21st Century, professional baking is split in two groups. On the one hand, there is the renown traditional workmanship baking that is still firmly anchored also in customer circles, which derives a large part of its sympathy from the masterful, manual handling of valuable raw materials.
On the other hand, there are the necessities of modern production and economization, which have evoked completely new manufacturing and refinement processes, and not least also entirely new distribution channels for baking goods.

Every baker (here concluded once in the broadest sense) has the task, and at the same time the chance, to move within the boundaries of this correlation, to find his truly individual position. The fact that there have been reports of first disputes from Berlin in recent times that concern the authorization of the carrying entitlement to be called a „bakery" show how important such positioning is in an increasingly diverse market. At the same time, it shows that differentiations can be necessary and helpful in certain situations.

We as manufacturers of bakery equipment also have to re-orientate ourselves time and again under the constantly changing conditions. We give our best to mirror and support the versatile forms of modern baking in our product portfolio and with our comprehensive service offer. We are aware of our anchorage in the German bread culture, and we feel deeply affiliated with the classic bakery trade for a number of reasons. But we are also open to new forms and ways of baking, for suggestions from the many baking and bread cultures of the world.

This is the only way we can be sustainable, and remain fit for the future. This is the only way we can help you find your respective place in the market, and be successful there.

The fact that we not only have our eye on the actual baking process, but also on the entire field surrounding it, with its versatile technologic and economic implications, is clearly visible again in this MIWE impulse. For example, look at the „Wenz 1919", a baking oven that combines tradition and modern age under an attractive hood like no other, and gives bakers who know themselves in the best hands in a corresponding niche a tool for their positioning (and of course for excellent baking results).
And as a second example, look at the innovative heat recovery system MIWE eco : nova that gives bakers a hand in a meanwhile very sensitive area: The energy costs.

Unquestionably both concepts stand for completely different aspects of modern, economic baking. But in one point they are, each in its own way, true MIWE products: They both help to make the bakers' life easier.

Warmest regards from Arnstein,

Sabine Michaela Wenz

Niche-product for more success

In the face of the increasingly hard competition, many bakers are searching for a compelling characteristic for a unique position. We have a recommendation all in black: The Wenz 1919.

To stand out positively – that is the great challenge in a market that is becoming increasingly versatile and confusing, and in which a rising number of career changers work alongside the various classic bakeries, from the petrol station tenant to the kiosk owner all the way to pure bakeries. There are many approaches to the development of an independence valued by the customer. Specific product quality, individual assortment differentiation, and the offer of refinement levels (keyword „eating out-of-home") are surely first on the agenda in this course. But also the atmosphere you offer your customers during purchase.

The great art of baking wants to be accordingly presented. However, baking in front of customers alone is no longer an art today. The baker as an ambitious craftsman of the old school who wants to be recognized as an event master of this trade must also provide the right environment for this demand. True, self-dramatization is regarded as not quite respectable. But it helps business. The saying: „Puff is part of the trade" has a reason.

Because we at MIWE are truly interested in making the bakers strong in their market, we have been offering them solutions right from the start that enable a perfect baking result with the perfect presentation on top. The most recent example: The Wenz 1919, that successfully combines traditional of a deck baking oven MIWE condo with the original front of an old German wood-fired baking oven – thus, a baking oven that successfully joins traditional bakery atmosphere and modern baking, efficiency, and nostalgia.

Admittedly – the historic front of the Wenz 1919 is only facade. But a mighty impressive one: It is produced on the same casting mould as the true old German wood-fired baking oven, therefore brings an impressive weight onto the scales, and is opened by the principle of a chain-operated loading door with chain hoists and balance weights. It is very easy to operate, but draws all attention. Contrary to the market-common would-be nostalgia doors made of sheet metal and lacquer, the front of the Wenz 1919 does

Tradition and high-tech under one hood

A wood-fired baking oven stands for pure, original, healthy bread ...

not become unsightly with years of use, but even gains character in the process.

Behind the massive door: Pure modernity. There, a MIWE condo performs its work, and masterfully controls the entire baking programme from the most sensitive pastry goods to the heaviest type of bread (and delicious roasts) with its even, gentle flow of heat and the individually applicable heat from the top and bottom. Due to the perfect versatility it can obviously be found not only in many bakeries, but also worldwide in renowned „star kitchens".

Thus, there is state-of-the-art baking technology cloaked in the attention-grabbing historic garment, a mixture that meets the wish of many bakers, who use the most authentic baking experience as quality proof for the acquisition and binding of their customers, but do not wish to forego the performance and flexibility of a modern baking oven in the process.

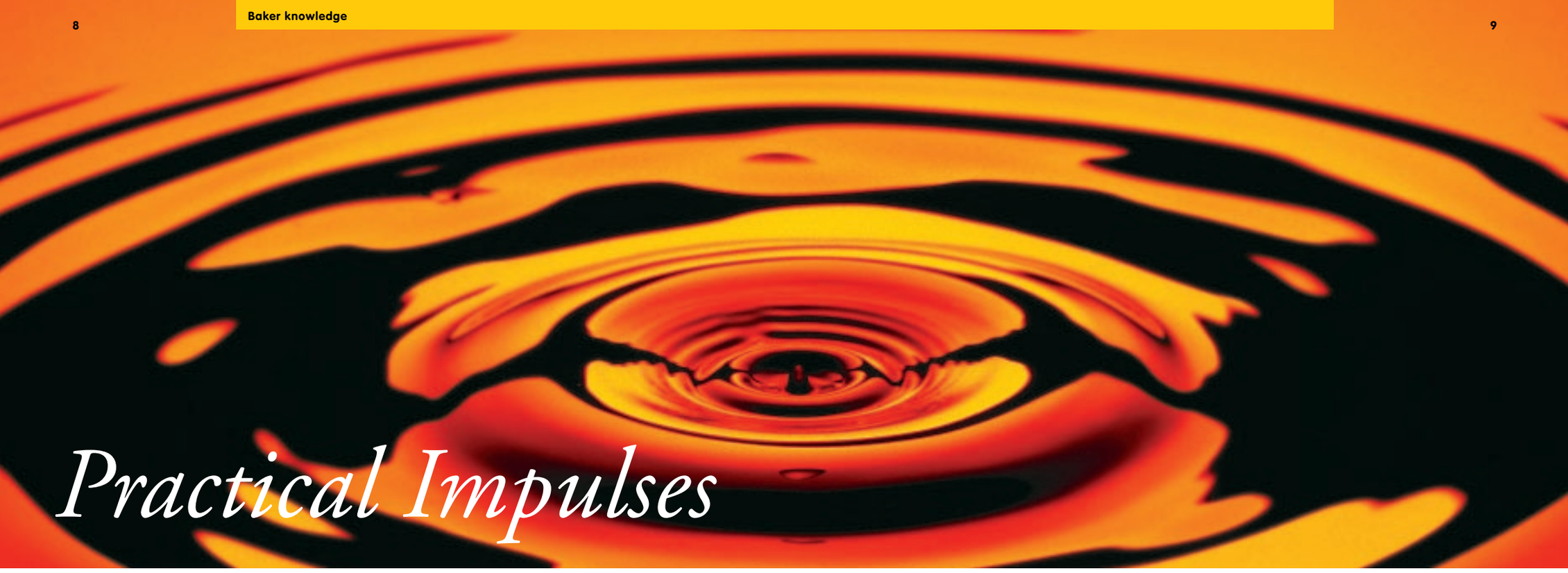
... but even better if one does not have to forego state-of-the-art convenience and modern quality control and hygiene in spite of the sales-promoting impression.

The Wenz 1919 is available with two decks for the tray dimension 60 x 80 and a deck height 19 cm. The baking oven is mounted on rollers, which means it can be easily driven into a niche. You design the surroundings of the baking oven – so to speak the front screen in which it is driven into – yourself. Whether stonework, natural stone, trowel plaster, or historic timber framing – your sales room defines style & ambience. The control unit (MIWE FP) is specifically equipped with an extra long cable, so that you are able to place it at a distance of your choice.

This way you can efficiently emphasize what many bakers would like to show their customers: In this store, baking is performed by every trick in the book of classic baking art.

Talking about authenticity: Of course MIWE also still conducts the art of classic baking oven construction. So if you rather wish to operate a true old German wood-fired baking oven artfully constructed from chamotte instead of the Wenz 1919, you are also in the very best hands of the baking oven builders at MIWE.

This leaves only one more question to answer: Why of all things „Wenz 1919"? Easy: Because Michael Wenz, the founder and patron of name of our company built the first baking oven in 1919 in Arnstein, his hometown, and therefore gave the starting signal for now almost 90 years of success.
And on this occasion, we would like to bring this to mind once again. ■



Practical Impulses

Another thing that makes the bakers' life easier: Advanced training with clear practical reference

Theory is one thing, practical experience the other. Specialists know that ideal advantages are created only in combination. This is the basis for the concept of the MIWE seminars: Combining theory with clear practical relevance.

You can simply grasp better what you can grasp, meaning experience with your hands, says an old perception in pedagogic's. This is why the concept of the seminars that MIWE conducts together with international bakery ingredients manufacturers is not only learning theoretically, but also grasping and trying one's hand in practical experience. The first courses (with Jung Zeelandia and the baking forum of the Martin Braun Group) were fully booked – and a thorough success in the unanimous opinion of the participants.

„There were many suggestions that one can integrate in the business", one visitor noted in his review. This is exactly what it is about in the seminars: To take up current topics that prey on the minds of bakers, and of which they expect valuable impulses for the own business. These topics are then offered in a manner that provides the necessary basics, and introduces practical solutions that can be tested in the seminars and directly realized in the shops upon need.

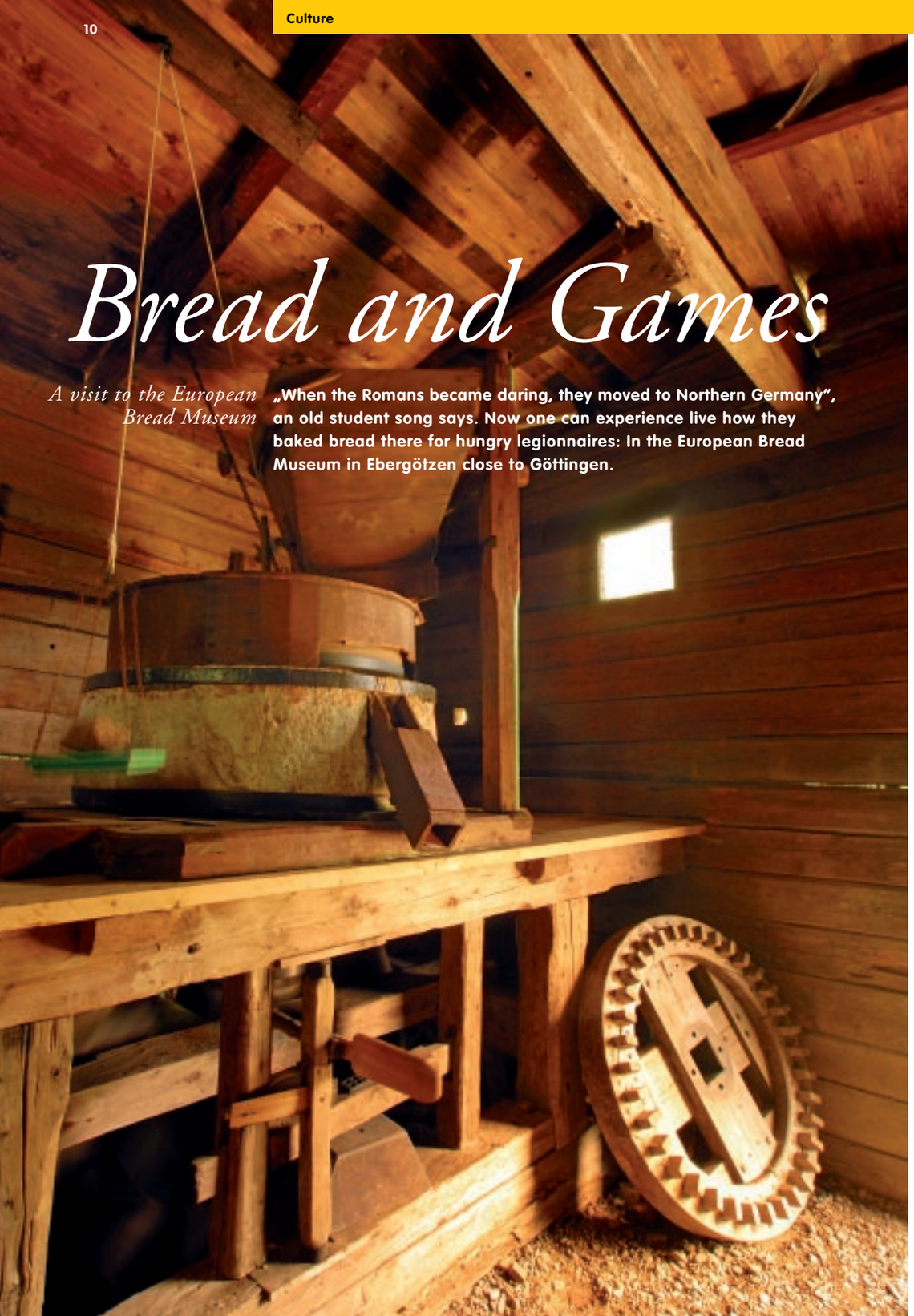
Braun's topic was the „special character out of the oven", meaning the question, „How you can give character to your baking goods with different oven systems".
The seminar participants at Jung Zeelandia informed themselves about the possibilities of „Communication and sales promotion for in-store baking". But also about MIWE smartproof™, the flavor-intensive unit with significant savings in energy and logistics in the long time dough method based on the suction blast freezer MIWE SF-D was a further topic.
The participants rated the chance to get to know the advantages of the procedure in detail in practical experience as extremely positive.

Already with these few examples one can see that the subjects of the MIWE seminars are not only the improvement of the pure baking processes, but also the optimization at the „Point of Sale".
Meanwhile, both areas are decisive for success, and as it is known, MIWE has the goal of making baking easier in all its facets.

At the seminars, the speakers are, next to the specialists of the baking ingredients manufacturers, the specialists of MIWE, especially our baking masters, who possess the most extensive know-how to all questions of technique and technology that you can wish for due to their practical experience in numerous businesses in all parts of the world.

Further seminars (for the moment in Germany and in German-speaking countries) are already being planned. MIWE will publish a seminar programme for the coming year. You can receive detailed information either directly from our partners Jung and Braun or on our website at http.//www.miwe.de/seminare ■

„More taste. Less costs." The available numbers were quickly sold out for this seminar topic.



Bread and Games

A visit to the European Bread Museum

„When the Romans became daring, they moved to Northern Germany", an old student song says. Now one can experience live how they baked bread there for hungry legionnaires: In the European Bread Museum in Ebergötzen close to Göttingen.

When the regional archeologist of the county Göttingen presented the remains of a Roman settlement from the time around the Birth of Christ on the Burgberg close to Hedemünden an der Werra to the specialist world in the spring of 2004, the archeologists were astonished. Until then, they had not expected a permanent Roman settlement so far North, so far into the „free Germania" (Germania libera).

Back then, a specialist in the nearby Ebergötzen also cocked his ears: Wilhelm Bruinjes, manager of the European Bread Museum and therefore very familiar with historic questions and experimental archeology listened intensively when the excavations in Hedemünden gradually brought forth the remains of three Roman baking ovens. Bruinjes did not yet have such a baking oven in his collection. That would be an additional attraction for the museum and an ideal supplement with local and at the same time European relation, were the thoughts of him and the remaining members of the sponsoring association.

Only four years later, in spring of 2008, the idea became reality: A Roman baking oven was built and started up on the museum grounds in Ebergötzen.
The looks of Roman baking ovens north of the Alps are known from several historical sites.
Even though mostly only the base wall and the underframes are preserved (which makes an exact identification difficult), but there is an almost complete original „furnus", as the Romans called the baking oven in Agst in the Canton of Basel. The people in Ebergötzen used it as a model.

First they cemented a 30 cm deep fundament in the gross shape of a circle with an outside diameter of 170 cm. On top of that, they built a round base of about 45 cm height with crude stones, and filled the hollow space inside with a mixture of dry sand and gravel that saves heat well.
The top layer consists of a mixture of sand, ashes, and gravel. Subsequently, brick plates were lain on top without mortar – the underframe of the baking chamber was finished.

Now it was time to build the dome. First, the baking oven opening had to be built with sandstones. Subsequently the builders set the first four layers of the vault onto the round base with sandstones, under supervision of the specialist archeologist. Thus, the baking chamber has an inner diameter of approx.130 cm, meaning a baking space of almost one and a half square meters. A thick wooden pole, erected vertically in the middle of the baking space, served as central support for the supporting frame

View into the operative water mill from the Gerols valley in Tyrol (left). The Roman baking oven is heated with dry spruces and beech logs (bottom).

Widely visible mark of the European Bread Museum: The Bockwind mill from the year 1812 is fully operational.

of the dome that was built from hazel branches and interwoven spruces. The builders of Ebergötzen applied moist clay and plaster to this frame. Only after that the actual vault of fireproof stones could be built with mortar of fireproof earth. To achieve the necessary wall thickness, Bruinjes and his helpers built a brick cover around the fireproof stones with chalk mortar, which was subsequently plastered with coarse chalk mortar. Some Roman ovens possessed a drought opening with a brick slide on the side or at the highest point of the dome for a better control of the drought during heating. This was omitted in Ebergötzen. An iron plate can be set inside the oven hole during baking that helps to keep the heat inside the baking oven during the baking process.

The authenticity of the historic touch is maintained also during heating (if you ignore the old newspaper that starts up the fire). Dry spruces burn like tinder, and already a few minutes later the beech logs are crackling in the baking oven. The supporting construction of hazel branches that was not needed anymore after the mortar had set, burned down to ashes during the first heating. While the fire heats the oven we have time for a little tour over the open-air grounds and the actual museum. „Our ambition is to show the entire range from the grain to the bread", Wilhelm Bruinjes says. The vast area is designed accordingly: Young grasses of spelt and wheat glimmer in an early summer green on several plots of land, the wheelwork of the old Bockwind mill creaks alongside, when the refreshing wind passes the circulating wings.

Not far away, the Auebach River murmurs. It steadily drives the water mill with the undershot wheel, which is originally from the Gerlos valley in Tyrol.

Historic grain types like spelt or emmer are also present (right).

Today there is nothing to do, the mill runs empty. Wilhelm Busch, who spent his school time in Ebergötzen and most surely thought up more than one prank here together with his friend, the millers son Erich Bachmann, erected a memorial to the Auebach River and its mills in his „Max and Moritz".

„This swift river a bridge did span, and the road across it ran", he wrote – and drew – in the third prank of the rascals story. „Max and Moritz, naught could awe them! Took a saw when no one saw them: secretly saw with the saw, Ritze-ratze! Riddle-diddle! Sawed a gap across the middle." A quick look shows: The damage was obviously carefully repaired, the small bridge can be passed safely.

In an old shed, the hood of an old baker car is open wide. Displaying the strange insides with thick cables, switches, and wires: The electric engine, whose 11 PS distributed bread in Berlin between 1939 and 1970, is almost 70 years old. The precious piece counts 263.000 kilometers, but after a thorough renovation it still hums and whirrs today. 40 km / h peak speed, maximum range 40 km. To save battery power, meaning to increase the range, the electric wagon was pulled by street cars along the main road during the years of war. The board-own battery was only used on the side roads. It alone weighs more than a ton.

For special occasions Wilhelm Bruinjes carefully pulls the veteran out of the hall, and drives small rounds on the premises. Next to it, a stationary thresher is waiting for its use in early spring.

The actual bread museum is accommodated in the Baroque building

of the old state forestry. For example, Bruinjes constructed a trade bakery there, as it was common all the way to the 1970ies. One entire room is dedicated to a collection of bread boards made of porcelain and the history of this contribution.

As exciting as these exhibited objects are until today, the European Bread Museum has become „more and more of a practical museum from a very static one in the beginning" in the course of its meanwhile 40-year history", Bruinjes explains. „Not for nothing is our slogan: The Bread Museum – a place that lives." Only the own practical experience of the visitors conveys permanent memories. „Especially young people learn more in the museum if they can do things with their own hands. For example, the corn garden is cared for by a school class. From sowing to the harvest, all the way to thrashing, milling, and baking, the children are responsibly integrated in all processes." Bread and Games – the Juvenal-quotation assumes an own meaning in Ebergötzen. Bruinjes addresses a broad range of interested people with special exhibitions, cultural events (theater, concerts, literature readings), and numerous museum-pedagogic actions.

Bread boards are actually proven in the kitchen culture history only from around approx. 1600, even though they surely are of older origin.

The museum also shows a small culture history of the bread board. Primarily, models made of porcelain resp. faiences are displayed.

„Army bread", like the Roman legionaire knew it ...

The success proves him right: Bruinjes can pay for about 90 % of the running costs from the revenues from entrance tickets. „This is only possible because we are so close to our ‚customers', and pay special attention to what matters."

Wilhelm Bruinjes waves – the Roman oven is hot. They have not yet been able to gain much experience with its baking behavior, the baking oven was only built in spring, and has only been fired up for special occasions since then. But Bruinjes knows one thing: „When the dome is lukewarm, the baking oven has the right heat." Then the embers must be brushed out of the baking chamber, maybe a moist scut is needed to bring a little hot moisture into the oven, and the bread can be loaded.

Keeping true to the style, Roman bread is baked in Ebergötzen, of course: „Panis militaris" or „panis castrensis", a military or camp bread, like the legionnaires in Hedemünden probably ate in the lifetime of Christ.

This „army bread" counted among the simpler kinds of the versatile Roman bread basket that ranged in quality from „panis candidus" (white bread of finely milled wheat flour, largely separated from the bran) over the „panis secundarius" (second quality) all the way to „panis rusticus", „plebeius" or „cibarius" (the farmers bread of the people), which was also called „panis sordidus" (dirty bread, gray bread) because of its color.
The Romans even knew a wholegrain bread of unsieved flour with full bran part (panis acerosus) and valued it for its slightly laxative effect. Lastly, „panis furfurius" (lat. furfur = bran) consisted of pure bran, which noble Romans only gave their dogs to eat, but was surely also eaten by the poorest of the poor due to need.

In Rome, bread was known in all possible shapes and sizes. The most widespread however, were the common bread shapes, flat, oatcake-like with star-shaped cuts. Traditional recipes and illustrated demonstrations for example from Pompeji show how Roman bread was made, and what it looked like.

The camp bread that is baked in Ebergötzen is a relatively hard, firm wholewheat bread. Emmer, which grows on the museums premises is mainly milled for the flour; emmer, also called two grain, is a development of the „original wheat" one grain, and together with it one of the oldest cultivated grain kinds of all. Emmer flour is rich in protein and minerals, hearty in taste, but extremely hard to process in bread production due to its moderate sticking characteristics.

A star-shaped print is pressed in to the dough pieces prior to baking, which divides the small, flat loaves into cake-like pieces. This way they can be broken and portioned easier later on. The legionaire was able to carry a bread ration, and eat while walking if hunger came. The bread has the great advantage of being preservable for a relatively long time – which would have been essential for its military use. It can be broken well even in a hard state, and dipped in milk or broth. A high-value food – some historians are convinced with good reason that the Roman Empire that spread throughout all of Europe over hundreds of years, owed this exclusive power position to its superior bread culture, among other things.

The clever builders of the Romans also made their contribution to the success of this bread culture. This becomes clear quickly when looking at the remake of an early stone age baking oven for comparison, which is located a few steps away from the Roman baking oven in Ebergötzen. The basic principle of the baking chamber, the dome built on a branch frame made of clay is the same: But the differences lie in the practical detail.

The Romans were the first that built a firm base underneath the baking chamber – this way a decent bottom heat was actually even possible, the baking oven kept the heat (also due to the thicker wall) significantly longer, and it was easier to operate, as the opening was not on earth level. If it was already too cooled off for baking, it could be brought to baking heat again quickly with a small fire.

This way decisive innovations in the bakery can be studied on a „living" model in Ebergötzen – for us a good reason to report about the European Bread Museum in detail here, and sincerely thank Wilhelm Bruinjes for his hospitality. ■

... baked by Wilhelm Bruinjes in the authentic Roman clay baking oven.

Main building of the European Bread Museum with the water castle tower from the 12th Century (left) and the Bockwind mill (right).

Energy gainer

Baking consumes plenty of energy. The more drastic the energy prices increase, the more it pays off to optimize energy use in the bakery. For example by recovering the energy that was usually lost through the chimney as flue gas to a great extent, and making it available for further use. This is exactly what the new MIWE eco : nova does. We explain the physical basics and the mode of action of the unit. And we show what else needs to be considered in the process.

Recovers consumed energy immediately: MIWE eco : nova

The MIWE eco:nova opens the door to resource-saving baking with simultaneous drought regulation

As we already have explained in detail in earlier editions of the MIWE impulse, energy consumption during baking is composed of three allocations:

- From the actual baking energy that is transferred onto the baked goods (and which cannot simply be reduced without massive consequences for the baking result).
- From the operative losses that occur for example by unnecessarily high baking temperatures, little occupation, or generally by lacking care in the handling of the baking oven, and therefore can be avoided easily.
- From the energy losses that are caused by baking-technological physical reasons (e.g. wall and radiation losses, but especially by the waste heat loss of flue gas and steam).

The flue gas losses are especially important for heat recovery.
In MIWE baking ovens, these values are usually far beneath the values that the DIN 8766 (German industrial standard) approves for new units.

Energy consumption during baking:
- **Flue gas / Steam**
- **Operative losses**
- **Actual baking energy**

For example, the MIWE ideal shines with flue gas loss of only 10 % – barely half of the admissible value. Still, there is so much valuable potential in these 10% and especially in steam that it absolutely pays off to think about procedures for heat recovery.

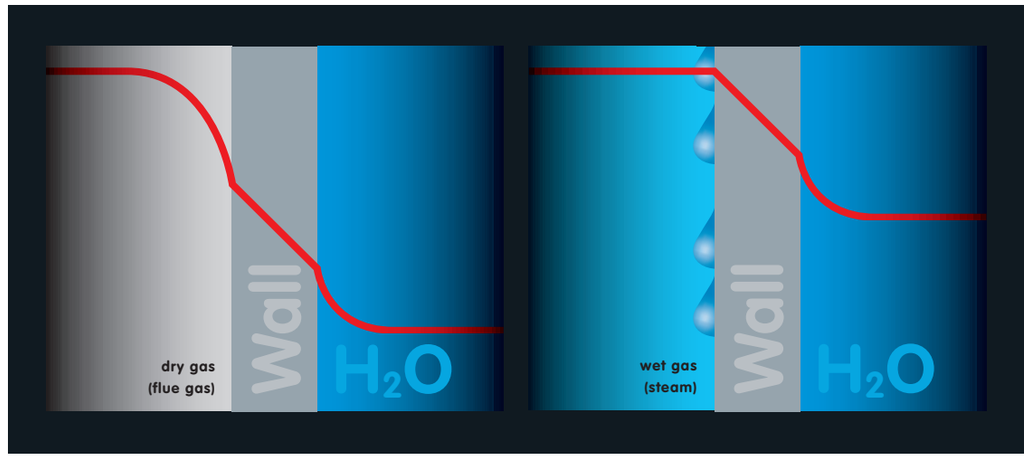
This is exactly what we did, and we developed a universal system that is tailored to fit the needs of the bakeries to a tee, recovers significant percentages of the used energy, and can be adapted to different business sizes within broad boundaries: The MIWE eco : nova.

By the way, as a first, this offers bakeries the possibility to set the draft for each oven indivi-dually and precisely – independent of the weather! But lets start at the beginning …

The basic principle

In its core, the MIWE eco : nova is a heat exchanger or „heat transducer". Such a heat exchanger transfers thermal energy from one material flow (in our case flue gas resp. steam) to another (in our case water). As both of the material flows come into contact not directly but separately through a heat permissible wall in the MIWE eco : nova (namely the wall of the pipes arranged in the heat exchanger), this is an indirect heat exchanger – like the cooler in your car.

While the (hot) material flow passes through the pipes in the heat exchanger, it releases its thermal energy over the pipes to the cold material flow surrounding the pipes. Flue gas and steam are cooled off while the water is heated at the same time. So much to the basic principle (see also graphic on page 22).



On the left the (subdued) heat transfer with a dry medium, on the right the immediate (via condensation) heat transfer of a wet medium. The higher temperature level in the water is obvious.

So where is the energy potential?

In the bakery, two „waste materials" are produced with high energy content: the flue gas and the steam. Flue gas is a dry gas to a great extent, steam in contrary is an almost sated wet gas.

That is why the two materials are distinctly different in the heat transfer to the wall of a smooth pipe, as is the case in the heat exchanger of the MIWE eco : nova.
Physical background: The vapour of the steam condenses upon contact with the pipes, meaning it changes from a gaseous to a liquid aggregate phase at once in an energy-intensive transformation, while the flue gas is only basically cooled linearly.

The physician can determine the different potentials very easily by calculating the performance sums of flue gas resp. steam. We do not want to confront you with the required formulas here, but at least show the (for some by all means surprising) results. As an example, let us look at a MIWE roll-in with a burner capacity of 85 kW.

In this case the flue gas has a gas power of approximately 8.5 kW at a temperature of 240°, an absolute moisture of 20 g of water per kg of dry air, and a volume flow of 0.050 m^3/s of the burner.
On the contrary, the baking steam has a temperature of approx. 120 °C, an absolute moisture of 800 – 900 g water per kg of dry air, and a volume flow of approx. 0.015 m^3/s. With these values however, it reaches many times the amount of energy content of flue gas: impressive 51 kW.

This means: In spite of its distinctly lower temperature, and the vastly lower volume flow, the baking steam contains significantly more recoverable energy than the flue gas. The aggregate transfer (gaseous – liquid) of the steam during condensation is responsible for this, which produces much more additional energy. No wonder, as it is the same the other way around: Much more energy needs to be consumed in order to produce steam vapour from water (aggregate transfer liquid – gaseous) than is required for the heating of the flue gas. ▷

The separation of flue gas and steam

Due to physical reasons, this higher energy potential of the steam can however only then be used to full extent if one does not mix flue gas and steam, as is the case in simple heat exchangers due to cost reasons (and possibly inspired by the existent pipework), but rather handles them separately.
The background is the physics of wet gases, in which first of all the internal pressure conditions play a decisive role next to the temperature – and exactly those are usually negatively influenced by the mixture of flue gas and steam.

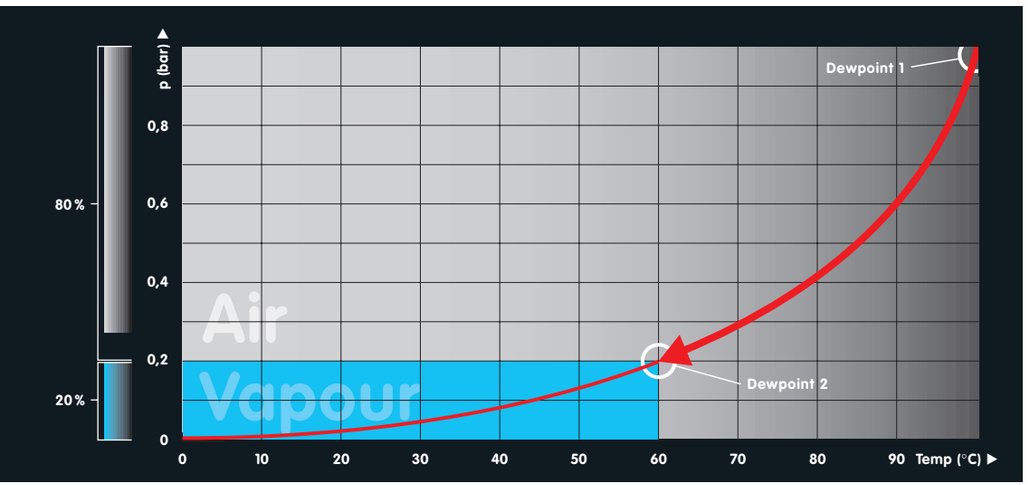
That is to say, if one mixes different gases of the same temperature and same pressure, the partial pressure of the involved gases does not consistently remain the same, but is determined depending on the volumetric mixing ratio.

A concrete example: If 80 volume percent air (with a temperature of 100 °C and a pressure of 1 bar) and 20 volume percent steam (with a temperature of also 100 °C and a pressure of 1 bar) are mixed, this mixture subsequently still has a temperature of 100 °C and a total pressure of 1 bar.

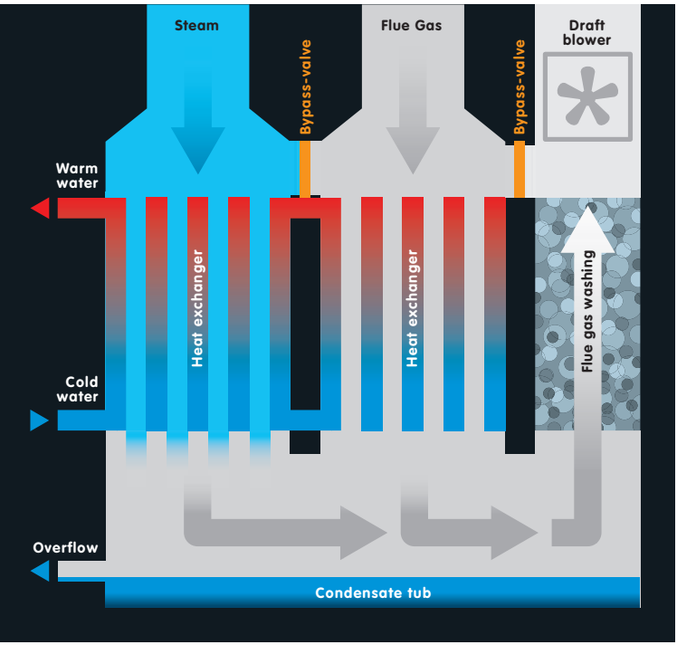
According to the law of mixture by John Dalton however, only 20 % (0.2 bar) of this pressure goes on the steam percentage. The partial pressure of the steam now dropped to a fifth due to the addition of the flue gas.

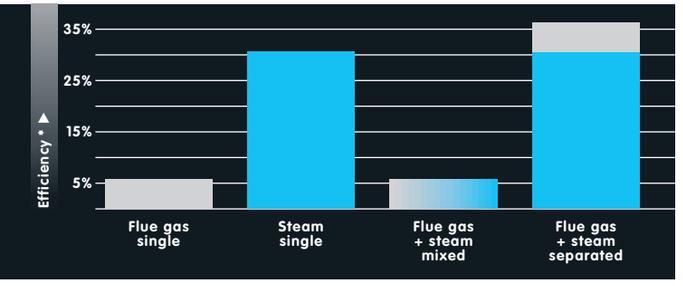
At the same time, this changed a further important characteristic of the steam that is of utmost importance for energy recovery: Along with the partial pressure, the dewpoint of the steam also dropped, from 100 °C at first to approx. 60 °C.

The dewpoint (temperature) is the respective temperature of a wet gas at which the gas is sated with water vapour – under the existent pressure conditions. Condensation, the energetically decisive phase transfer from steam to water starts below this dewpoint. ▷



The lowering of the dewpoint from 99.9 °C (Dewpoint 1) to approx. 60 °C (Dewpoint 2) prevents the condensation of the water steam at temperatures over 60 °C (= energy loss).





Principle illustration (top) and efficiency of the material flows by type of utilization* (bottom).

* Example hard rolls; water temperature from 60 °C; power input 70 % of the burner capacity

The higher the dewpoint, the higher therefore also the condensation – and that temperature is decisive for the temperature that can be achieved in heating the process water (and this is exactly what matters in energy recovery).
While the condensation can be maintained with concentrated vapour, it stops already at 60 °C with diluted vapour.

Therefore the dewpoint of the vapour should be as high as possible for efficient energy recovery.
To achieve this however, flue gas and steam must be processed separately in the energy recovery unit, because significantly higher temperatures can be generated with pure, not mixed steam in the secondary material flow than with mixed steam thinned with flue gas. It will be no surprise to you now that of course the MIWE eco : nova leads flue gas and steam separately, in order to achieve maximum exploitation in the energy balances.

The flue gas cleaning

As the water vapour condenses during the heat transfer, condensate (water) accrues, which subsequently is collected in the MIWE eco : nova in a special collecting tub. The fat particles and dusts that exit the baking chamber in tiny amounts with the steam are also collected in this tub.
Because the MIWE eco : nova works by the inside smooth pipe principle, the heat exchanger basically cleans itself on side of the steam during operation.

Contrary to common outside finned pipe heat exchangers that not only show extremely poor self cleaning, but are also difficult to clean to top it all, the heat exchangers of the MIWE eco : nova only have to be rinsed once a year.

The cooled flue gas is subsequently led through a neutralization unit in the MIWE eco : nova, which washes out the present sulphur dioxide, so that the heat exchanger releases nearly sulphur-free air in the end.

And what about the draft?

An important question. Because the draft determines how quickly flue gas and steam are discharged from the baking oven.
Therefore the draft, as we all know, has immediate influence on the baking result.

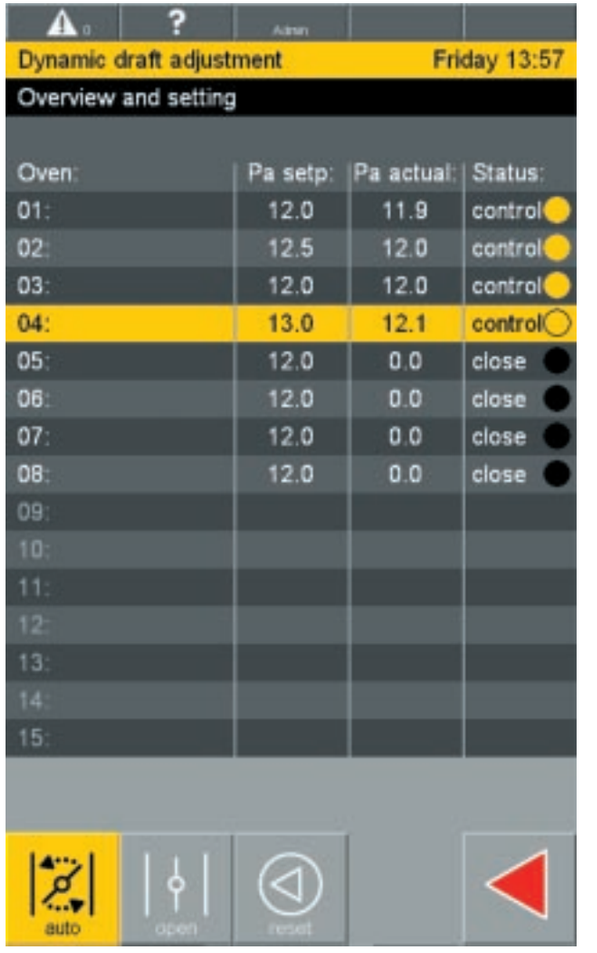
In conventional construction, the connected chimney must provide the necessary draft: The warm flue gas rises in the chimney due to its low density, and allows cold air to follow. That these draft conditions are not only influenced by the weather, but also by several constructional factors like pipework, chimney profile and oven count, is also principally known in general (and has also been topic in the MIWE impulse on several different occasions).

Until now, there has not been a control mechanism available which would have allowed to practically turn off all of these influential factors, meaning to adjust a desired drought in a precise and reproducable manner.
Therefore, in connection with the development of the MIWE eco : nova, we elaborated a solution that makes drought a calculable factor also, and turns it into a precisely working regulation parameter.

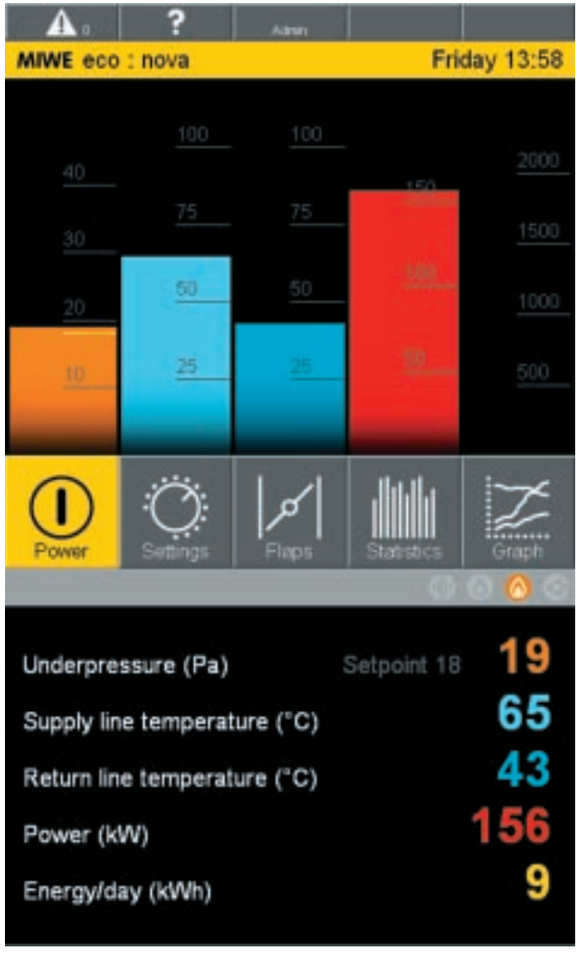
A chimney is required and used as before – but only one for the entire unit, a significant cost advantage. This chimney is actively supported, because each heat exchanger – no matter which construction type – reduces the natural chimney effect not only by the flow resistance within the unit, but also by the cooling of the flue gas, which lessens the lift powers.

With the MIWE eco : nova an innovative solution was created that allows optimal heat recovery on the one hand, but supports perfect (and at least perfectly controllable) drought conditions at the same time.

We achieve this with a combination of two components: an electronic frequency-controlled drought blower (per unit), and a new dynamic drought adaptation (one per baking oven) registered for patent.
This combination provides the right drought in the baking oven in a significantly more reliable and even manner than a chimney in all weather conditions. The drought blower consistently provides the required vacuum in the exhaust system.



The touchscreen displays all pressure parameters of all baking ovens and the status of the respective drought regulation at the push of a button.



The MIWE eco : nova constantly shows you all operation-relevant parameters in quickly readable graphics, and saves them for ongoing documentation

With the dynamic drought adaptation the drought can be set accurately to 0.01 mbar each (= 1 Pascal) for each baking oven.

Different than with conventional drought valves, no fresh air from the bakery is added in the process. This also finally eliminates the tiresome problem of the different weather-caused drought conditions. Because no cold air is added, there is also no energetically undesired cooling nor the important dewpoint lowering mentioned earlier.

The thing that will please users the most however, is that with this solution they also finally have control of the last baking parameter, and are able to set it accurately within a broad value range: The drought, which has the decisive influence on the quality of the baking products – fully independent of weather and season.

If the product demands it, you can de-steam the baking oven quickly with a strong drought or weaker drought, if need be. Can you imagine what that means for the consistency and quality of your products?

High operational reliability

Just like with any active regulation, the question comes up also concerning the MIWE eco : nova: What happens in case of a fault or malfunction? And even more important: What consequences does a fault have on the processes in the bakery? The answer is simple: None.

We at MIWE know of the necessities in production: Downtimes are to be avoided at all costs regarding a process sequence that does not allow random interruptions, because it always contains live dough. Therefore the MIWE eco : nova is equipped with a bypass, a simple installation that leads flue gas and steam past the actual recovery unit directly into the chimney in case of fault. This is also the reason why we recommend connecting the MIWE eco : nova to a chimney, even though it usually could do without one under normal operation.

How much energy can I recover?

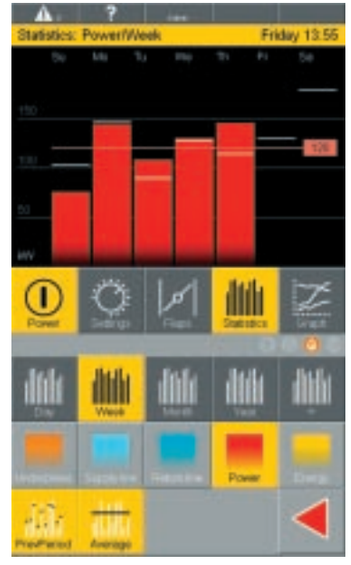
The important question for bakers remains: How much energy can I recover with the MIWE eco : nova? In general, one can assume that approximately one fourth of the total energy that is consumed for baking can be „recovered". With a classic baking goods mixture (see further below) this can add up to about 600 kWh on a single day – a volume with which the investment in a MIWE eco : nova can amortize itself already within a few years with the energy prices common today. How much energy can be recovered in detail is among other things dependent on how much energy was previously consumed for baking.

The advantage is therefore significantly different from baking goods to baking goods. In general, the following is applicable: The higher the baking loss, the higher also the useable energy potential. Therefore the baking of hard rolls usually generates the highest energy recovery, for example.

Next to the product, the achieveable energy recovery is also dependent on the total burner capacity (meaning the operating time of the baking oven), and on the desired process water temperature. In general, the energy recovery can be coarsely calculated with the following formula: Energy recovery [kWh] = Baking loss x Burner capacity [kW] x Baking duration [h].

The parameter termed here as „baking loss" is a specific product of flue gas, steam, burner runtime, and level of effectiveness – dependent on the water temperature – that we have determined for numerous baking goods in empiric tests.

Therefore, with a total burner rated power of 520 kW and a total baking duration of 1.86 hours, this amounts to an energy recovery of approx. 240 kWh for hard rolls. In this specific case, a user of the MIWE eco : nova generates an energy recovery of more than 630 kWh per day with a typical baking goods mixture of bread (3.83 hours total baking time), hard rolls (1.86), lye products (0,43), sweet rolls and



Statistical illustrations help you in the operational optimization: All parameters can be matched with pre-period or medium value in different time intervals.

poppy seed snail-shaped pastries (0,466), apple turnovers (0,36) and Croissants (0,31).

You can easily calculate how much potential your own baking goods contain using the MIWE eco : nova-example calculator that we provide for you on the Internet at www.miwe.de/econova. The baking losses for the common baking goods are already saved there. You only have to enter the total burner rated output of your baking ovens and the total baking time to learn how much energy you can recover with the MIWE eco : nova.

For detailed analyses however, an individual actual analysis of your business is necessary. Our experts are gladly available to you for this purpose.

Also on the inside the MIWE eco : nova is clearly structured and has a service-friendly design.

When is usage beneficial?

The MIWE eco : nova can generally be combined with all baking oven types and different burner capacities. However, it is obvious that there is a lower limit by which the use of a heat exchanger is even beneficial economically. We therefore recommend the MIWE eco : nova for installations from 4 baking ovens upwards resp. from a gross burner capacity of approx. 320 kW. There hardly are upper limits, as the MIWE eco : nova can be conceptted at will in steps of 160 kW (burner capacity) all the way to 800 kW.

One more thing energy savers should consider: Recovered energy is good – but only then if it is also truly used.

Therefore, before you invest in energy recovery, you should review where and to which extent you can use the hot water that the MIWE eco : nova supplies so conveniently and cost-effectively, and consider that the unit not only runs in wintertime, but also at the peak of summer.

Typical takers for hot water in the bakery are for example dishwashers, followed by heating and warm water supply, and finally takers in the vicinity or also further away.

Of course, a heat exchanger always is the most beneficial if it is integrated in a comprehensive energy concept, which for example also includes the bakery refrigeration units.

Our expert consultant team is gladly available to you for all of these questions. ■

- Highest total efficiency thanks to the separation of steam and flue gas; uses the full thermal energy of both material flows
- Recovers an average of one fourth of the energy consumed for baking – this corresponds to a unit efficiency of up to 37 %
- Heat exchanger with the inside smooth pipe principle with condensate collecting tub
- Clean: A sulphur dioxide flue gas washing unit with $CaCO^3$-neutralization for the protection of the environment is already integrated
- Constant total drought by forced suction (central fan with frequency converter-PID-regulation)
- Highest operational reliability due to MIWE bypass
- Automatic, dynamic drought adaptation to any baking oven
- The oven drought can be individually regulated for each baking oven
- Central system that is useable for numerous baking ovens, available from a baking oven burner capacity of 320 kW to maximum 800 kW in expansion steps of 160 kW

MIWE eco : nova
The central heat recovery system for bakeries

Some like it hot!

Pizza out of an ordinary baking oven? Now there is something better.

The FreshFoodSystem MIWE cube receives a hot backup: The MIWE cube : fire for Pizza & Co. And with it a cool tool for easy planning: The online variant planner.

Fresh bakers have even more alternatives now. The third baking component for MIWE's modular baking system has been introduced in autumn of 2008.

The MIWE cube : fire, a hot-blooded specialist for all baked goods that need especially high temperatures up to 350 °C. Pizza, snacks, tarte flambée, lye pretzels and the like turn out even better now.

Four full-grown pizzas (ø 26 cm) have room on the baking space of the MIWE cube : fire. At the same time, it fits accurately into the cube system in terms of design as well as dimensions, meaning it can be combined with all other components (from the base to underframes and proofing chambers, all the way to the baking modules) at will.

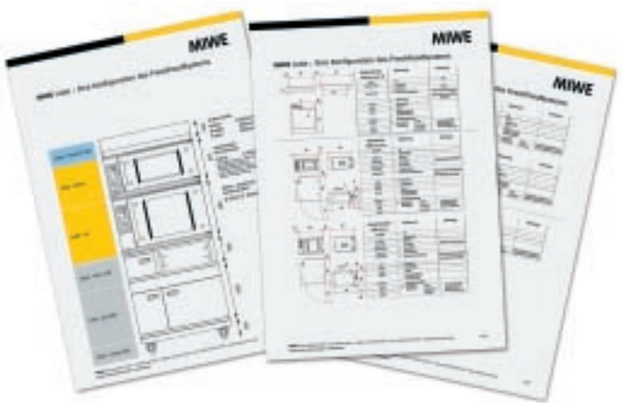
Robust as it is, the MIWE cube : fire carries loads of up to 250 kg. If you wish, you can also stack up to four of these hotspurs on top

You can find the MIWE cube:variant planner on the Internet at http://www.miwe.de/cube-planer

of each other. The MIWE cube : fire bakes on a solid stone plate, just as is right and proper for a real pizza baker.

Therefore bakers now have the choice of three different baking modules for their FreshFoodSystem for baking in front of the customers, and can combine these modules at will to meet their individual requirements: the convection baking oven MIWE cube:air, the deck baking oven MIWE cube:stone, and the pizza specialist MIWE cube : fire.

With a push of a button you receive accurate specifications of your desired configuration.



This is the first modular system in which each product receives precisely the baking atmosphere it requires for perfect baking and therefore also a perfect taste result.

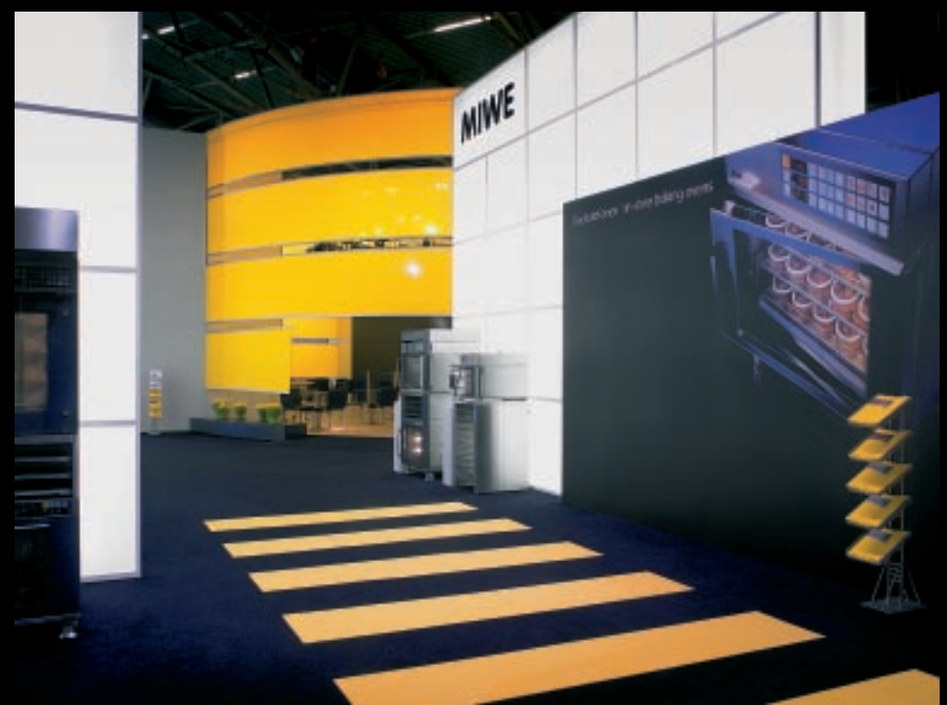
By the way, you can configure your own individual FreshFoodSystem so easily: With the variant planner for the MIWE cube. On the left, you can see all of the available modules, on the right side your individual configuration is displayed – of course it is still empty when you start out. Using the mouse, simply drag and drop the desired components to the right position, one after each other. This is not only helpful for the composition of a new FreshFoodSystem, but also for example if you are reconfiguring existing systems for modified use, and expanding in the course, where necessary.

As soon as your configuration is finished, you can print all relevant technical data (connection loads, weight, dimensions) with the variant planner. And send a corresponding inquiry to MIWE with one click of the mouse, if you wish.
Hot stuff, don´t you think? ■

Fair dates

- **FBK**
  Berne / Suisse
  25.–29.01.2009
- **Gulfood**
  Dubai / VAE
  23.–26.02.2009
- **Salon de la Boulangerie**
  Paris / France
  07.–09.03.2009
- **Internorga**
  Hamburg / Germany
  13.–18.03.2009
- **Bakepol**
  Kielce / Poland
  24.–28.04.2009
- **Indagra Food**
  Bucharest / Romania
  20.–23.05.2009
- **Modern Bakery**
  Moskow / Russia
  23.–26.06.2009
- **iba**
  Düsseldorf / Germany
  03.–09.10.2009
- **Anuga**
  Cologne / Germany
  10.–14.10.2009

You can find our current trade fair deadlines on the Internet at www.miwe.com/news



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