

Vocational School Kitzingen

„The planning was an incredible challenge for us“, Hans Stahl remembers. The master baker and technical instructor is head of the practical training department and was decisively involved in the planning for the new apprentice bakery at the Kitzingen Vocational School. The school now boasts conditions of the highest standard for providing education and training in the bakery and pastry trades.

A number of apprentice bakeries have been installed here incorporating state-of-the-art bakery technology and training techniques. MIWE plays an integral role where provision of the oven and refrigeration technology is concerned. The bakeries are namely equipped with an entire range of different MIWE solutions. Whereas MIWE condo deck baking ovens or MIWE roll-in rack ovens are used for baking, the training area is fitted with oven technology from the MIWE FreshFoodSystem equipment range. The entire refrigeration area comprises MIWE bakery refrigeration solutions – solutions ranging from cold storage and deep-freeze cells for the bakers to cooling cells for the pastry area.

The new installation became necessary and was therefore permitted because trainees from three different vocational schools were due to transfer to Kitzingen. There are currently 2,200 trainees enrolled at this public vocational school, 440 of which are receiving training in the bakery and pastry trades. Workshops that had been previously used for automotive training were remodelled and equipped for the purpose of training these 440 apprentices.

Today, each of the bright, light-filled technical rooms is equipped with an air conditioning system that literally ensures for an optimum climate. „This is not only important in the pastry area“, departmental head Hans Stahl reasons. „The students and teaching staff should be provided with the best possible conditions in which to teach and learn.“ It is for this very reason that the apprentice bakeries have been equipped with the latest state-of-the-art technology available on the market. „In this school, we work with the machines and equipment that the trainees will find in any modern business“, Hans Stahl summarises.

The bakery area consists of two apprentice bakeries fitted with identical technical equipment. Such a setup was necessary



For current day sales specialists in the bakery trade, baking skills are part and parcel of the training process. These skills are taught using the MIWE cube:air and MIWE cube:stone.



The pastry cooks' practical room houses a five-chamber MIWE condo complete with proofing chamber.

sary because the classes have to be split into two groups for their practical lessons. The technical instructors use each of these apprentice bakeries to teach groups of between 10 to 16 students.

„The current techniques for providing practical instruction involve giving the students as much freedom and individual responsibility as possible. The teacher remains on the periphery as a point of contact and source of technical expertise“, Hans Stahl says, highlighting the training concept. In small groups, the students put recipes into practice and bake without any form of assistance. And it is for this very reason that the technical facilities we provide here are so necessary.

„The entire planning and set-up (of the bakeries) took place under a very advantageous constellation, namely with a new „field-based“ programme of study that was developed for the baking apprenticeship following the introduction of the „learning field theory“ in vocational education,“ headmaster and further education director Bruno Buchen explains. „This new programme demands an exceptionally close link between theory and practice.“

The practice-orientated tuition method involved here is based on a didactic concept that links the technical and practical elements together. The school's new technical rooms offer the best opportunity for practising this new teaching concept to an extremely high level of efficiency, academically speaking. The dual partners of the educational institution, the training companies, are not only impressed by the technical equipment available in the specialist department, but have also praised the entire, single-source teaching concept.

Several kneading machines with different mixing systems have been made available. There are small kneading machines and mixers for small dough batches and large



A proofing chamber completes the front of the oven.

batches. For the baking process, each apprentice bakery is equipped with 16 MIWE condo ovens. Each oven can be controlled separately and has a baking area of 60 x 80 cm. „This means that during the exam period, each student has his or her own oven“, Hans Stahl says happily.

There are several good reasons for using MIWE condo ovens in an apprentice bakehouse: each oven can be controlled independently, they have short heating-up times and they are electrically heated meaning that they are neither noisy, nor do they produce any gas emissions. The ovens are technically sophisticated and solidly built. Of course, such advantages also make the MIWE condo a good choice for commercial bakehouses.

A MIWE roll-in is used in each of the apprentice bakehouses to mimic the operational practice common to a business as closely as possible. „It is simply about demonstrating the principle and the advantages it brings to the production process“, departmental head Stahl explains. Small MIWE roll-in ovens are used, each with 16 shelves of size 60 x 40 cm and an electrical heating system.

Fitted with the air management system, aircontrol, the MIWE roll-in shows the students all that can be achieved with modern technology in the present day bakery trade. Because different baked products possess varying characteristics in terms of heat conduction and differing volume to mass ratios, the MIWE aircontrol has a feature that allows you to react to these differences. In addition to the temperature, the air volume control can be individually adjusted for each product. „A „soft“ heat is required for baked products with high contents of fat and protein and we are able to control this accordingly“, says Hans Stahl, highlighting the requirements. In „live practice“ sessions, the students determine the required parameters themselves by conducting baking tests

and save these parameters in the oven's control system. Incidentally, the students learn that energy can be saved by using these types of techniques. This is made possible because the amount of circulated air and the baking temperature are mutually dependent. Higher air circulation can be offset with lower baking temperatures or shorter baking times, reducing energy consumption.

Each oven is fitted with a large exhaust system. The ventilation plates are designed in such a way that they can be removed for cleaning. „We want to experience cleanliness and hygiene“, Stahl explains, „which means that the ovens have to be kept clean constantly.“ The MIWE exhaust system can manage this – it is powerful, yet quiet.

The fact that the training conditions at the school are very similar to the actual market conditions is also apparent to the sales trainees. According to the opinions of the technical instructors, in-store baking must form a substantial part of the training process. To this end, the latest range of MIWE FreshFoodSystem in-store baking ovens are installed onsite. The modular system makes it possible to combine different baking ovens, proofing chambers, tray inserts and steam extraction systems on the same ground area by stacking them on top of one another.

The public vocational school in Kitzingen has combined a convection baking oven – the MIWE cube:air with a deck baking oven complete with stone plate – the MIWE cube:stone. The MIWE cube:air is ideal for baking rolls, while the gentle radiation heat of the deck baking oven lends itself to the baking of snack products such as soufflés.

One example of a practical lesson involves the production of half-baked rolls, which are then baked to completion at a

later stage using the in-store baking ovens. This lesson is not only given to the production trainees (bakers) but also to the sales trainees (sales specialists). „The sales specialist becomes familiar with how the bakery operates and the bakers get to know what happens when their products are not up to standard“, Hans Stahl explains, highlighting the advantages.

„During the planning stages, we asked ourselves what a baker does and how we could best convey this to the trainees“, Stahl explains. The vocational school's main objective is the impartment of knowledge for practical use. We are even able to demonstrate long-time dough methods to the students. In the refrigeration area, automatic proofing machines, cold storage and deep-freeze storage cells are available for use.

Hans Stahl and his fellow technical instructors are amazed when they observe the trainees getting to grips with the control system programming. „It did not take them long to understand it and given their age, you could almost call it ‚child's play‘.“ All of the ovens and refrigerating units are equipped with the MIWE fixed program control. In just a few button presses, the parameters are set.

Each baking chamber of the MIWE condo is controlled separately. The electronic MIWE FP8 is positioned to the right of each baking chamber. The abbreviation stands for fixed program control with 8 fixed program keys. A single press of one of these eight keys is all it takes before a preset baking programme is underway.

As many as five individual process phases can be saved in a baking programme. Aside from the baking time and the top heat and bottom heat temperatures, the steam quantity and steam exposure time can also be defined for automatic operation. In addition to the eight fixed programmes, →



The control system for each oven is connected to a network and can be operated from the preparation room used by the teaching staff.



Even fixed program control systems such as the MIWE FP require instruction.



Nowadays, a bakery requires the implementation of refrigeration technology. The onsite equipment includes cooling cells for cream products (MIWE SK), a freezer storage unit (MIWE TK) and a cold storage unit (MIWE NK).

other baking programmes – up to a total of 30 – can be entered into the control system.

All of the control systems are connected via a network. Incidentally, due to the number of ovens and cooling cells onsite, the school has probably created the largest network of baking and refrigeration technology in Germany. Hans Stahl: „This is something that you find increasingly in businesses today. The education and training the students receive has to address that.“ MIWE networks its oven and refrigeration technology via wincab, a programme that is both simple and intuitive to operate. This enables access to the system via remote servicing. The students do not only learn how to perform the settings on the control systems of the ovens and refrigeration units themselves, but rather they also learn how this can be done on the PC.

For teaching purposes, Hans Stahl and his colleagues are able to project each oven control system onto screens installed in the apprentice bakehouses. „This way, everyone can see what settings have been entered and where there might be potential errors“, the technical instructor explains, pointing out the advantages of the networking feature for the school’s teaching method.

The pastry area comprises both a „warm“ and a „cool“ bakery. The main feature of the warm bakery is the MIWE condo deck baking oven. The oven is used for baking pastry bases and other pastry shop goods. In the cool pastry shop, it is a cooling cell that captures your attention. „This room is mainly used for cooling any chocolate-based products, because we are often short on time“, Stahl explains. The cooling process is attuned specifically to meet these requirements and only generates a very low level of humidity.



Technical instructor Hans Stahl is the departmental head responsible for the bakery classes at the vocational school in Kitzingen.

Additional MIWE cold storage and deep-freeze cells of varying types are also available in the faculty storerooms. „On the one hand, we require this additional refrigeration space for our raw materials. However, we also want to demonstrate the different dough processes by means of refrigeration“, Stahl explains. Automatic proofing units have also been installed in the two apprentice bakeries used by the bakery trade trainees, so that they can also become familiar with how these work. „The learning environment conditions that we offer here really do count among the best“, Hans Stahl summarises. MIWE is happy to know that, in providing high-quality technology from their Arnstein-based company, they have been able to contribute to ensuring the future of the bakery and pastry trades.



A generously dimensioned air duct positioned above the ovens ensures for a favourable climate in the apprentice bakeries.