

Saving energy step by step

WALTER PLÜCKER INTENDS TO GRADUALLY CONVERT HIS FAMILY BAKERY IN WALDECK, GERMANY, INTO A LOW ENERGY BAKERY. HE HAS TWO YEARS OF EXPERIENCE



++ figure 1
The heat recovery plant MIWE eco:nova feeds two water tanks with a capacity of 7,500 l each. The stored water is used for the crate washers, the production machines, different proofing rooms and for supplying a residential house with warm water

++ figure 2
Master Baker Christian Plücker is responsible for production and dispatch

+ When asked about the newly integrated heat recovery plant MIWE eco:nova, Master Baker Christian Plücker, responsible for production and dispatch at the bakery Walter Plücker in Waldeck, Germany, is enthusiastic, “I would always do it again.” Two years ago the bakery was looking for new rack ovens with an integrated heat recovery system because the former oil-heated ovens had done 20 years of service. MIWE GmbH from Arnstein, Germany, installed three new double rack ovens including the newly developed

eco:nova heat recovery unit. Master Baker Plücker is very pleased. The oven manufacturer has continuously supported the bakery; there have always been new updates available for the plant. The system is suitable for meeting the heat requirements of a cleaning plant recently purchased from Kitzinger Maschinenbau GmbH, Flensburg, Germany, and also a residential home with 400 sqm of living space. The heated water is stored in two 7,500 l water tanks. “We currently also have a central heating plant for peak times as backup”, reports Plücker.

Mode of operation

The central condensate and exhaust gas heat recovery system eco:nova is situated downstream of the ovens. It works as a central chimney and heat exchanger. Fans inside the plant suck in flue gas and vapor from the ovens separately through several heat exchangers that generate warm or hot water. A sulphur dioxide flue gas washer purifies the flue gas by leading it through a water bath where lime stone neutralizes the bound contaminants. ▶



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++ figure 3

The control MIWE TC depicts all important parameters such as temperature or recovered energy. Added to that there are statistical data available for all parameters

++ figure 4

Master Baker Christian Plücker can rely on a 165 sqm baking area

++ figure 5

The bakery only uses grain grown in Hesse, in the German Federal State



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The degree of suction can be separately controlled for each oven via frequency-controlled flaps. Apart from the newly installed ovens, the four existing trolley ovens have also been connected to the heat recovery plant. Altogether the eco:nova plant has a total burner capacity of 800 kW. Recently the plant was maintained and cleaned by MIWE staff and Plücker was amazed that the unit was barely soiled. Eike Zuckschwerdt, Manager of MIWE energy, explains, "During the design stage we paid attention to easy maintenance of the plant. According to our knowledge, the eco:nova plant only needs to be maintained every three years when operating with gas." Currently about 40 of these plants have been installed in the core markets of Germany, Austria and Switzerland. From 2011, Western and Eastern Europe shall be served as well.

"The installation of new technology always results in changes in the production. To me it was important that the qual-

ity of the baked goods was not impaired. Therefore, we decided on a step-by-step approach for the conversion into a low energy bakery," explains Christian Plücker. A photovoltaic unit was installed on the roof about one year ago; its solar cells convert energy from the sun directly into electrical energy. The energy obtained from the different installations is not only used for the generation of warm water but also for the air conditioning of the production areas.

Further optimization measures for the production are also scheduled. The bakery has also invested in the new MIWE TC (Touch Control) control for the refrigeration equipment. The Plücker employees are familiar with this control from the eco:nova plant and the rack oven MIWE roll-in. The control is centralized and because of the uniform operating concept the employees do not have to be trained for separate programs. Furthermore, the individual energy consumers can be directly controlled and all important pa-



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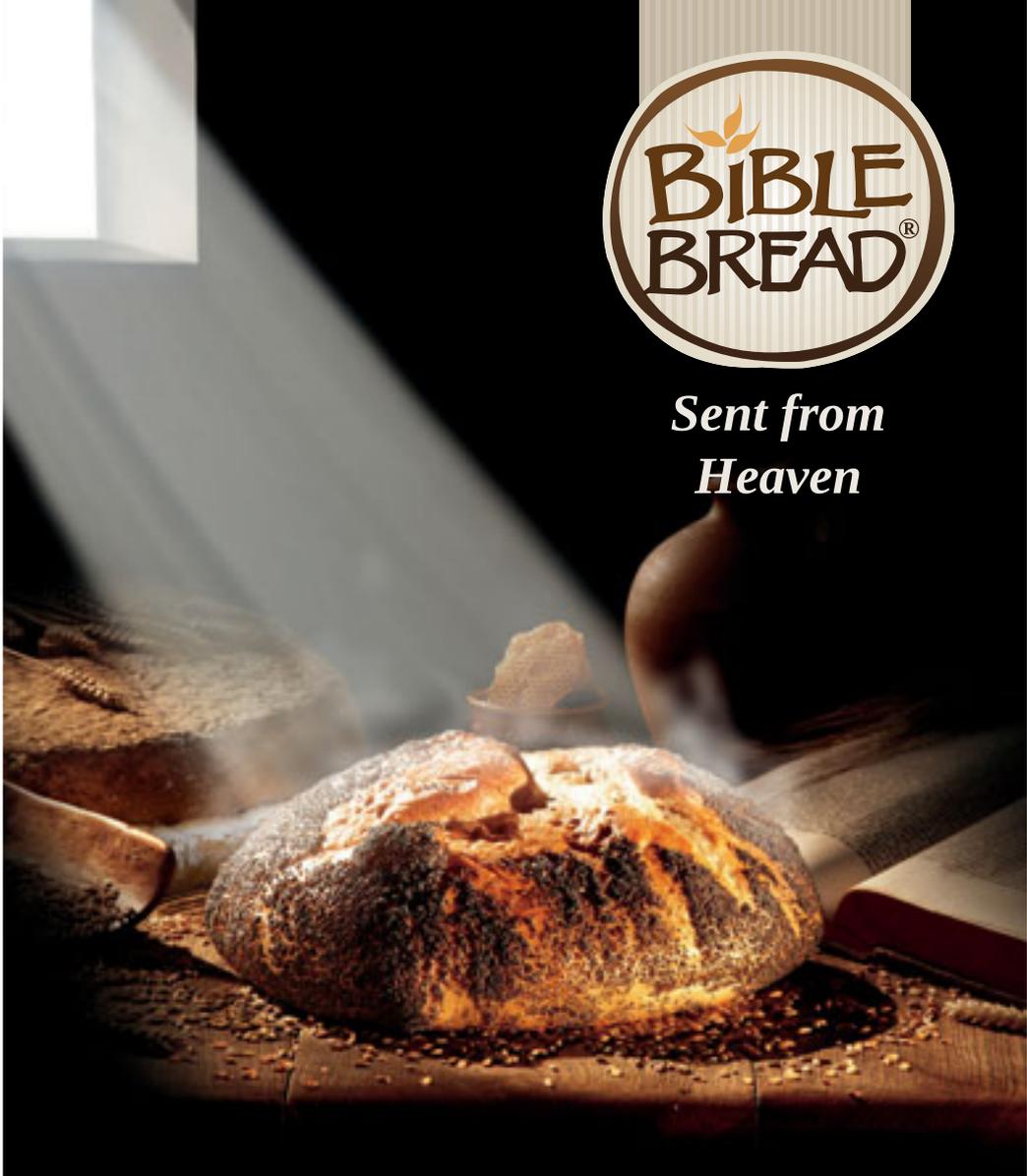
rameters such as the actual temperatures or the amount of recovered energy can be easily checked. There are also comprehensive statistical features available that can be used for energy efficient operation and baking. Another installation was the system MIWE eco:proof where proofing is supported by warm water. For the optimal utilization of the energy, Christian Plücker not only invested into MIWE proofing units but also retrofitted an existing climate cabinet with new MIWE technology. The proofing parameters for each product are individually optimized. The temperature is controlled via frequency converter and TC control. "Since the climate is adjusted to each product and the heat is transferred via warm water, the environment we create is perfect for the product. The transfer of heat and humidity is done non-aggressively," explains the Production Manager. Master Baker Plücker has also observed an improvement in the quality of the baked goods and an increase in proofing stability. Added to that, between 100 and 200 kW/h flow back into the production via the eco:proof system. The other proofers, with a total area of 80 sqm, will be retrofitted in the near future.

Innovative family company

The growth of the family bakery started in 1989 with the expansion of the sales outlets. Today the company operates 30 of its own outlets. Approximately half of them are situated at the entrance sections of supermarkets and the other half at independent locations. All sales outlets are located within a radius of 50 km of the production facility. Six of its own trucks deliver the fresh products to the outlets. Added to that, there are four driver-sales trucks that serve different routes around the National Park Kellerwald-Edersee. The company employs 175 people, 30 of them in production. Plücker has been able to stand up against competitors such as dis-

counters and food retailers. He reports that, "The rural structure protects us and added to that we have many regular customers." Most of them are rather traditionally minded and not necessarily open for product innovations. "Despite the economic crisis, we have been able to increase our sales in the past two years without expansion of the production", emphasizes Christian Plücker. The baker's motto for its product range is: Cobbler, stick to your last. The sales outlets do not offer warm meals or lunches. "Our strength is bread", reports Plücker. The bread business accounts for about 40% of sales; small baked goods contribute about 30%, cakes 20%; the remaining share is snacks and the coffee business. +++

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