

Comprehensive energy concept

AT IBA, MIWE, THE MANUFACTURER OF BAKING OVENS AND REFRIGERATION SYSTEMS FROM ARNSTEIN, GERMANY, WILL INTRODUCE A CONCEPT FOR THE OPTIMIZATION OF ENERGY IN BAKERIES: MIWE ENERGY



+ The production of baked goods requires a lot of energy. When using refrigeration equipment for separating the time of production from the time of sale, the energy consumption rises even more. It is no wonder that companies are looking for possibilities to save or recover energy, for example by recovering heat from the exhaust vapors of baking ovens. Currently, the most common method for re-

using thermal energy is via water heating. Unfortunately, the time of heat recovery from flue gases and steam is hardly identical to the time when the warm water is needed for the cleaning of crates or for heating systems, for example.

This was the reason behind Miwe commissioning a working group consisting of thermo-dynamic engineers, sales staff and service experts with the aim of searching for more com-

prehensive concepts. Miwe will present the results at iba. Key to the concept is to stop approaching the problem from the equipment side alone. Instead, an energy composite system will be developed based on four aspects and offered to the companies as a consulting service.

1 Saving energy with at least the same performance – a check-up of the equipment for efficient use of energy.

The company will present a Miwe roll-in e+ baking oven as an example as to what may be possible. According to the company this oven will use 15% less energy than the previous model. Miwe claims it to be probably the most economical rack oven in the world.

2 Due to physical reasons, no baking oven is able to use 100% of the energy introduced and so the Miwe concept also focuses on the utilization of exhaust heat from ovens and refrigeration equipment. Already available on the market is Miwe eco : nova, a combined flue gas/vapor recovery system with integrated flue gas cleaning and automatically controlled slide trap. It can be used economically for burner performances above 160 kW; up to now the limit has been 320 kW total burner capacity. New for smaller baking ovens or restricted space is the MIWE eco : box, a heat exchanger for flue gases with very good efficiency. In general, bakeries use an expensive type of energy for freezing, namely electrical power. The phase transition in the temperature range around 0 °C (or -7 °C for dough) is high in energy consumption. This is where MIWE eco : freeze steps in: an absorption cooler with a new type of refrigerant that is able to produce low temperatures down to -10 °C from hot water (>95 °C). It will save a lot of electrical power in the freezing plants. For the utilization of waste heat from refrigeration plants, special plate heat exchangers are used which can also be operated in two stages, if needed, while achieving higher temperatures above the common 40-45 °C. A stratified storage concept is used as a central buffer and energy management unit from where the interfaces to the air-conditioning and heating systems of the building and also the heating of process water are served.

3 Alternative energy generation and energy carriers
Co-generation units are already available in sizes suitable for single family homes. This technology is only of limited use for bakeries because of the simultaneous generation of electrical energy and heat, the latter being available in excess in bakeries. Nevertheless, electrical power can be generated with the use of waste heat as is similar with the eco : freeze. Miwe provides co-generation units in cooperation with partners. For the use of energy carriers such as pellets or wood chips, Miwe offers a new biomass firing unit.

4 The Miwe consultation service consists of three stages:
+ Review of the existing equipment with a rough estimate on profitability and optimization of energy consumption
+ Actual analysis based on a detailed collection of all relevant data including consideration of the situation in the building and product range. Based on this analysis, an energy balance and possible solutions including calculation of investment costs and profitability will be prepared.
+ Detailed individual concept for energy optimization and a quote for implementation. +++

STORAGE

DISCHARGE

CONVEYING

SIFTING

WEIGHING

METERING

TEMPERING

MIXING

KNEADING

CONTROLS

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