

# Gentle heat for optimum quality

DR. GERD MEYER (52), PROCESS ENGINEER AND MANAGING DIRECTOR OF DAUB GMBH, HAMBURG, GERMANY, EXPLAINS IN THIS INTERVIEW HOW TO USE THERMO-OIL FOR THE PRODUCTION OF BAKED GOODS.



**+ bbi:** Dr. Meyer, the oven has traditionally been the heart of the bakery – is this still true today considering the increasing amount of automation of entire production processes that we are experiencing?

**+ Dr. Meyer:** The oven is still of central significance, but there is more to it. We are able to control the entire processing chain from the proofing stage to the finished baked item. We know when, where and how to dust with flour, when and how to cut the baked goods and of course, we are specialists in the actual baking process. As a result of all of that, we are able to offer our customers thermo-oil ovens.

**+ bbi:** Why do you prefer thermo-oil?

**+ Dr. Meyer:** Thermo-oil ovens bake with a very mild radiation heat. This keeps more moisture inside the crumb and the products stay fresher longer. At the same time, it can be determined how the crust should develop: hard or not so hard, with many cracks for a rustic appearance or with a beautiful bloom. In addition to that, energy can be saved and clearly less acrylamide is formed in the product.

**+ bbi:** What is the reason for the energy saving?

**+ Dr. Meyer:** About half of the energy consumed during baking is for the evaporation of water from the dough. A thermo-oil oven provides a uniform baking temperature without any temperature peaks. Due to the more careful baking process, about one-fifth of the evaporation energy can be saved because more water is kept inside the product, which in turn prolongs the fresh-keeping period. Calculated on the entire baking process, such a thermo-oil oven saves about 10% energy due to the lower baking loss when compared to other processes. Added to that, several ovens can be heated with one boiler plant, thus requiring only one gas stream flue and one chimney. When used to their optimum, energy and raw material savings of up to one third can be realized with thermo-oil ovens.

**+ bbi:** What are the raw materials savings?

**+ Dr. Meyer:** Due to the improved baking behavior of the thermo-oil oven, we can intervene directly in the processes upstream of the oven. One key factor is the prolonged oven spring observed in a thermo-oil oven which enables the baker to reduce the proofing time. This makes the proofed doughs less susceptible. Therefore, we can use more water

and less yeast. About 6% flour can be saved when increasing the dough hydration by 10%. And yeast also costs money!

**+ bbi:** Does this also apply to panned goods?

**+ Dr. Meyer:** For panned goods, we use special radiators. Toast bread, for example, will develop more uniformly and fills the pan precisely without developing a "waist".

**+ bbi:** Can thermo-oil be used for heating stone-plate ovens?

**+ Dr. Meyer:** Yes, stone-plate ovens can be excellently heated with thermo-oil.

**+ bbi:** Are there specific baking benefits when using this combination?

**+ Dr. Meyer:** The gentle heat transfer and low baking losses make thermo-oil heated stone-plate ovens very suitable for par-baked artisan products with open structure and the so-called "egg shell crust". A lot of moisture is retained in the products, while at the same time the sides and bottom of the product are very stable when baked on stone.

**+ bbi:** Do you build stone-plate ovens in all variations: deck, rack and tunnel ovens?

**+ Dr. Meyer:** In a deck oven, stone-plates should be a natural feature. However, attention must be paid to optimum loading technology. Daub is the only company producing multi-level tunnel ovens with stone plates because this can be well realized with thermo-oil. In the past 12 months, Daub has commissioned five automatic stone-plate tunnel ovens with more than 500 sqm of baking area. High quality frozen products such as ciabatta and baguettes are baked in these ovens.

The customers experience a clear increase in quality. As far as rack ovens are concerned – we have recently introduced the new Artisan Stone Thermo Roll with a baking area of up to 10 sqm on a footprint of just 1.2m by 2.0m. This oven can be completely loaded at one time. This is optimal for medium-sized bakeries which request high capacity but only have limited space in their bakeries.

**+ bbi:** What is this?

**+ Dr. Meyer:** The radiators which provide the heat for the oven are covered with stone so that traditional, unmoulded products can be loaded directly. However, it is also possible to push a trolley with pan bread or trays into the oven, while the stone-plate remains inside the oven. Next to its high flexibility, the oven also has high performance.

**+ bbi:** What type of baked products can be made in a thermo-oil oven?

**+ Dr. Meyer:** The range of products that bake well in a thermo-oil oven is very large. It stretches from bread and rolls to cookies, very dry biscuits and juicy cakes. The gentle heat transfer inherent in this oven technology is positive because the products will obtain a uniform and flat shape.

**+ bbi:** What is next on the investment agenda at Daub?

**+ Dr. Meyer:** We will increase our engineering capacities as we are convinced that future orders will have to be more and more individualized, requiring highly qualified developers and service personnel.

**+ bbi:** In which areas of the world do you expect to see high growth rates in the next few years?

**+ Dr. Meyer:** First of all, Germany is one of the most important markets to us. However, international business is increasing in significance. In the past years, our export share has steadily grown. The most important foreign markets are Eastern and Southern Europe.

**+ bbi:** Let's go back to the energy savings. Besides the use of thermo-oil, what else is Daub offering for environmentally friendly baking?

**+ Dr. Meyer:** For Daub, this is not exclusively a matter of technology. We are also increasingly considering the process. More than 50% of the energy consumption during baking is needed for the evaporation of water from the dough. About 17% of the energy escapes via exhaust air. Therefore, for energy savings we have to consider two fields of the baking process; water evaporation and exhaust air.

**+ bbi:** Can you explain in concrete terms how you save energy?

**+ Dr. Meyer:** We use intelligent controls and sensors for the management of vapor and exhaust air. This allows a more precise control and monitoring of the baking process, the amount of exhaust air and product quality. In this way we save energy. Added to that, thermo-oil ovens have a lower baking loss. In concrete terms, the baking loss is reduced by up to 3%. The energy-saving features of our ovens are achieved by reasonable control of the temperature, the baking process and by use of radiation.

**+ bbi:** Will the aspect of heat recovery play a larger role in the future?

**+ Dr. Meyer:** The recovery of flue gases is part of our standard program and is increasingly requested by our customers. This one-time investment is paying off and often, within a very short time.

**+ bbi:** Dr. Meyer, thank you for this interview. +++

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