

# New paths

THE APPLICATION OF VACUUM TECHNOLOGY IN THE BAKING INDUSTRY IS AN EXCITING NEW WAY USED IN THE PRODUCTION OF APPEALING BAKED PRODUCTS



**++ figure 1**  
Product check after vacuum cooling



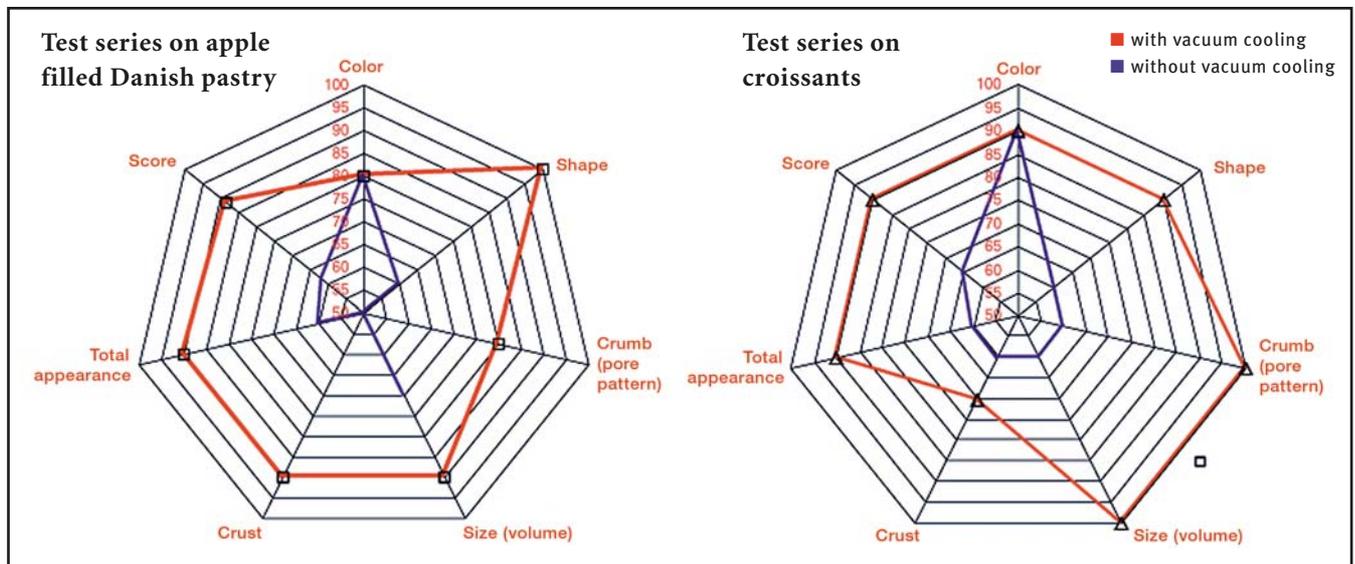
**++ figure 2**  
Brioche for home-baking, bake-off 2-3 minutes at 200°C (ready to eat)

**+** Danish pastries from the bake-off station, yeast-raised donuts that look and taste freshly baked, ready to eat pizzas with a topping that does not soak the pizza base – cooling and baking with vacuum opens up all these possibilities.

The audience meeting, organized by Cetra-vac-Foodtechnology at the Institute for Grain Processing (IGV) in Potsdam, Germany, was well selected: industrial bakers from Germany, the Netherlands, Austria and the Ukraine, master craftsmen, traders and equipment-manufacturers all gathered together to have a close look at new application fields of vacuum technology.

The researchers and application engineers focused on three product groups, products for food service, products for bake-off stations

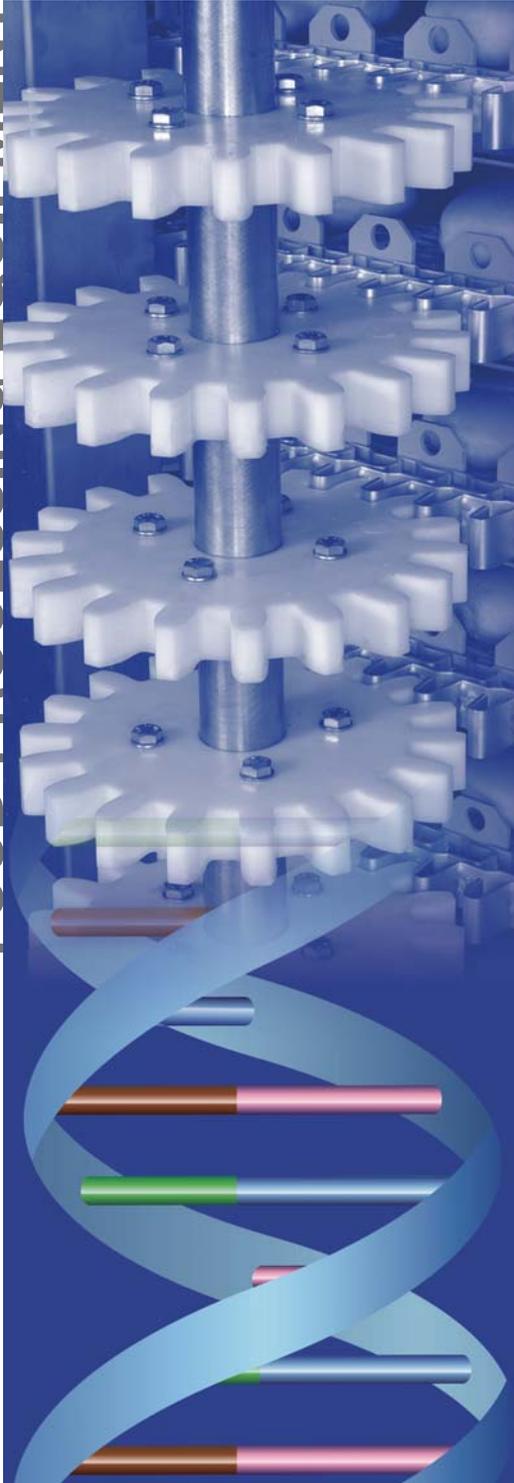
and products offered via a chilled convenience food counter at food retailers. According to the researchers at IGV, the gluten in the baked goods intensely gelatinizes during the cooling phase under vacuum. This slows down retrogradation and keeps rolls and bread fresher for a longer time. At the same time, the fast cooling phase reduces the risk of microbial growth and their contamination with mould spores. It also offers the opportunity of supplying food service companies with vacuum-chilled baked goods for breakfast or other meals several days in advance. Optionally, the breads can also be supplied frozen. The products presented, as examples, in Potsdam displayed a fresh, crispy crust and a soft crumb after only a short bake-off time and even if only just thawed. ▶



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**++ figure 3**  
Bread for bake-off, 10-12 minutes at 200 °C (frozen – ambient temperature)



**++ figure 4**  
Bread for food service, thaw only before serving (frozen – ready to eat)

**++ figure 5**  
Croissant with praline filling for home-baking, bake-off 2-3 minutes at 200°C (frozen – chilled fresh)

**++ figure 6**  
Soft pretzel sticks for food service, thaw only before serving (frozen – ready to eat)

According to Adolf Cermak, CEO of Cetravac, products sprinkled with salt or sugar can be frozen and thawed after vacuum cooling without impairing the sugar or salt decoration of soft pretzels and brioche.

Similar positive results can be achieved with par-baked Danish pastry. The vacuum cooling stabilizes the volume which prevents a collapse of the leaved structure but also encourages fillings that are baked with the dough to rise and fill all cavities emerging during baking. In a blind test with consumers, vacuum-cooled croissants and apple filled Danish pastry scored much better in all respects than commonly produced baked goods. The color was intentionally the same.

According to Cermak/Cetravac, the volume stabilizing effect in par-baked goods, which primarily makes these suitable for bake-off, is not limited to Danish or puff pastry. Even fried baked goods such as donuts or German

Berliner can be finished in a simple bake-off oven and provide significantly more freshness and taste than thawed frozen goods.

A comparatively new distribution channel for baked goods is the chilled convenience counter offering products for quick bake-off at home. For mass products, such as simple types of bread or rolls, this might not be an economical alternative other than for special or premium products such as pizza with toppings. In general, pizza with toppings is not a suitable candidate for prolonged chilled storage because the moisture from the topping migrates into the pizza base. This process is not completely reversible during baking.

However, the migration of water is significantly delayed in pizza subjected to a quick vacuum cooling. This opens up the opportunity for central production. A similar effect can be observed for goods sprinkled with sugar or salt. Such products are commonly not suitable for distribution in a frozen state as





the salt and sugar will melt fast during thawing. This process can be prevented by using vacuum cooling. The examples in Potsdam proved this.

A representative of the Dutch Bakkersland Group, which developed the process of vacuum baking together with Cetravac, confirmed in Potsdam the positive effects of the new

combination of vacuum cooling and vacuum baking on baked-off bread in store.

Cermak: "After baking, the bread has the same moisture content as before as the moisture is transported back into the pores during the process which, in turn, promotes the re-gelatinization of the starch. Bread made in this way has the same shelf life as freshly made bread." +++

**++ figure 7**  
Butter croissants for food service, thaw only before serving (frozen – ready to eat)

**++ figure 8**  
Butter croissants for home-baking, bake-off 2-3 minutes at 200°C (frozen – chilled fresh)

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