



# Final baking with a new infrared

RPE.InfraTherm GmbH, Lichtenberg/Germany, specializes in developing, producing and marketing services and products for infrared systems. A possible application has now been used in the WP Bakerygroup's new ITES oven, which was presented at the iba.



++ The new ITES pretzel tunnel oven based on IR.C for thawing and final baking



++ Pretzels emerge from the ITES

**+** Dr. Peter John developed baking using STIR infrared (Selective Transformed InfraRot) between 2002 and 2011 with the IBT.InfraBio.Tech GmbH company in Freiberg, Saxony. Today he is the Scientific Managing Director of RPE.InfraTherm GmbH in Lichtenberg, and has developed the technology further with HoFi GmbH, Winnenden, and WP Lebensmitteltechnik Riehle GmbH, Aalen.

The outcome of a joint development is the new ITES infrared pretzel tunnel oven. According to the company, the tunnel oven enables pretzels as well as bread rolls, pizzas and sandwiches to be finish-baked from frozen. The technical foundations for the new infrared are components based on special functional

ceramics. Coatings using this IR.C ceramic (Infrared based on functional Ceramics) in the oven give it the characteristics of a ceramic stone oven, and do so with additional advantages. According to Dr. John, the most important of these are that IR.C penetrates gently and quickly into the core of the baked product, starts from there to form a crumb, and ends with a crust that can be adjusted in any desired way.

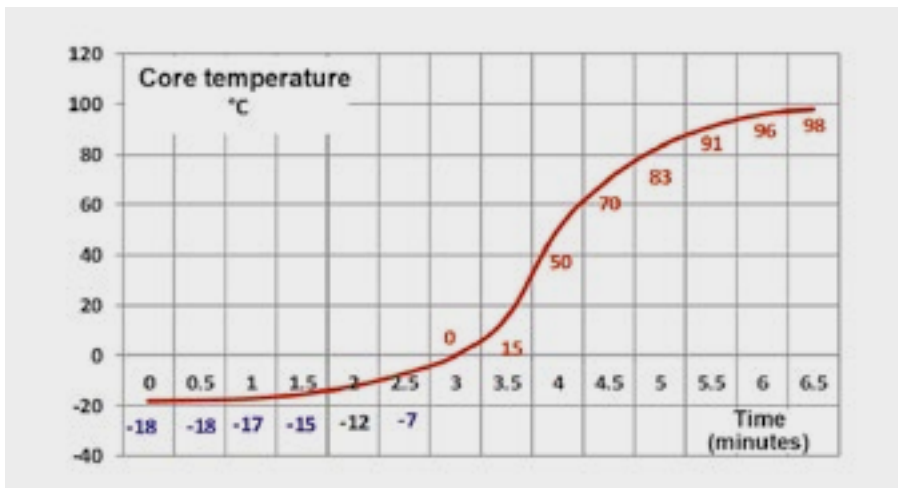
Horst Fischer, owner of HoFi GmbH, initiated and supported the ITES joint project in collaboration with RPE.InfraTherm GmbH and WP Lebensmitteltechnik Riehle GmbH. In the new ITES pretzel tunnel oven, infrared is used for the first time both to thaw out and also for the final baking process.



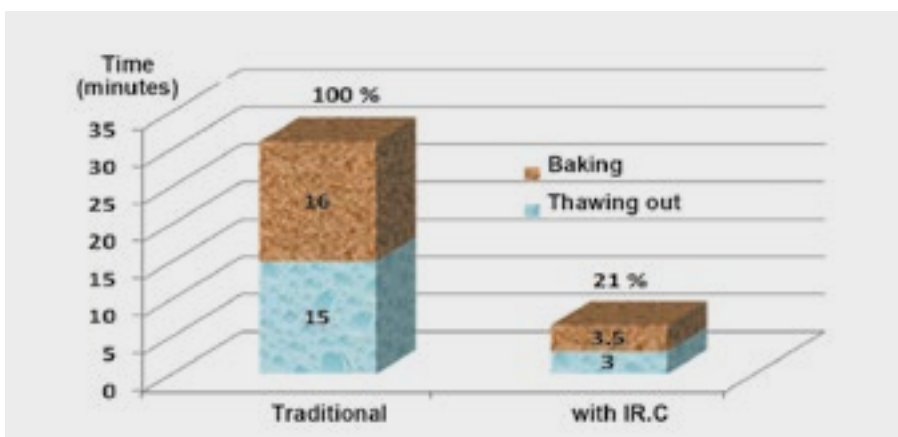
++ General view of the new small tunnel oven

“Final baking can also take place from room temperature. The decisive factor for the new high quality of the baked product is that it is not just warmed up somehow, but instead a final core temperature of 98 °C is attained in a very short time and with minimal moisture losses”, says Dr. John. According to Dr. John, this is possible only with IR.C. The new ITES was presented to the public for the first time at the iba 2015; a corresponding patent application has already been filed.

By using a tunnel oven, which bakes-off frozen products in 7 minutes, there is no longer any need to bake off so much to stock up in the branch – losses due to returns and/or



++ Thermal history of thawing and final baking when using IR.C



++ A comparison of times – thawing out from -18 °C up to a core temperature of 98 °C

discarding baked goods no longer sold can be reduced. Another advantage: the baked-off product now comes out of the oven automatically and precisely on time.

### Baking-off and pre-baking

According to the company, pre-baking with IR.C Infrared yields additional benefits, as well as giving good preconditions for final baking:

1. Shorter baking time, lower energy consumption and more capacity per m<sup>2</sup> of oven surface area
2. A finely porous, elastic crumb together with a white, relatively stable outer skin
3. Optimum moisture content, which prevents drying out during baking-off

Dr. John is certain that shortening the baking time by using this infrared, both for pre-baking and also for baking-off, is not associated with poorer quality. Quite the contrary: the dough is stressed much less due to the rapid, deep penetration of the IR.C right into the core. The valuable components and good sensory properties are retained better. However, if the baking time can be shortened so drastically, the temperature-time regime must be adhered to exactly, and thus removal from the oven must also take place accurately almost to the second.

Infrared can also be employed in large and small tunnel ovens in a differentiated way based on process zones, e.g. specifically for optimized pre-baking, thawing out, final baking, crust formation and pasteurizing. It will soon also be possible for classical tunnel ovens as well as hearth and in-store ovens to be retrofitted to IR.C very quickly. The scientist is certain that pre- and final baking using IR.C, with its efficiency and quality advantages, can and will further accelerate the trend towards interrupted baking. +++

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