

Baking Technology

Industrial baking without compromises



The way you bake your product plays a crucial role in shaping the bread's characteristics, including its color, flavor, cell structure, and texture. To achieve the best results, it's essential to select the right oven configuration, considering the right baking technologies and principles. By choosing Royal Kaak

baking technology, you benefit from years of expertise and a wide range of oven solutions. With our extensive knowledge combined with a diverse range of innovative options, we can provide tailored solutions perfectly suited to your specific needs and operational goals.

You bake, we care

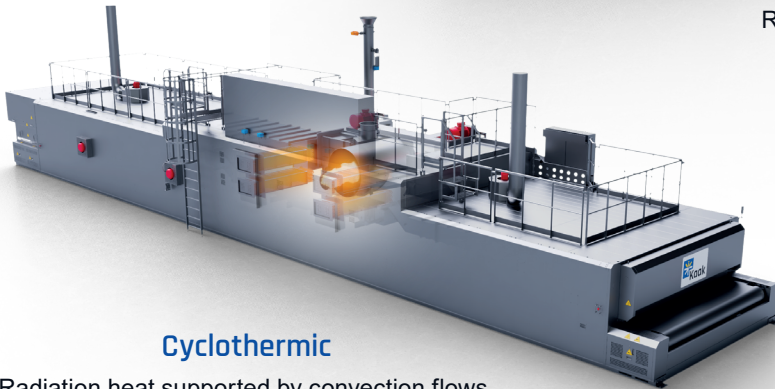
- Five baking technologies
- Hybrid and full-electrical ovens
- Innovative energy saving methods
- Real-time baking data management (iBakeCare)
- Oven energy consultancy
- Turn-key solutions

Baking technologies



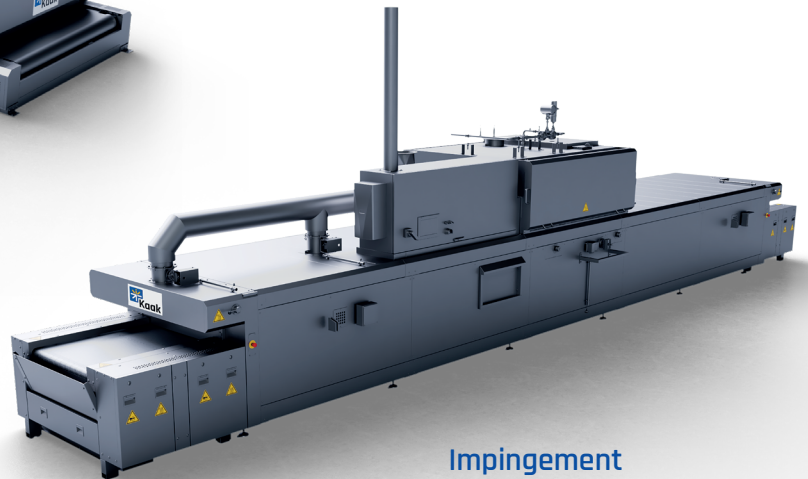
Thermal Oil

Radiation heat supported by convection flows.
Radiators are heated by hot oil powered by gas or electricity (hybrid).



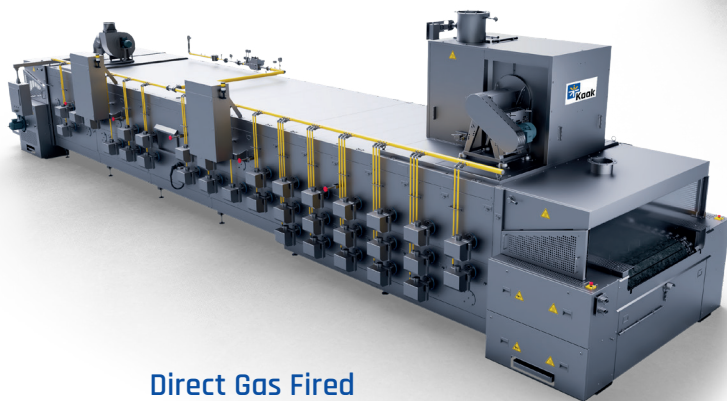
Cyclothermic

Radiation heat supported by convection flows.
Radiators are heated by hot air powered by gas or electricity (hybrid).



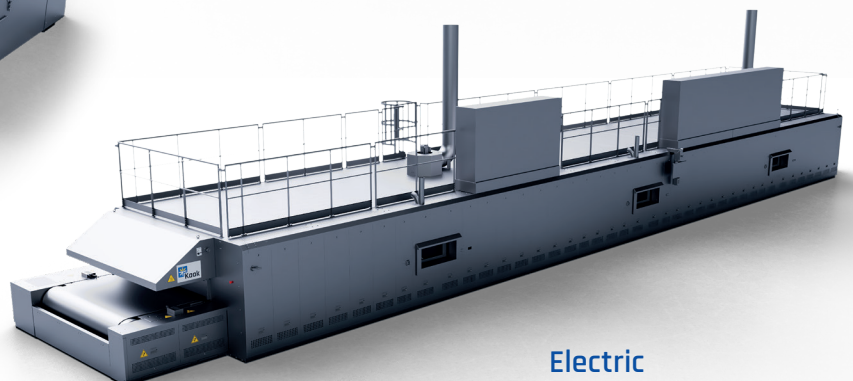
Impingement

Baking by direct convection in the baking chamber powered by gas or electricity.



Direct Gas Fired

Radiation heat by burners placed inside the baking chamber powered by gas or electricity (hybrid).



Electric

Radiation heat supported by convection flows.
Radiators are heated by electrical resistors placed inside the baking chamber.

Baking principles



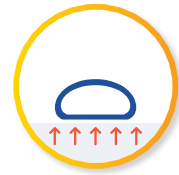
Radiation

Radiation is heat transmission from the hot radiator surface to the product surface and the product.



Convection

Convection is heat transmission caused by air flow (turbulence of the air) inside the oven.



Conduction

Conduction is heat transmission through contact between the heated surface (oven belt) and the product.



Batch baking (Multi-deck)

- High flexibility in baking different short production runs with different kind of products.
- Full baking process in a static position in fixed conditions.
- Combination of different oven belt types possible in the same oven.



Conti-step baking (Multi-deck)

- High production capacity.
- Possibility to create a baking profile by different temperature and humidity zones.
- Baking in a closed environment.
- Optimal utilization of the oven.



Continuous baking (Tunnel ovens)

- High production capacity.
- Possibility to create a baking profile by different temperature and humidity zones.
- Very constant baking result, every product is running exactly through the same baking conditions.
- Optimal utilization of the oven.

Available baking conveyors



Steel carriers with roller chain

- Heavy load
- Very open structure
- Positive drive



Wire mesh belt

- Universal solution
- Self cleaning function
- Friction drive



Steel hinged plate belt

- Universal solution
- Free standing baking
- Compact design



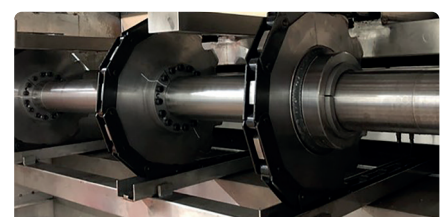
Stone plate carriers with roller chain

- Artisanal baking
- Freestanding bread
- Positive drive



Steel open link belt

- Very open structure
- Positive drive



Chain conveyors for trays

- High loads
- Very open structure
- Positive drive

Different layout principles



Multi-deck ovens

- Small footprint, limited space needed for high-capacity lines.
- Possibility to bake different products in the same oven at the same time.
- Quick product change-over.
- High-capacity with conti-step baking principle possible.



Tunnel ovens

- Economical efficient solution.
- Constant baking performance.
- Available in all baking technologies
- Easy and reliable loading and unloading.
- Easy acces for maintanance, cleaning and operation.

Bakling Technologies			Cyclo- thermic 	Thermo- oil 	Impingment 	Direct fire 	Direct electrical 
Heat principle	Heat source		Indirect	Indirect	Indirect	Direct	Direct
	Heat supply		Hot air circulation in radiators	Hot oil circulation in radiators	Hor air flows in baking chamber	Combustion in baking chambers	Electrical resistors inside baking chambers
	Heat fuel	Natural gas / LPG	✓	✓	✓	✓	
		Electricity	✓	✓	✓	✓	✓
		Diesel / Oil	✓	✓	✓		
Execution	Tunnel / Multi-deck		Tunnel	Tunnel / Multi-deck	Tunnel	Tunnel	Tunnel / Multi-deck
	Batch/ Conti-step/ Continuous		Continuous	Batch / Continuous / Step	Continuous	Continuous	Batch / Continuous / Step
	Steam injection		✓	✓	○	○	○
	Convection zones		○	○	✓	○	○
Baking conveyors	Wire mesh belt		✓	○	✓	✓	✓
	Steel carrier with roller chain		✓	○			✓
	Stone plate carrier with roller chain		✓	✓		✓	✓
	Steel hinged plate belt		○	✓	✓		✓
	Steel open link belt		✓	✓	✓	✓	✓
	Chain conveyor for trays			✓			✓
	Closed steel belt				✓		

✓ Included
○ Optional

Sustainable Ovens

Hybrid Thermal Oil Ovens

In a thermal oil oven, the baking chamber is heated by radiators filled with hot oil. This oil is usually heated by a gas boiler. In the hybrid setup, an e-boiler is installed next to the gas boiler, allowing bakers to run their oven on gas or electricity, or a combination of both energy sources. Other energy sources such as hydrogen or direct solar heat can also be added to the mix.



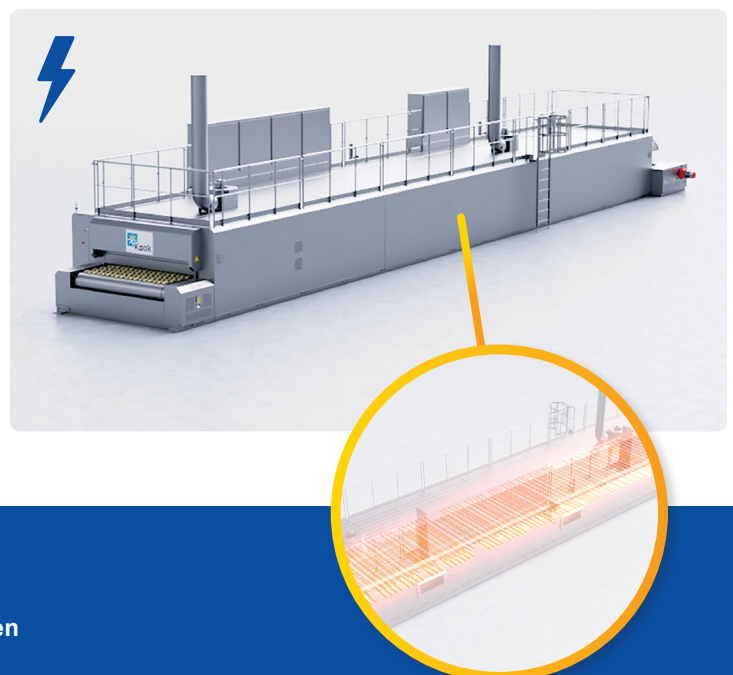
Hybrid Cyclothermic Ovens

In a cyclothermic oven, the baking chamber is heated by radiators filled with hot air. This air is usually heated by gas burners. In the hybrid solution, electric heating elements are placed in the air circulation channel, allowing bakers to heat the oven with gas, electricity, or both.



Fully Electrical Ovens

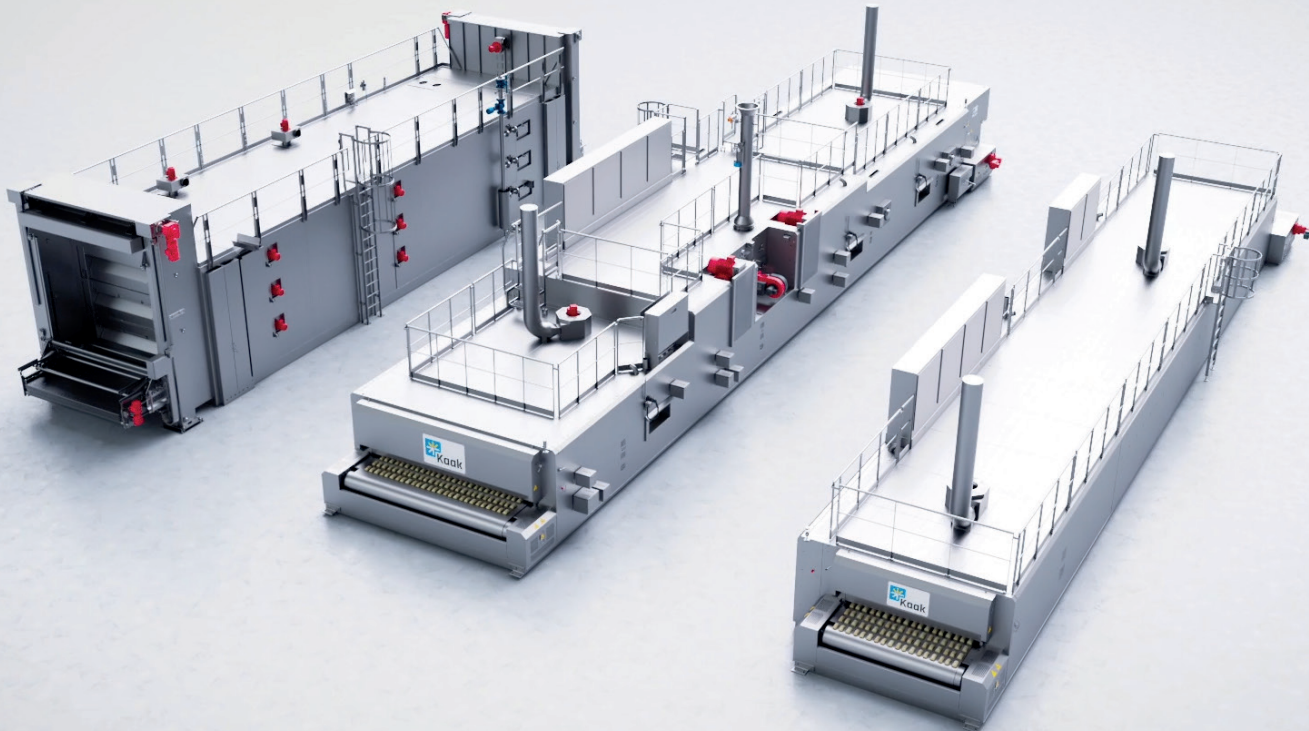
For bakeries that have sufficient electricity, Kaak has also developed a fully electric oven. In this oven, electric heating elements are placed directly in the baking chamber. This oven is available with both tunnel and multi-deck designs. When this oven is powered with green electricity, baking takes place without any CO₂ emissions.



More information

Watch our video about Sustainable Oven Solutions on YouTube via the QR code.





Reduce your energy spend and CO₂ emission

The oven typically accounts for 80% of the total energy consumption of an industrial bakery. As such, optimizing the oven's energy consumption is one of the best levers to pull for reducing costs and CO₂ emissions. Driven by our aspiration to enable "Food without Footprint", Royal Kaak has developed several energy consultancy services to help you optimize your energy efficiency, for the oven specifically as well as for the entire line.

The benefits of Royal Kaak's energy consultancy services include:

- Insight into where in your process most energy is wasted
- Actionable recommendations to:
 - Save energy
 - Reduce energy costs per ton produced
 - Reducing CO₂ emissions per ton produced
- Opportunities to reduce energy price volatility and optimize your price per kWh



Start saving energy now by engaging in a free oven scan at kaak.com/ovenscan or by booking an appointment with one of our specialists.



Do you need some more information? Visit our website kaak.com