



Innovative baking  
technology



## Nearly 20 years of experience in the baking industry

KORNFEL ranks among the most prominent manufacturers of bakery ovens and technological equipment in Europe. Thanks to fully automated bakery lines, large selection of bakery ovens, loading machines, proofers, and other devices used in automated control of baking processes and in processing waste energy, KORNFEL offers a wide range of systems for baking all types of bread and a variety of additional bakery products.

### KORNFEL in numbers

- Established in 1991 in the Czech Republic
- Operating in over 30 countries worldwide
- Currently employing 140 workers
- In 2006 was awarded the International Standards Organization certificate, ISO 9001

### The development of bakery ovens and equipment

KORNFEL is a family owned and run corporation whose members and all 140 employees are dedicated to not only manufacturing and modernizing bakery ovens and all essential accessories for all types of bakery operations, but also developing new technologies in this area.

### Company values and priorities

- Continual emphasis on product quality
- Innovation and development of technologies in the baking industry
- Low energy intensity of our products
- Low operating costs for our customers



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## Bakery ovens

KORNFEIL bakery ovens guarantee high productivity while preserving the distinct features of handmade bread and other bakery products. The ovens are distinguished by high baking performance, optimal uniform baking, and by their capacity to save energy, space, and costs.

Based on their technical specifications and the type of construction, the bakery ovens are divided as follows:

### 1. Deck ovens

The dough is loaded into individual decks located on top of each other.

### 2. Trolley box ovens

Bakery products are placed on baking trays inserted into trolleys that are subsequently pushed in and out of proofers and ovens.

### 3. Continuous tunnel ovens

The dough, placed on belts, passes through the baking area – the oven tunnel – and is gradually and continuously baked by the oven's radiant heat.

Regardless of the design of construction, bakery ovens are generally categorized according to the method of heat distribution and the character of the heating medium into three types.

#### • Cyclothermic ovens

These ovens operate on the principal of hot air circulating under the baking panels hermetically separated from the baking area. With the circulation, the deck is heated both from top and bottom through the baking panel. The ovens feature good thermal flexibility and ensure an optimal temperature curve essential for high-quality baking of rye-wheat and wheat bread. Cyclothermic ovens use natural gas or thermal oil as the heat carrier

#### • Thermal oil ovens

Ovens that are distinguished by their ideal uniformity of baking. The transfer of energy is more efficient, resulting in lower consumption when compared to cyclothermic ovens. Thermal oil ovens use hot oil as the heat-transfer fluid circulating around heating radiators located under baking panels. The thermal oil technology is used in both deck and trolley ovens. The ovens use natural gas, heating oil, and electricity as the heat carrier.

#### • Electric ovens

These ovens find their use mostly in areas with limited availability of natural gas or more affordable electricity. Our electric ovens are designed so that individual decks are separated, allowing simultaneous baking of different types of bakery products. The heating medium is invariably electricity.

## Deck ovens with accessories

Deck ovens featuring radiant heat are designed for all types of bakery operations. High heat accumulation in the baking panels makes them the best solution for baking tasty, porous, and quality bread. The individual types of basic deck ovens are distinguished by the method of heat distribution and the character of their heat carrier.

### Cyclothermic deck ovens

- VARIANT

### Thermal oil deck ovens

- ThermoStar
- ThermoStar classic
- ThermoLine

### Electric deck ovens

- FORNATA
- FORNATA MINI a UNI
- K-Market



## VARIANT cyclothermic deck ovens

VARIANT cyclothermic deck ovens constitute an essential factor in baking high quality bread with extended durability. Radiant heat accumulated in the ceramic baking panel is able to raise even very loose dough into a large volume. They are popular in particular for their versatility, with a baking area ranging between 8 and 31 m<sup>2</sup>, affording wide range of ovens for all bakers.



VARIANT	V 8/4	V 10/5	V 10/4	V 12/5	V 12/4	V 15/5	V 15/4	V 18/5	V 22/6	V 26/7	V 30/8	V 31/7
<b>Baking surface [m<sup>2</sup>]</b>	8	10	10	12	12	15	15	18	22	26	30	31
<b>Number of decks</b>	4	5	4	5	4	5	4	5	6	7	8	7
<b>Baking surface dimensions</b>												
<b>Width [mm]</b>	1,200	1,200	1,200	1,200	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
<b>Depth [mm]</b>	1,600	1,600	2,000	2,000	1,600	1,600	2,000	2,000	2,000	2,000	2,000	2,400
<b>Number of heating circuits</b>												
<b>Single circuit</b>	•	•	•	•	•	•	•	•	•	•	•	•
<b>Double circuit</b>	•		•		•		•		•		•	
<b>Proofer steamer</b>	•	•	•	•	•	•	•	•	•	•	•	•
<b>Deck height</b>												
<b>200 mm</b>	4x	5x	4x	5x	4x	5x	4x	5x	6x	7x	8x	7x
<b>230 mm</b>	4x		4x		4x		4x	5x	6x	7x	8x	7x

## ThermoStar thermal oil deck ovens

ThermoStar thermal oil deck ovens, featuring a baking surface of 15 to 52 m<sup>2</sup>, are favoured for their ideal uniformity of baking, good temperature stability, and the invariable ability to produce a well baked crust. Compared to cyclothermic ovens, the transfer of energy is more efficient, resulting in consumption savings of up to 10%. To better utilize the space of the bakery, thermal oil ovens can be outfitted with more decks (i.e., 9, 12, up to 15) for different types of bakery products and Asistent loading devices to operate them.

### Jaké jsou výhody pecí ThermoStar?

- Fast temperature rise and good temperature stability
- Ideal uniformity of baking; fluctuating  $\pm 1^\circ\text{C}$
- Economical baking via radiant heat
- The potential to produce between 200 and 1,300 kg of bread per hour
- Wide selection of ovens in one, two, or three-circuit versions
- Simultaneously processing different types of bread and bakery products in individual decks
- Separate temperature settings for individual decks

ThermoStar®	TS 15/4	TS 18/5	TS 22/6	TS 26/6	TS 26/7	TS 31/7	TS 30/8	TS 35/8	TS 34/9	TS 33/9	TS 39/9	TS 43/12	TS 52/12
Baking surface [m <sup>2</sup> ]	15	18	22	26	26	31	30	35	34	33	39	43	52
Number of decks	4	5	6	6	7	7	8	8	9	9	9	12	12
Baking surface dimensions													
Width [mm]	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Depth [mm]	2,000	2,000	2,000	2,400	2,000	2,400	2,000	2,400	2,400	2,000	2,400	2,000	2,400
Number of heating circuits													
Single circuit	•	•	•	•	•	•	•	•	•	•			
Double circuit			•	•	•	•	•	•	•	•	•	•	•
Tri circuit										•	•	•	•
Proofer steamer	•	•	•	•	•	•							
Deck height													
200 mm	•	•	•	•	•	•	•	•	•	•	•	•	•
230 mm	•	•	•	•	•	•	•	•	•	•	•	•	•

\* Deck oven doors are custom-made using either stainless steel or fireproof glass.



# ThermoStar Classic

The compact ThermoStar thermal oil deck ovens are designed for baking high home-made quality and porous bread. ThermoStar Classic ensures traditional and cost saving baking performance with a precisely set temperature curve and the best baking characteristics.

It features a unique system of microcirculation, producing a golden, crispy bread crust, common in decks higher than 300 mm. Combined with an integrated thermal oil boiler, ThermoStar constitutes a cost-effective alternative to conventional bakery ovens.

## What are the advantages of ThermoStar Classic ovens?

- Excellent temperature flexibility and stability
- Uniform baking; deck temperature fluctuating  $\pm 1^\circ\text{C}$
- High-quality baking performance using radiant heat
- Thoroughly baked crust
- Economical baking saving energy

ThermoStar Classic	TSC 11	TSC 13	TSC 15	TSC 17	TSC 18	TSC 21	TSC 22	TSC 26
Baking surface [m <sup>2</sup> ]	11.3	13.3	14.4	17.3	18	21.6	21.6	25.9
Number of decks	3	3	4	4	5	5	6	6
<b>Baking surface dimensions</b>								
Width [mm]	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Length [mm]	2,000	2,400	2,000	2,400	2,000	2,400	2,000	2,400
<b>Deck height</b>								
300 mm	•	•	•	•				
TURBO fan	•	•	•	•	•	•	•	•
<b>Oven dimensions</b>								
Installed kilowatt	4	4	4	4	4	4	4	4
Heat input [kW]	80	95	105	125	130	155	155	180
Max baking temperature [°C]	300	300	300	300	300	300	300	300
<b>Types of control and operation panels</b>								
H1 manual	•		•	•	•	•	•	•
H4 computer ThermoClassic	•	•	•	•	•	•	•	•
<b>Door and steam outlet control system</b>								
Manual	•	•	•	•	•	•	•	•
Pneumatic	•	•	•	•	•	•	•	•
<b>Deck doors</b>								
Fireproof glass	•	•	•	•	•	•	•	•
Stainless steel	•	•	•	•	•	•	•	•



## ThermoLine pass-through thermal oil deck ovens

ThermoLine pass-through thermal oil ovens are multi-purpose ovens used by modern mid-sized and large bakeries for baking a wide range of high-quality bread and bakery products. Equipped with pass-through decks and a pair of Asistent Line loading devices, ThermoLine ovens can also be integrated into fully automated lines, ensuring high baking performance with the same ideal uniformity of baking as provided by other thermal oil ovens.

ThermoLine accomplishes the main goal of baking all products (rolls, buns, baguettes, French bread, twists, etc) directly on the baking panels with a thoroughly baked bottom crust.

### The combination of proofers and ThermoLine ovens

To bake a home-made quality bread

- ovens with manual tipping out of bread baskets
- ovens with automated continuous proofers

To bake rolls, buns, and variously shaped bakery products

- ovens with fully automated continuous proofers
- ovens with box proofers and pre-proofers

### What are the advantages of ThermoLine Ovens?

- Higher quality and freshness of products
- Low energy intensity
- Versatile use for efficient production of standard bread and bakery products
- Baking directly on baking plates
- High performance in a limited space.

The ovens are designed primarily for high-performance baking of bakery products and bread with weights ranging from 50g to 2.5 kg.

### The thermal oil technology features

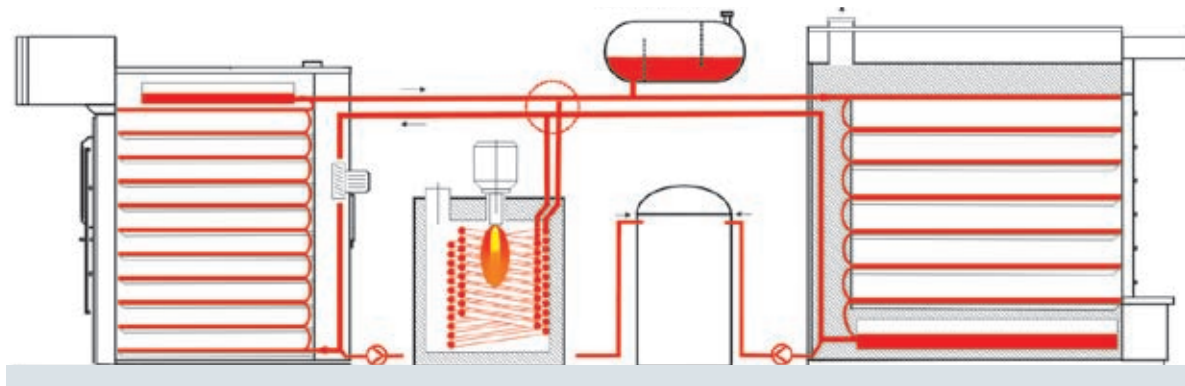
- Fast temperature rise
- Ideal uniformity of baking
- Baking by means of delicate radiant heat
- Cost saving performance

ThermoLine	26/7P	31/7P	33/9P	39/9P	43/12P	52/12P	54/15P	65/15P
Baking surface [m <sup>2</sup> ]	26	31	34	39	45	52	56	65
Number of decks	7	7	9	9	12	12	15	15
Baking surface dimensions								
Width [mm]	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Length [mm]	2,000	2,400	2,000	2,400	2,000	2,400	2,000	2,400
Version								
TURBO	•	•	•	•	•	•	•	•
Double circuit	•	•						
Tri circuit			•	•	•	•	•	•



## Thermal oil boilers

KORNFEIL thermal oil boilers constitute the “heart” of the whole system of thermal oil ovens, making it possible to connect several ovens to a single heat source. They are designed for pressure burning fluid and gaseous fuels, providing energy for thermal oil ovens. The transfer of energy between boiler and oven is ensured by a thermal oil heat carrier with temperatures ranging between 290 and 300 °C.



### Thermal oil boilers are an essential part of thermal oil ovens

- Their operation is fully automated
- Must be installed out of the bakery
- A control panel located in the bakery indicates the boiler's operating conditions and temperatures
- In order to comply with safety and hygienic regulations, the thermal oil system must be equipped with an expansion and drain tank

Thermal oil boilers	OK140	OK200	OK300	OK500	OK700	OK1000
Type of construction	Vertical/ Horizontal	Vertical/ Horizontal	Vertical/ Horizontal	Vertical/ Horizontal	Vertical/ Horizontal	Vertical/ Horizontal
Heat output (kW)	140	200	300	500	700	1400
Max. oil temperature [°C]	320	320	320	320	320	320
Rated circulation volume [m <sup>3</sup> /h]	8.6	13.8	20.6	34.4	48	68.9
Boiler volume [l]	55	116	155	355	440	720

## FORNATA Electric deck ovens

FORNATA electric deck ovens, featuring a baking surface between 4 and 22 m<sup>2</sup>, find their use mainly in small bakeries, confectioneries, grocery supermarkets, and other areas with a limited availability of natural gas or with more affordable electricity, providing fresh bakery products throughout the day. Capable of simultaneously baking different varieties of products, FORNATA ovens are highly versatile.

### Standard features of FORNATA ovens

- Independent baking of different types of products in individual decks
- Low consumption of electricity
- Auxiliary steaming unit
- Optional number of decks



FORNATA	F 4	F 5	F 6.5	F 7.5	F 10	F 12.5	F 15	F 18	F 22
Baking surface [m <sup>2</sup> ]	4	5	6,5	7,5	10	12,5	15	18	22
Number of decks	4	5	4	5	4	5	4	5	6
Baking surface dimensions									
Width [mm]	1,200	1,200	1,200	1,200	1,800	1,800	1,800	1,800	1,800
Depth [mm]	1,600	1,600	2,000	2,000	1,600	1,600	2,000	2,000	2,000
Number of heating circuits									
Single circuit	•	•	•	•	•	•	•	•	•
Double circuit	•		•		•		•		•
Proofer steamer	•	•	•	•	•	•	•	•	•
Deck height									
200 mm	4x	5x	4x	5x	4x	5x	4x	5x	6x
230 mm	4x		4x		4x		4x		6x



## Module electric deck ovens

FORNATA MINI and UNI modular electric ovens with a baking surface ranging between 0,5 and 5 m<sup>2</sup> are suitable for small bakeries, confectionaries, snack bars, hotels, and other establishments, providing a constant supply of fresh products throughout the day, effortlessly keeping up with the demand. With their design and level of technical equipment, FORNATA constitute a new high-quality type series of electrical ovens featuring continuous regulation of the upper and lower heat intensity to ensure a first-rate baking performance. Each deck has its own steam unit.

### What are the advantages of FORNATA MINI and UNI ovens?

- Easy installation and operation
- Effective ergonomics
- Low consumption of electricity
- Optional number of decks (1–6)
- FORNATA MINI is designed for confined spaces

### Additional equipment

- Proofer placed under the oven
- Optional control and operation
  - manual
  - programmed



FORNATA MINI	FM 1deck	FM 2deck	FM 3deck	FM 4deck	FM 5deck	FM 6deck
Voltage system [Uc]	3/N/PE AC 50 Hz 230/400V	3/N/PE AC 50 Hz 230/400V	3/N/PE AC 50 Hz 230/400V	3/N/PE AC 50 Hz 230/400V	3/N/PE AC 50 Hz 230/400V	3/N/PE AC 50 Hz 230/400V
Rated current [A]	5.4	10.8	16.2	21.6	27	32.4
Rated input [kW]	3.5	7	10.5	14	17.5	21
Baking surface [m <sup>2</sup> ]	0.48	0.96	1.44	1.92	2.40	2.88
Baking surface width [mm]	600	600	600	600	600	600
Baking surface depth [mm]	800	800	800	800	800	800
Max. temperature [°C]	350	350	350	350	350	350

FORNATA UNI	FU 1deck	FU 2deck	FU 3deck	FU 4deck	FU 5deck	FU 6deck
Voltage system [Uc]	3/N/PE AC 50 Hz 230/400V	3/N/PE AC 50 Hz 230/400V	3/N/PE AC 50 Hz 230/400V	3/N/PE AC 50 Hz 230/400V	3/N/PE AC 50 Hz 230/400V	3/N/PE AC 50 Hz 230/400V
Rated current [A]	10.5	21	31.5	42	52.5	63
Rated input [kW]	6.8	13.6	20.4	27.2	34	40.8
Baking surface [m <sup>2</sup> ]	0.96	1.92	2.88	3.84	4.80	5.76
Baking surface width [mm]	1,200	1,200	1,200	1,200	1,200	1,200
Baking surface depth [mm]	800	800	800	800	800	800
Max. temperature [°C]	350	350	350	350	350	350



## K-Market electric deck ovens

K-Market electric deck ovens are primarily used by retail stores and supermarkets in finish pre-baked products. The quality of bread finished in K-Mart ovens is comparable to products made fresh in a bakery, providing warm and crispy baked goods throughout the day. K-Mart ovens give bread its main characteristics such as shape and porosity.

K-Market **Standard – an oven** with manual loading and unloading using a peel

K-Market **Comfort – an oven** with manual loading and automated unloading of baked products into baskets.

### What are the advantages of K-Market ovens?

- Pre-baked bread lasts 1–2 days longer
- No losses – production based on actual demand
- Simple bakery design that fits into an area of 6 m<sup>2</sup>; no technological equipment, no flour
- Pre-baked bread is delivered to retailers in crates
- The finishing can be performed by the shop personnel

K-Market	
Baking surface [m <sup>2</sup> ]	1.6
Baking surface depth [mm]	1,200
Number of decks	3
Max. input [kW]	12.5
Baking capacity [kg/hr]	30–40
Oven dimensions [mm] (d × w × h)	1200 × 1740 × 1960
Total weight [kg]	870
Mains	3 × 400V/ 50 Hz



## Deck ovens control and operation systems

Deck ovens are available in three versions of control systems:

**H1 manual** – manual control;

**H4 computer** – programmed control and baking; and **Multi control** – a sophisticated control system.

The deck ovens digital control panels are equipped with a user-friendly, water and dust resistant, and easy-to-clean foiled keyboard.

### H1 manual control panel

The single-circuit and double-circuit version of the H1 manual digital control panel contains an independent electronic device regulating the temperature and time.

#### Programmable functions of the H1 panel

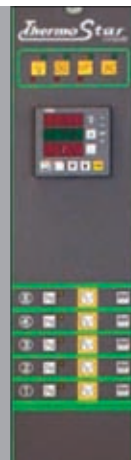
- Basic activation
- Temperature, temperature curve, and time setting
- Steam amount
- Door manipulation
- Control of steam outlets

### H4 computer control panel

The single-circuit and double-circuit version of the H1 computer control panel uses a touch screen with 99 baking programmes, simultaneously displaying all important operating values.

#### Programmable functions of the H4 panel

- Basic activation
- Temperature, temperature curve, and time setting
- Steam duration and intensity; steam outlet
- Operation of the vapour absorber
- Service intervals
- Data transfer to PC and visualization

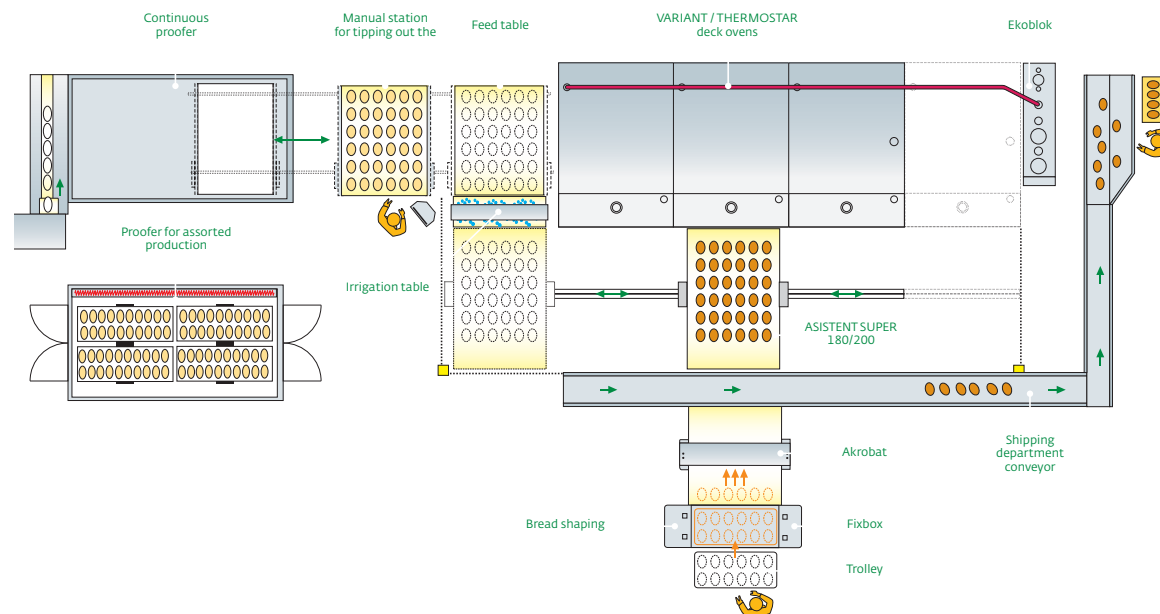


## Multi control system for automated bread lines incorporating deck ovens

Used in all areas of the baking industry ranging from mid-sized bakeries focused on hand-made bread quality to the largest of productions with outputs of up to 40 tons and 20 types of products daily, Multi control systems constitute modern production lines for effective and high-performance baking in deck ovens.

The automated bread line integrates in a unique way the advantages of a fully automated operation with the production of first-rate home-made quality bread. Each component of the automated production lines performs a particular function, which enables you to design your own line with a continuous proofer based on your special requirements.

### An automated bread line set with a Multi control system



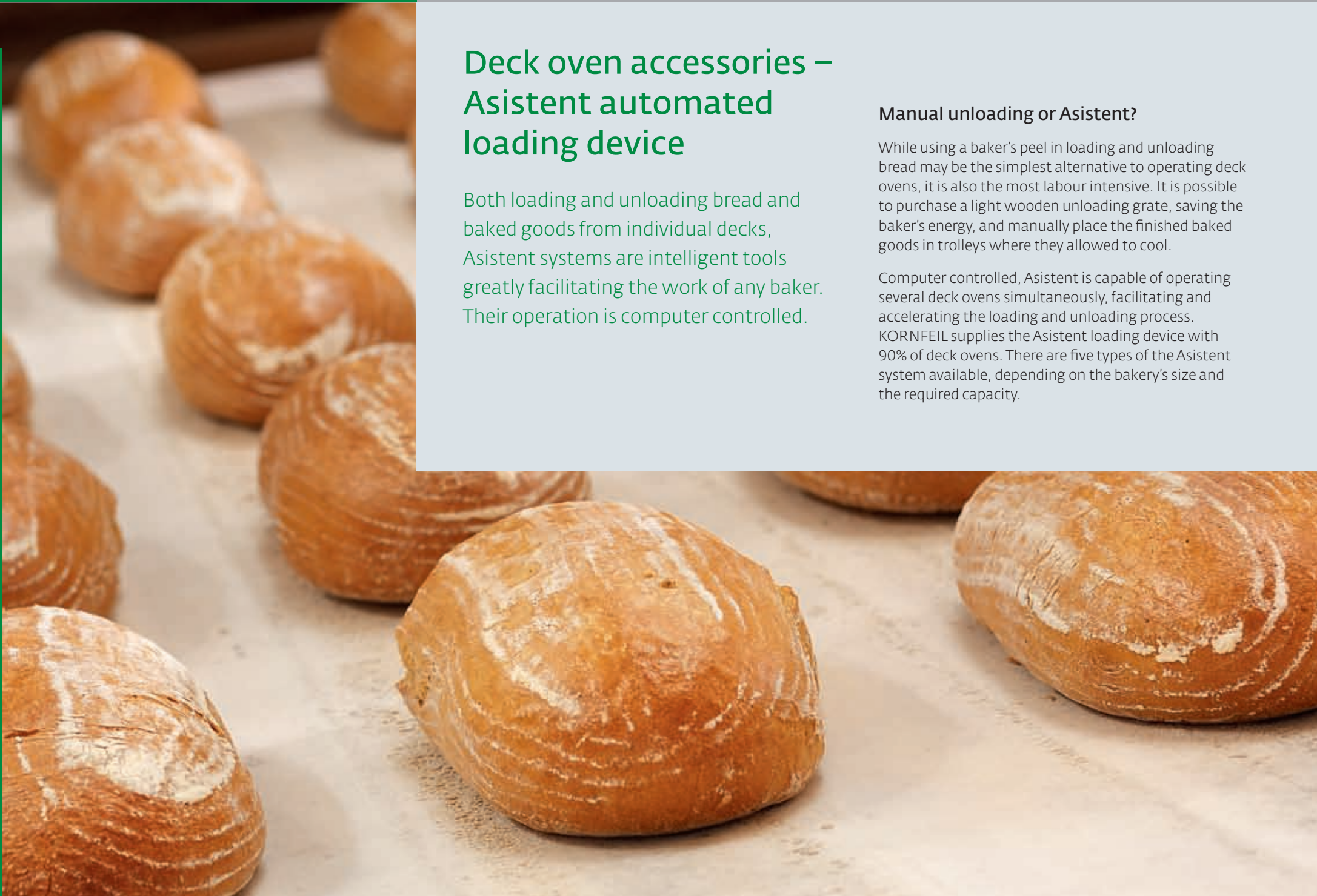
## Deck oven accessories – Asistent automated loading device

Both loading and unloading bread and baked goods from individual decks, Asistent systems are intelligent tools greatly facilitating the work of any baker. Their operation is computer controlled.

### Manual unloading or Asistent?

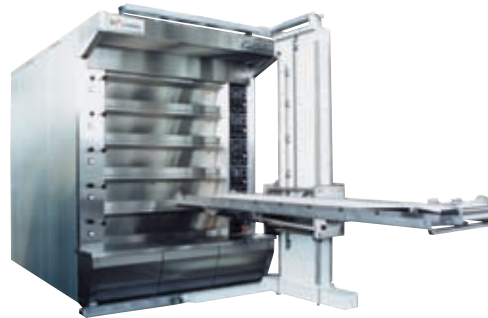
While using a baker's peel in loading and unloading bread may be the simplest alternative to operating deck ovens, it is also the most labour intensive. It is possible to purchase a light wooden unloading grate, saving the baker's energy, and manually place the finished baked goods in trolleys where they allowed to cool.

Computer controlled, Asistent is capable of operating several deck ovens simultaneously, facilitating and accelerating the loading and unloading process. KORNFEIL supplies the Asistent loading device with 90% of deck ovens. There are five types of the Asistent system available, depending on the bakery's size and the required capacity.



## Asistent Manual loading device

The Asistent Manual loading device automatically loads and unloads bakery products from individual decks. In the half-deck version, it is suitable for operating 1–2 ovens. Its movement functions are mechanically based, using counterweights.



Asistent manual	S60/160	S60/200	S90/160	S90/200	S90/240
Working width [mm]	600	600	900	900	900
Working depth [mm]	1,600	2,000	1,600	2,000	2,400
Height [mm]	2,660	2,660	2,660	2,660	2,660
Weight [kg]	310	330	370	390	440
Length, including oven [mm]	5,050	5,850	5,050	5,850	×

## Asistent Super loading device

The intelligent Asistent Super loading machine is a full-deck automated version loading the entire deck. Outfitted with a motor drive, it can operate 2–3 ovens; or 1–2 ovens in a simple mode. The operating personnel ensures the manual tipping of the dough out of baskets and activating relevant programmes on the control panel only.

Asistent super	2A120/160	2A120/200
Working width [mm]	1,200	1,200
Working depth [mm]	1,600	2,000
Height [mm]	2,660	2,830
Length, including oven [mm]	5,243	6,043
Electrical connection [kW]	0,75	0,75
Line protection 3 × 400 V / 50 Hz	C16	C16
Weight [kg]	440	470

## Asistent Automat loading device

The Asistent Automat is available in the same half-deck version as the Asistent Manual with some functional differences; instead of being mechanically based, it is motor controlled by a computer.

Asistent automat	1A90/160	1A90/200
Working width [mm]	900	900
Working depth [mm]	1,600	2,000
Height [mm]	2,830	2,830
Length, including oven [mm]	5,243	6,043
Electrical connection [kW]	0,75	0,75
Weight [kg]	420	450



## Asistent Super Automat loading device

The high-performance Asistent Super Automat is among the most demanded deck oven accessories.

It is a full-deck automated version capable of loading the entire deck, with simple operation (1–3 ovens) or motorized drive (2–3 ovens). The Asistent Super Automat is designed primarily for mid-sized bakeries, capable of loading light-weight bakery products (from 50g) baked directly on the baking plates of deck ovens, making the goods pliant with tasty and thoroughly baked crust.

### Custom-made loading device

- Automated bread irrigation
- Unloading bar for light-weight products
- Automated START of the baking programme
- Motor-driven movement between individual ovens

Asistent super automat	2A/180/ 160	2A/180/ 200	2A/180/ 240
Working width [mm]	1,800	1,800	1,800
Working depth [mm]	1,600	2,000	2,400
Height [mm]	2,700	2,700	2,700
Length, including oven [mm]	5,315	6,115	6,920
Electrical connection [kW]	1,5	1,5	1,5
Weight [kg]	640	690	760



## Asistent Line loading device

High performance Asistent Line machines constitute the fastest device for loading Multi Control deck ovens in a fully automated line. Capable of loading up to 6 ovens with 40 decks, their heavy duty design enables them to operate 24 hours a day, producing up to 2000 kg of bread per hour.

### 5 primary reasons for getting the Asistent Line

- Producing up to 2 000 kg/hr
- Construction designed for industrial operation
- Loading and unloading baked goods weighing between 50 and 2 500 g
- Capable of efficiently loading up to 15-deck ovens
- High baking capacity in a limited space



AsistentLine	AL 07/200 S	AL 09/200 S	AL 12/200 S	AL 15/200 S	AL 07/240 S	AL 09/240 S	AL 12/240 S	AL 15/240 S	AL 07/200 V	AL 09/200 V	AL 12/200 V	AL 15/200 V	AL 07/240 V	AL 09/240 V	AL 12/240 V	AL 15/240 V
Working width [mm]	1,734	1,734	1,734	1,734	1,734	1,734	1,734	1,734	1,734	1,734	1,734	1,734	1,734	1,734	1,734	1,734
Working depth [mm]	2,000	2,000	2,000	2,000	2,400	2,400	2,400	2,400	2,000	2,000	2,000	2,000	2,400	2,400	2,400	2,400
Dimensions																
Depth [mm]	2,600	2,600	2,800	2,800	2,600	2,600	2,800	2,800	2,600	2,600	2,800	2,800	2,600	2,600	2,800	2,800
Width [mm]	3,344	3,344	3,344	3,344	3,744	3,744	3,744	3,744	3,344	3,344	3,344	3,344	3,744	3,744	3,744	3,744
Height [mm]	3,330	4,400	5,200	6,000	3,330	4,400	5,200	6,000	3,330	4,400	5,200	6,000	3,330	4,400	5,200	6,000
Electrical connection 3 × 400 V/ 50 Hz																
Electric input [kW]	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Line protection	C16A	C16A	C16A	C16A	C16A	C16A	C16A	C16A	C16A	C16A	C16A	C16A	C16A	C16A	C16A	C16A
Weight [kg]	1,550	1,750	1,950	2,250	1,600	1,800	2,000	2,300	1,550	1,750	1,950	2,250	1,600	1,800	2,000	2,300

## Automated Akrobat & Fixbox transferring station

The automated Akrobat & Fixbot station set is a super-structural device incorporated into automated Multi Control bread lines, using rolling cloth to gently manipulate leavened dough for fast loading into deck ovens.

The dough is manually placed onto cloth-surface trays, inserted into special trolleys, and left to rise in proofers. When the dough is ready, the trolley is inserted into the Akrobat & Fixbox station that eventually loads it into the oven.

Akrobat & Fixbox	Akrobat 180/200	Akrobat 180/240	Fixbox 180/70	Fixbox 180/80
Tray dimensions [mm]	1800 × 700	1800 × 800	1800 × 700	1800 × 800
Number of trays	9–12	9–12	9–12	9–12
Electric input [kW]	1.35	1.35	0.05	0.05

### Fast and gentle loading of leavened dough

The time between inserting the trolley into the transferring station and the loading of the dough onto the preheated plate of the deck oven is about 30 seconds. The dough can therefore be very loose, containing more water, which greatly effects the resulting porosity.

The Akrobat & Fixbox station is suitable for loading pieces of dough weighing 300–2 500g, wheat, whole-wheat and rustic bread, ciabattas, Arabian bread, and light-weight products, from 100g.

### Akrobat & Fixbox in combination with dampening tables

**Sprinkler dampening system** – the dough is fog-moistened.

**Brush dampening system** – the dough dampening with a rotating brush imitates a baker's handwork by gently working flour into the dough. The resulting effect is a shiny, golden colour of bread and other bakery products.



## Feed table

Feed tables are multifunctional devices designed for fast transferring of dough onto the Asistent loading device. They also assist in marking and automatically sprinkling dough pieces with salt and caraway or sesame seeds. They are an intelligent and variable interlink in the baking process, contributing to a maximum performance of Asistent loading devices.

Feed table	AS-01	AS-02	AS-03
Width [mm]	1,955	1,955	2,092
Length [mm]	2,080	3,490	2,080
Height [mm]	850	920	953
Working area [mm]	1 800 × 2 000 (2 400)	1 800 × 2 000 (2 400)	1 800 × 2 000 (2 400)
Input [kW]	0.7	1.7	1.0



## Trolley bakery ovens

Designed primarily for baking regular and sweet baked products, pastries, and durable goods, trolley box ovens are nowadays standard equipment in most modern bakeries of all categories. The use of trolley ovens provides bakeries with a large baking surface in a small area, extending their production capacity.

## Rotomax Midi rotary trolley ovens

Rotomax Midi ovens with a single rotating trolley are designed for conventional baking. Their parameters make them suitable for processing all types of confectionary, sweet bread, and pastries.

The baking process of rotary ovens is based on a programme controlled air movement to decrease energy consumption without excessively drying the products, resulting in a crispy, soft crust. The heat carrier in stainless steel Rotomax Midi ovens can be natural gas, heating oil, or electricity.

Rotomax	Midi 12G	Midi 12E	10G	10E
Baking surface [m <sup>2</sup> ]	12	12	10	10
Number of baking trays	15–20	15–20	15–20	15–20
Baking trays dimensions [mm]	580/980	580/980	580/780	580/780
Heat carrier	gas/oil	electricity	gas/oil	electricity



## Rotomax rotary trolley ovens

Designed for baking a wide range of top-quality bakery products, Rotomax rotary trolley ovens have a universal application.

The solid stainless steel design guarantees not only long lifespan of the oven, but also continuous operation 7 days a week, 24 hours a day. A high-performance heat-exchanger unit and effective insulation ensure temperature stability. The heat carrier is natural gas, heating oil, electricity.

### The advantages of Rotomax ovens

- Controlled air circulation
- Continuous baking – uninterrupted exchange of trolleys
- Industrial design ideal for 24/7 operation

Rotomax	12G	12E
Baking surface [m <sup>2</sup> ]	12	12
Number of baking trays	13–20	13–20
Baking trays dimensions [mm]	580/980 580/780	580/980 580/780
Heat carrier	gas/oil	electricity

## Thermomax thermal oil trolley ovens

Using the identical system of baking by means of radiant heat as deck ovens, Thermomax thermal oil trolley ovens produce high-quality white bakery products, such as rolls, buns, tin bread, French bread, baguettes, as well as a variety of special bread.

Due to their design of baking and tray manipulation, these ovens can be essentially regarded as both deck and trolley ovens respectively, providing high comfort of operation, uniform baking, easy operation, and stable quality of products. The heat carrier is either natural gas or heating oil.

### Standard features of Thermomax ovens

- Universal utilization of the oven with 2 or 3 trolleys
- Simple computer control and operation
- Air microcirculation for better quality and colour of crust – TURBO ventilator
- High output – maximum utilization of the oven's capacity

Thermomax	T 9	T 11	T 12	T 14	T 18	T 21
Baking surface [m <sup>2</sup> ]	9	11	12	14	18	21,5
Number of decks	10	12	10	12	10	12
Baking trays						
Dimensions [mm]	580/780	580/780	580/980	580/980	580/980	580/980
Number of trolleys per oven	2	2	2	2	3	3
Deck height [mm]	130	108	130	108	130	108
Oven dimensions						
Width [mm]	1,500	1,500	1,700	1,700	1,500	1,500
Depth [mm]	2,430	2,430	2,430	2,430	2,860	2,860
Height [mm]	2,750	2,750	2,750	2,750	2,750	2,750
Heat input [kW]	55	60	65	70	100	116



## ThermoRoll continuous tunnel ovens

ThermoRoll baking ovens are modern continuous thermal oil conveyor ovens with programme control and operation of all functions.

They are designed to meet the needs of mid-sized and large bakeries for high-performance baking of large batches of primarily white bakery products such as rolls, Kaiser rolls, buns, French bread, and pan bread.

ThermoRoll is available in single or double-deck models, to save space, usually combined with a fully automated continuous shaping line. The entire line is fully automated and programme controlled.

### Standard features of ThermoRoll ovens

- radiant-heat baking for continual production of bakery products
- ideal heat distribution and its precise regulation down to 1°C
- easy switching between various bakery products
- economical operation – low input energy consumption thanks to the thermo-oil system of energy transfer
- Efficient utilization of input energy
- Precise regulation of the steam pressure and the upper and lower baking intensity

ThermoRoll	TR 25/2000	TR 30/2000	TR 35/2000	TR 38/3000	TR 45/3000	TR 54/3000	TR DUO 50/2000	TR DUO 60/2000	TR DUO 70/2000	TR DUO 75/3000	TR DUO 90/3000	TR DUO 105/3000
Baking surface [m <sup>2</sup> ]	25	30	35	38	45	54	50	60	70	75	90	105
Number of decks	1	1	1	1	1	1	2	2	2	2	2	2
Baking belt width [mm]	2 100	2 100	2 100	3 100	3 100	3 100	2 100	2 100	2 100	3 100	3 100	3 100
Total oven width [mm]	3 100	3 100	3 100	4 200	4 200	4 200	3 100	3 100	3 100	4 200	4 200	4 200
Total oven length [mm]	14 855	17 430	20 005	14 855	17 430	20 005	14 855	17 430	20 005	14 855	17 430	20 005
Oven height [mm]	1 450	1 450	1 450	1 450	1 450	1 450	2 500	2 500	2 500	2 500	2 500	2 500
Number of blocks [pc]	5	6	7	5	6	7	5	6	7	5	6	7
Number thermal cycles	3	3	3–5	3	3	3–5	3	3	3–5	3–5	3–5	3–5
Power input [kW]	9	9	9	9	9	9	18	18	18	18	18	18
Oven heat input [kW]	130	160	180	180	200	240	230	280	330	350	420	490

## Bakery accessories

Proofers with regulated air-conditioning ensure correct dough proofing at optimum and constant temperatures and humidity. They provide the essential conditions for the bread to have the right shape and appearance.

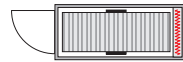
## Box and pass-through proofers

Box and pass-through proofers designed for mid-sized bakeries facilitate the process of dough proofing in trolleys, with bread dough in baskets and other products placed loosely on trays or plates.

Custom made proofers are available in a stainless steel model and with two types of control: manual or built-in programme control and regulation of temperature and humidity.

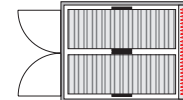
Using waste heat to warm the proofers and heat from deck ovens to obtain steam for sufficient humidity, the proofers consume a very small amount of energy only to run the ventilators and control system. If there is no waste heat available, the proofers can be outfitted with electric-powered air-conditioning.

BOX PROOFER K1



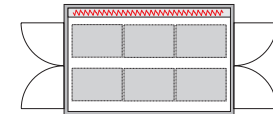
Dimensions: 1 100 × 2 600 mm

BOX PROOFER K2



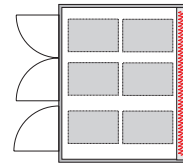
Dimensions: 2 000 × 2 600 mm

PASS-TROUGH PROOFER K2



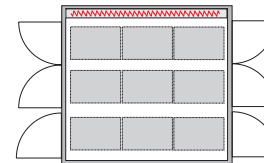
Dimensions: 2 200 × 3 400 mm

BOX PROOFER K3



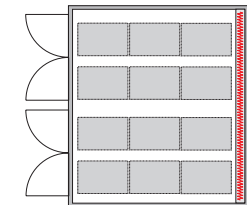
Dimensions: 3 150 × 2 600 mm

PASS-TROUGH PROOFER K3



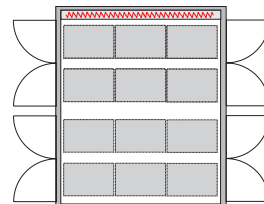
Dimensions: 3 150 × 3 400 mm (3 150 × 2 600 mm)

BOX PROOFER K4



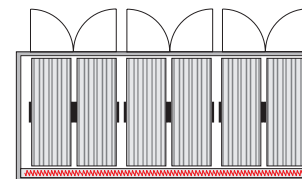
Dimensions: 4 000 × 3 600 mm (4 000 × 2 600 mm)

PASS-TROUGH PROOFER K4



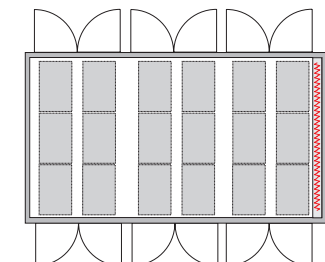
Dimensions: 4 000 × 3 400 mm (4 000 × 2 600 mm)

BOX PROOFER K6



Dimensions: 6 000 × 2 600 mm

PASS-TROUGH PROOFER K6



Dimensions: 6 000 × 3 400 mm (6 000 × 2 600 mm)



## Continuous proofers for fully automated

The continuous proofers are designed specifically to be used in conjunction with deck ovens. In fully automated proofers, the proofing process, including the entry and exit onto the feed table, is programme controlled.

Rye-wheat dough is allowed to rise in bread baskets and wheat dough in troughs or freely on trays

continuously moving through the proofer. When the dough is ready, it is gently loaded into individual decks or sections of continuous thermal ovens. This technology can be used also for very loose dough with high water content, resulting in porous products. After the dough has risen, it is transferred to the feed table, a connecting link between continuous proofer and ASISTENT loading machine that will subsequently load it, within 30 seconds, into the preheated deck oven or onto the belt of the multi-deck tunnel oven.

Continuous proofers can be also combined with pass-through thermal oil ovens.

## Proofer accessories

### Proofer air-conditioning systems

Ensuring quality and uniform process of dough proofing, air-conditioning systems constitutes an essential part of all box and pass-through proofers.

The air-conditioning systems are categorized according to the heat carrier they use into electric or Combi, using waste heat cost-effectively obtained either from deck ovens or the central steam distribution system. KORNFEIL bakery ovens come with the energy-saving EkoBlok, a device processing waste heat to either heat proofers or produce hot water.

KA-E air-conditioning	KA-E	KA-E	KA-E	KA-E	KA-COMBI	KA-COMBI	KA-COMBI	KA-COMBI
Tension [V]	1	1	1	1	1	2	1	1
Electric input [kW]	7.4	9.4	12.4	15.4	0.5	1.0	6.4	9.4

# Dough refrigeration and freezing

Designed to make the production of baked goods more effective, the refrigerating and freezing devices, including K-Stop proofers, K-IC blast freezers, and refrigeration or freezer storage units, ensure that the dough remains fresh for at least 7 days.

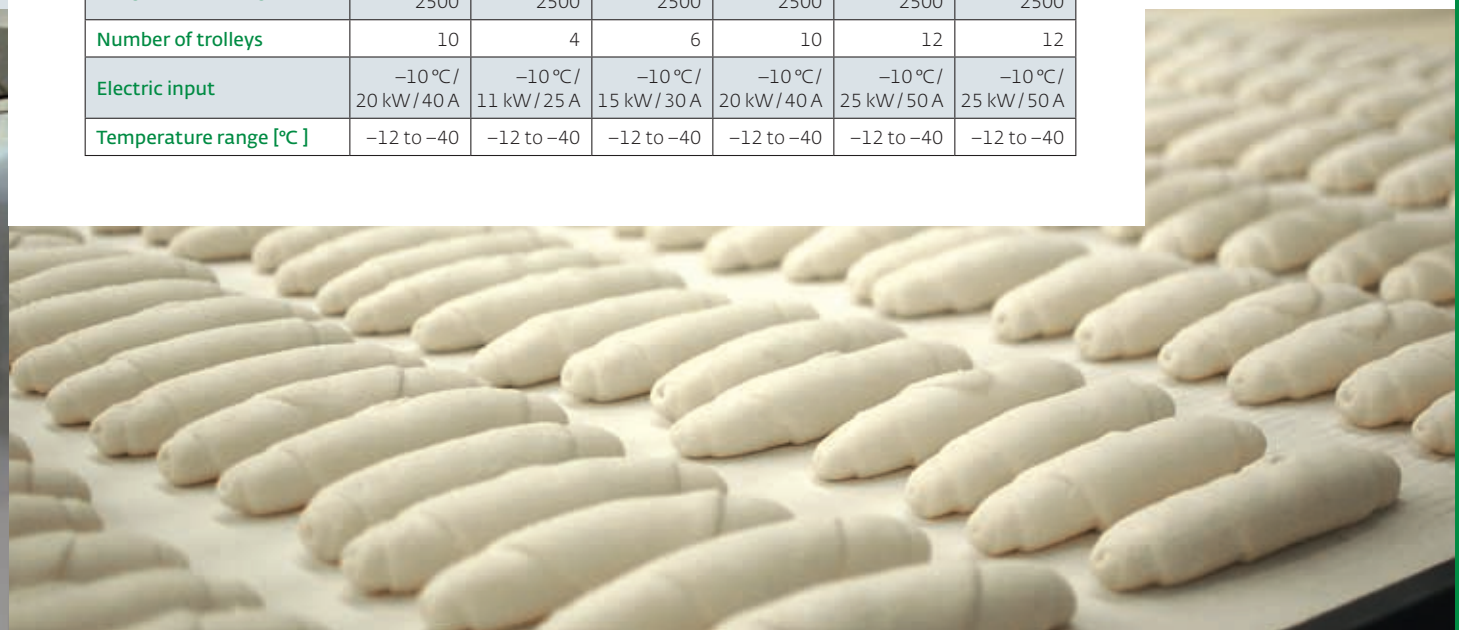
## K-Stop proofers

The main advantage of these proofers lies in their ability to save ingredients for longer periods, minimizing production losses. Other benefits include:

- Efficient utilization of production line and human resources
- Increased productivity of labour
- Decrease in wage costs
- Continual product quality
- Flexible reaction to unexpected orders

K-Stop proofers Pass-through model	K-STOP/P4 2x 2 Wing door	K-STOP/P6 2x 2 Wing door	K-STOP/P10 2x 2 Wing door	K-STOP/P12 2x 2 Wing door
Dimensions [mm] (length/width/height)	2610 x 2200 x 2500	3800 x 2200 x 2500	4850 x 2200 x 2500	7000 x 2200 x 2500
Number of trolleys	4	6	10	12
Electric input	-10°C/ 11 kW/25 A	-10°C/ 15 kW/30 A	-10°C/ 20 kW/40 A	-10°C/ 25 kW/50 A
Temperature range [°C]	-12 to -40	-12 to -40	-12 to -40	-12 to -40

K-Stop proofers Non-pass-through model	K-STOP/10 2 x 2 Wing door	K-STOP/4 1 x 2 Wing door	K-STOP/6 2 x 1 Wing door	K-STOP/10 2 x 1 Wing door	K-STOP/12 2 x 1 Wing door	K-STOP/12 2 x 2 Wing door
Dimensions [mm] (length/width/height)	4850 x 2200 x 2500	2500 x 2200 x 2500	3100 x 2200 x 2500	4850 x 2200 x 2500	5500 x 2200 x 2500	5500 x 2200 x 2500
Number of trolleys	10	4	6	10	12	12
Electric input	-10°C/ 20 kW/40 A	-10°C/ 11 kW/25 A	-10°C/ 15 kW/30 A	-10°C/ 20 kW/40 A	-10°C/ 25 kW/50 A	-10°C/ 25 kW/50 A
Temperature range [°C]	-12 to -40	-12 to -40	-12 to -40	-12 to -40	-12 to -40	-12 to -40



## K-IC blast freezers

Blast freezers are designed for fast and deep freezing and long-term storage of raw and pre-baked products.

The freezers are equipped with contact temperature sensors located both on the entrance and exit ends, continuously measuring the core dough temperatures and displaying the correct time of freezing.



### What is blast freezing?

The objective of blast freezing is to stop all enzymatic and fermentation processes, preserving the structure of dough and fillings intact and to stop and attenuate the retrogradation of starches, suppressing the ageing process.

In all bakery products it is crucial to very quickly pass the critical temperature point in the core of the dough –6 or –7 – to prevent the formation of large ice crystals.

Blast freezers	1-trolley freezer box K-IC/P1, K-IC/1	2-trolley freezer box K-IC/P2, K-IC/2	4-trolley freezer box K-IC/P4, K-IC/4
Trolley dimensions [mm]	580 × 980 / 20	580 × 980 / 20	580 × 980 / 20
Product weight [g]	50	50	50
Number of products per tray	30	30	30
Number of layers per trolley	20	20	20
Total weight of products per trolley [kg]	30	30	30
Trolley weight [kg]	32	32	32
Target temperature of the product core [°C]	-7	-7	-7
Time to reach the target temp. [min]	18	20	24
Trolley frequency [min]	18	10	10
Hourly output [trolleys/hr]	3,3	6	10
Hourly output [kg/hr]	100	180	300
Average power consumption [kW/hr]	10	18	30



## Dough dampening

The process of dampening the dough before it is loaded into deck or continuous tunnel ovens affects the quality and shine of the final product. Additional dampening is sometimes necessary for finished products to make them last longer.

## Dampening units

The KORNFEL dampening unit is designed for moistening products placed on a trolley. It is used for both moistening the dough prior to baking and for cooling the finished products.

### 4 primary reasons for using dampening units

- Time saving – takes several seconds only
- Strictly regulated process – unused water is drained
- The amount of water can be preset
- Uniform dampening



## Conveyor belts and the shipping department

The system of conveyor belts reduces the time between baking and dispatching the products, normally not requiring the touch of a human hand.



## Conveyor belts and the shipping department

### Conveyor belts

The Asistent device unloads the finished products from the oven and transfers them on the conveyor belt that in turn transports them directly into the shipping department. The operation of the conveyor belt is fully automated and perfectly synchronized with the remaining components of the production line. The conveyor gradually ascends, descends, and turns; its shape and dimensions can be adjusted to the environment and the customer's requirements.

### Dampening conveyors

This automatically controlled dampening conveyor is a component of the transport conveyor system, ensuring that the finished bread is moistened.

### Unloading conveyors

This segment of the conveyor system, featuring an independent drive and speed regulator, is used for unloading finished products from the conveyor belt. It is our most space saving model.

### Spiral chute

This part of the conveyor system allows the bread transport to quickly descend into a position where the products can be either unloaded from the revolving table or run through the product counter.

### Revolving table

This terminal device for bread unloading is a more affordable alternative to the product counter. It can accommodate one full deck.

### Bread counter

Facilitating gradual unloading of the finished products, the counting device at the end of the conveyor system records the information regarding the quantity and the type of products and forwards it to the bakery's central database. The baked bread rotates on counter-rotating belts before it is released one after another. The gradual unloading is monitored by the end sensor. There are two types of bread counters KAL/R1 and KAL/R2, based on the size of the baking surface.

Bread counter	KAL / R1	KAL / R2
Working surface dimensions [mm]	1800 × 1200	1800 × 2400
Power input [kW]	1,5	1,5
Dimensions [mm] (width/height/length)	1567 × 900 × 4500	1567 × 900 × 5500

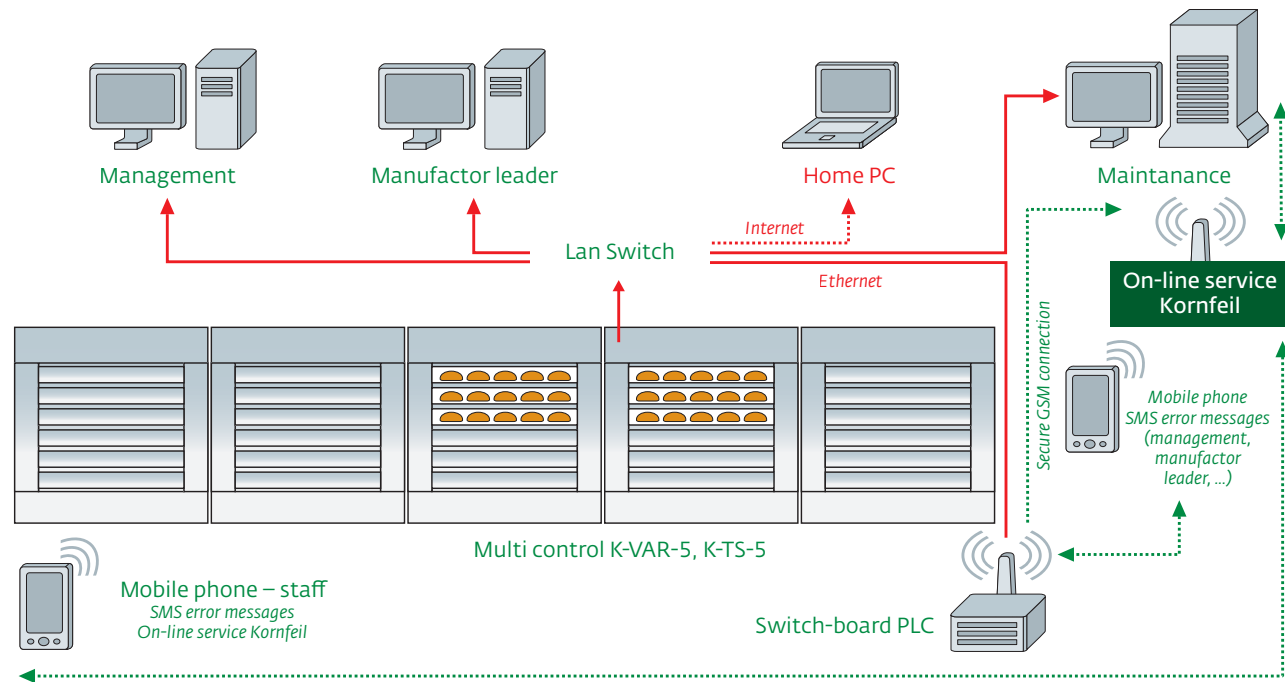
## Baking process visualization

Besides securing a continuous control over the production process, the control system also provides data analyses essential for improving the efficiency of bread and white bakery products production.

The line adjustment and operation is carried out by a production coordinator using the central control panel or the production engineer's computer. Owing to the incorporation of user's rights within the system, only authorised personnel are able to set and adjust baking parameters; others are allowed to only initialize baking programmes, and are unable to tamper with baking parameters.

Data transfer is carried out via the Ethernet Network. The equipment can be integrated within an existing company computer network, thereby facilitating the connection of the visualization system to local computers. The computer also monitors system malfunctions and notifies the user in case of a non-standard situation. Some of the other features of the system is the option to view, edit, print and back up baking programmes.

The visualization system also makes it possible to monitor and optimize all energy processes in the bakery. The baker can see where the heat accumulates, where it is utilized, whether there is any energy dissipation occurring. The remote access and visualization enable him to react flexibly to any changes within the system also during the course of seasons.



## Advantages

- Perfect control over production no matter where you are
- Possibility of data retention to assess production efficiency
- On-line service for immediate problem diagnoses
- Easy evaluation of production output



## Processing waste energy

For maximum efficiency of bakery operation without energy losses, KORNFEIL offers a custom-made device capable of saving up to 25% of input energy, regulating steam and waste gas outlet, and contributing to an eco-friendly operation of your bakery.



## Energy processing

### EkoBlok Bypass

The EkoBlok is an eco-friendly device for complete utilization and processing of waste energy, waste gases, and steam from gas and oil bakery ovens, as well as steam and thermal oil boilers. It reduces waste gases pollutants along with CO<sub>2</sub> emissions produced by individual ovens, thus protecting the environment.

The EkoBlok in combination with the KORNFEIL automatic bypass constitutes an ideal system for any bakery. The KORNFEIL bypass system ensures a completely safe bakery operation even in case of surplus energy by conducting oven waste gases and steam away from Ekoblok exchangers.

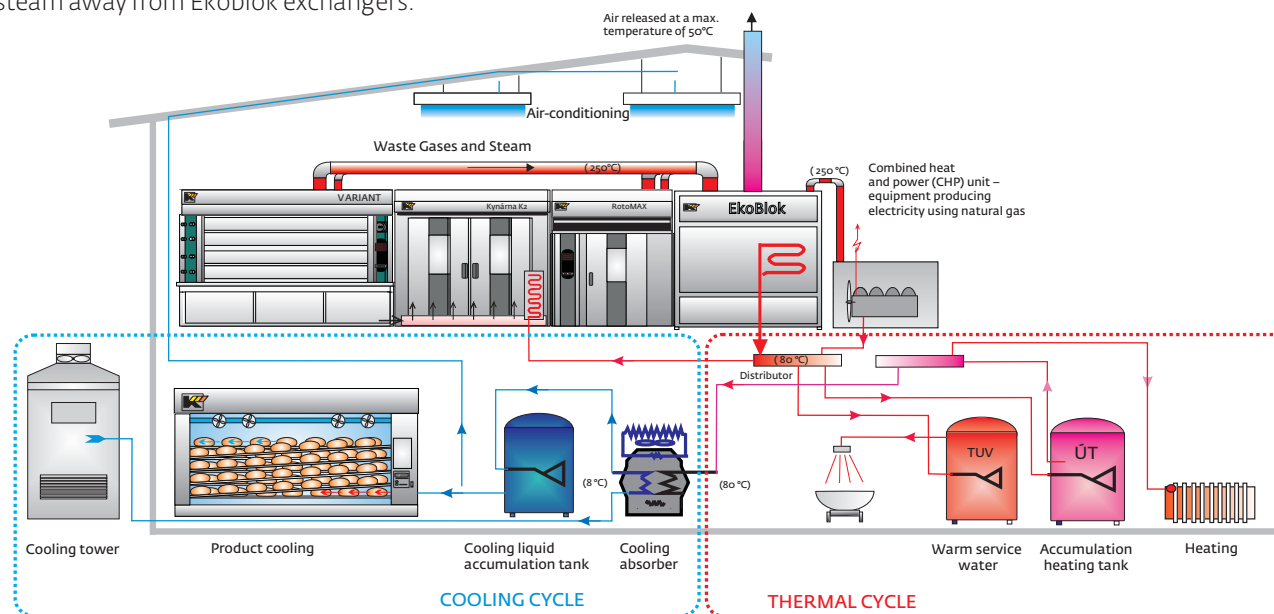
#### Energy for heating purposes

- Heating of service and process water
- Heating of bakery premises
- Preheating for steam production
- Heating of proofers and stop-proofers
- Washer operation

#### Energy for cooling purposes

Waste energy in the form of hot water is transformed via the absorption assembly into a cooling medium used for:

- cooling of the shipping department,
- air-conditioning of the working area,
- cooling of bakery products.



## Bypass EkoBloks

EkoBlok Bypass	EkoBlok I	EkoBlok II	EkoBlok III	EkoBlok IV	EkoBlok V	EkoBlok VI
Max. output of burners [kW]	120	200	300	400	600	800
Min. volume of water tanks [l]	1500	3000	4000	5000	6000	8000
Temperature of output air [°C]	50–60	51–60	52–60	53–60	54–60	55–60
Max. water temperature – primary circuit [°C]	95	95	95	95	95	95
Max. water temperature – secondary circuit [°C]	40	40	40	40	40	40
Diameter of input piping [mm]	180	180	180, 250	180, 200	180, 250, 350	180, 250, 350, 400
Diameter of output piping [mm]	180	200	230	260	350	400
Water line [inches]	G 1/2"	G 1/2"	G 1/2"	G 1/2"	G 1/2"	G 1/2"
Waste water	>DN50	>DN51	>DN52	>DN53	>DN54	>DN55
Heating output – primary circuit	G1"	G1"	G 1 1/2"	G 1 1/2"	G 1 1/2"	G2"
Pressure water line – secondary circuit	G1"	G1"	G1"	G1"	G1"	G1"
Electrical connection [kW]	0,95	0,95	2	2	3,5	3,5
Line protection 3 ×400 V / Hz	C16A	C16A	C20A	C20A	C20A	C20A
Water volume [l]	135	270	420	540	540	830
Net weight [kg]	380	615	865	1027	1050	1600

**KORNFEIL**  
spol. s r.o.

## Energy-focused projects and absorption cooling

In addition to the manufacture of bakery ovens, KORNFEIL has been for a long time involved in energy-producing projects with the potential of saving costs expended on energy and the entire baking operation. This goal can be achieved by taking advantage of:

1. cost-saving modern technologies that can be applied in baking and proofing processes with maximum utilization of primary energy for baking and the production of steam;
2. waste energy in the form of waste gases and polluted steam that be further processed by the EkoBlok.

## Energy processing

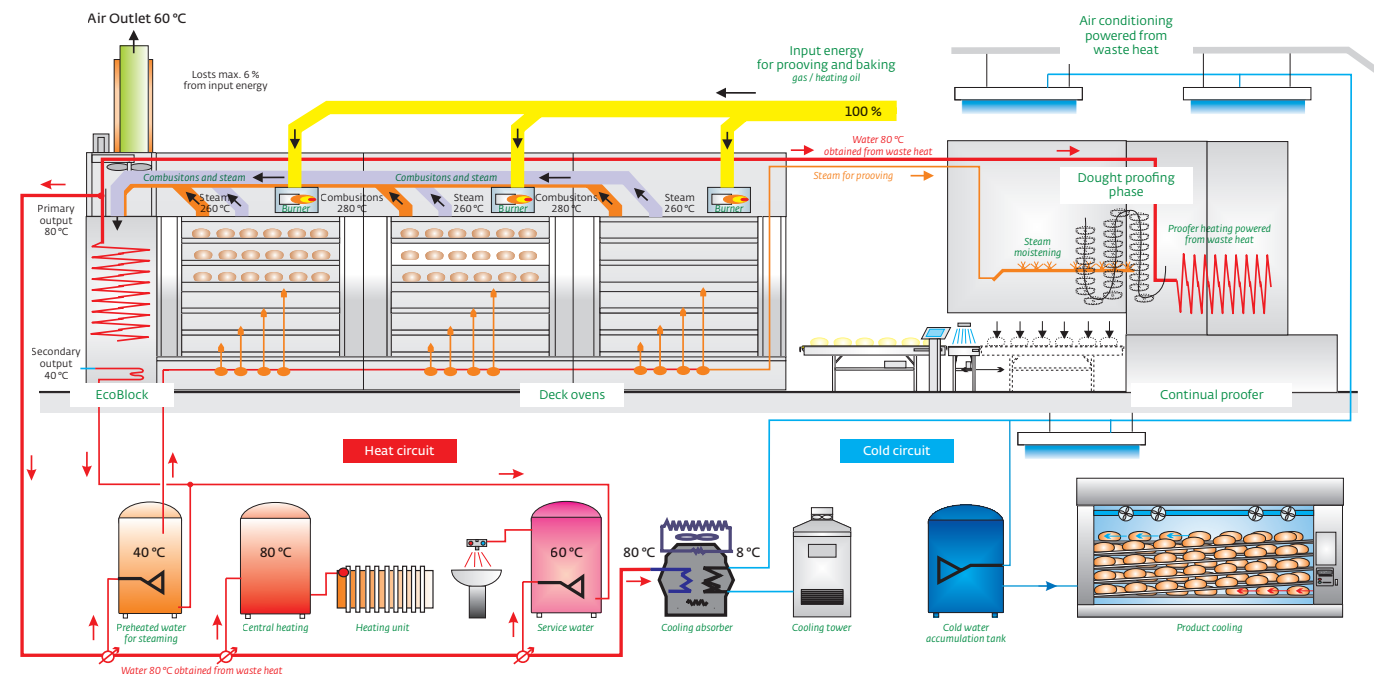
Following the successful application of the EkoBlok system in many businesses, KORNFEIL continues to work on projects in many European countries to help bakeries meet their energy requirements. The results are fully automated energy-saving devices:

- utilizing waste energy year-round,
- heating proofers and bakery premises,
- cooling working areas and products,
- producing technological steam,
- able to provide air-conditioning
- measuring and regulating all incorporated systems,
- displaying current energy evaluations of the bakery.

## Absorption cooling

In conjunction with the EkoBlok, utilizing the waste energy released from ovens, absorption coolers constitute cost-saving and eco-friendly system optimizing the bakery's energy consumption. The absorption cooling system cools waste heat – hot water (85 °C) – down to about 8–10 °C, which can be further used in:

- air-conditioning the production and shipping areas,
- cooling the working area,
- cooling baked products.



## Eco-friendly heating of bakery ovens

While providing heat to operate bakery ovens, this biomass system not only saves you energy costs, but also disposes of waste, including surplus baked goods.



## BioTherm

BioTherm is an eco-friendly alternative to conventional heating of bakery ovens. BioTherm only uses renewable energy sources, such as pulp chips, pellets, as well as unused remains of bread and other bakery products, as the heating fuel.

These are mainly more affordable sources of energy, including wastes products from forestry operations and the surrounding environment in general. As a result, the bakery is no longer dependent on natural gas and other fossil fuels susceptible to constant increases and fluctuations in prices.



### Why BioTherm thermal oil boilers?

- Eco-friendly and cost-effective heating of bakery ovens
- Elimination of surplus bakery products – free energy
- Fully automated heating medium for easy operation
- Affordable in-house produced heating medium independent of heating oil and natural gas
- Materials supplied by local farmers and foresters – regional recycling
- Energy-efficient system

Type of fuel	Wood chips	Pellets	Old bakery products
Fuel profile	(ONORM M7133)	(ONORM M 7135)	
Heating capacity [kWh/kg]	4*	5	3,9*
Batch weight [kg/m <sup>3</sup> ]	200–250	650	350
Size	G30/G50	6 mm / cca 5–40 mm	20–30 mm
Humidity [%]	15–35	<10	20–25

\* by 25% humidity



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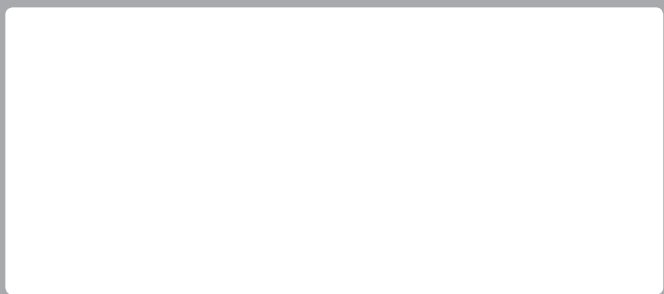
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