

## FAQ Energy efficiency and energy management

1	Efficient oven components .....	2
2	User settings in the controller menu .....	4
3	Saving energy with Intelligent Baking Control (IBC) .....	5
4	Overview of the energy input during baking .....	6
5	Ovens in the energy management system .....	7
6	Energy consumption during baking .....	8
7	Energy topics for maintenance and purchasing of an in-store oven .....	10
8	Keeping the oven ready for operation .....	11
9	Energy efficient working and handling .....	12



## **FAQ      Energy efficiency and energy management**

---

### **1 Efficient oven components**

Energy is a precious and expensive commodity.

As an oven manufacturer, we also want to help save resources and to allow our customers to make optimum use of their energy input.

Many key features of WIESHEU in-store ovens play a role in energy management.

#### **Energy efficient door glazing**

WIESHEU appliances are double glazed or – on E3 models – even triple glazed. The large air insulation layers result in a high level of thermal insulation.

In addition, the appliances have a heat reflecting coating on the glass panes of the ovens. This considerably reduces the heat transition coefficient, which becomes clearly evident in the surface temperature of the viewing pane.

#### **Perfectly insulated baking chamber**

The modern insulation materials that surround the baking chamber are indispensable. They ensure that the energy remains where it should – inside the oven.

The baking chambers of WIESHEU appliances are coated with sustainably produced insulation materials. They have a high density and are additionally provided with a protective external layer.

#### **High quality sealing materials**

New technologies and materials ensure targeted opening and closing of the openings of the baking chamber. Steam and heat are supplied to the products so that an optimum baking result can be achieved. This means that the energy used cannot inadvertently leak out in areas where this is avoidable.

In addition to this, most components and add-on parts of the baking chamber, such as exhaust air, drain and motors, are thermally decoupled. This technology also ensures that the heat from the baking chamber is not emitted to the outside unnecessarily.

## **FAQ      Energy efficiency and energy management**

### **Oven lighting**

LED light strips are used in the WIESHEU fan ovens, such as Dibas blue2, Dibas 64 blue, E3 and Euromat 64. These provide targeted and cost efficient illumination of the baking chamber.

Older appliances are equipped with halogen lamps.

This can be shown on the theoretical example of annual consumption of a Euromat size L with 10 tray supports.

#### **Facts:**

- Euromat E 200 A:
  - 8 halogen lamps
  - Total power = 80 W
- Euromat 64 / E3:
  - 2 LED light strips
  - Total power = 12.8 W

#### **Theoretical calculation:**

Power consumption / duration	10 hours/day	300 days/year
Euromat E 200 A [80 W]	0.8 kWh/day	240 kWh/year
Euromat 64 / E3 [12,8 W]	0.128 kWh/day	38.4 kWh/year
Comparison of savings from the LED light strip vs. halogen lamps		85.6%

## **FAQ      Energy efficiency and energy management**

---

### **2 User settings in the controller menu**

The Wtouch, Exclusive, Comfort and IS 600 E controllers offer the option of saving energy with user settings. The ENERGY SAVING item was added to the user menu for this purpose.

This gives the user the opportunity to make individual settings. The following settings are possible:

#### **Menu item SWITCH LIGHT OFF**

Does the oven lighting have to be switched on at all times?

Can the customer even see the oven?

Can we do without lighting, for example in cleaning mode?

This setting is particularly important for oven types that are not equipped with LED lights.

#### **Menu item END PREHEATING**

Set the time for holding the preheating temperature as required by you. If the oven is not used beyond the set period after the preheating temperature has been reached, the heating will switch off automatically.

#### **Menu item SWITCH TO STANDBY**

Set an individual time period after which the oven has to change to standby mode. If the oven or the user interface of the control unit are not used, then the oven will switch to standby mode after the set period.\*\*

\*\* Standby mode (also referred to as wait mode) is the status of the oven during which the essential functions are deactivated. These functions can be reactivated at any time and without wait time. In standby mode, only minimum power is consumed.

#### **Menu item SWITCH OFF DISPLAY**

The control display requires energy as well. The display can therefore be switched off as well in standby mode.

#### **Menu item LIGHT STANDBY**

Select this setting to automatically switch off the baking chamber lighting in standby mode.

### **3 Saving energy with Intelligent Baking Control (IBC)**

IBC is a system developed in-house by WIESHEU which automatically adapts the stored parameters of a baking program to the volume and/or thermal status of the baking product in the oven.

Given that only the energy actually required for the baking process is consumed, potential energy savings of up to 30% can be achieved.

This applies in particular for large numbers of baking processes with the following products or loads:

- Partial load
- Frozen products
- Defrosted products

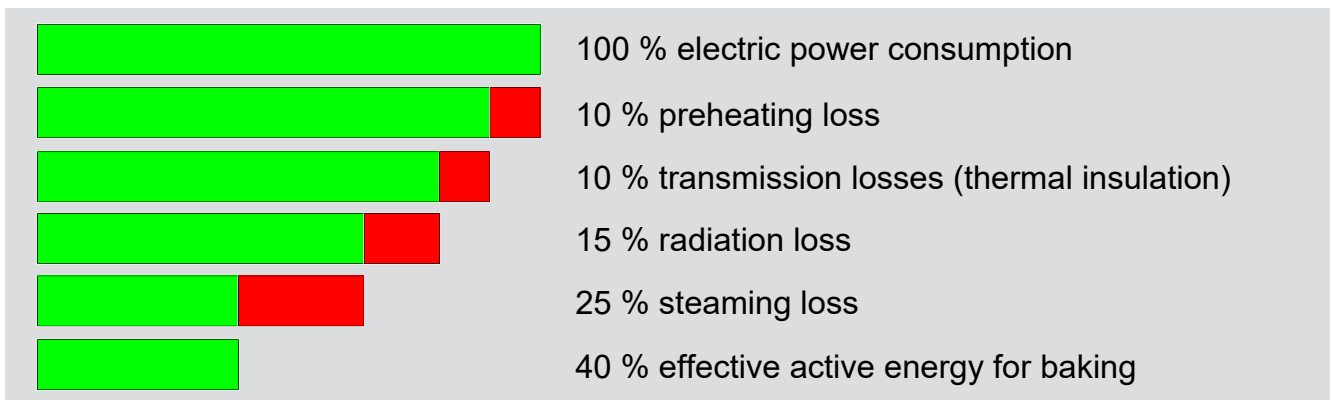
The averaged potential saving in daily use in a food retail outlet is about 8 % compared to a standard device without IBC.

IBC is available as an option for appliances equipped with the following controllers:

- Wtouch
- Exclusive
- IS 600 E

## 4 Overview of the energy input during baking

The example shows the energy flow of a 40 kW deck oven (source: Gloor.ch)



This is general information for illustration purposes. It does not refer specifically to ovens from WIESHEU GmbH.

## **5 Ovens in the energy management system**

With some contracts, the electricity price per kilowatt-hour is based on the customer's peak consumption. Exceeding a certain consumption value only once and briefly can result in having to pay a higher electricity rate for the whole year.

This peak consumption is also referred to as a load peak. Reducing these load peaks also reduce energy costs.

This can be achieved with a load management system. This means that all consuming units that are connected to the power supply are managed in a system.

A load shedding function is installed on the oven. This is the interface to the load management system. If the oven is installed in this system, the heating is switched off for a few seconds if necessary.

This targeted shut-off is always executed taking into account the priorities defined in advance. This means, for example, that the system first switches off those consuming units that have a sufficient buffer.

The heating of the oven generally remains shut off for such a short period of time that it has no impact on the baked products.

In exceptional cases, however, the baking result can be influenced, for example in the event of extended shut-off phases or unfavourable shut-off times.

Please contact your energy supplier for advice on load management systems.

## 6 Energy consumption during baking

### Determining the energy consumption by measuring consumption on site

The oven or the appliance combination is connected to appropriate measuring equipment through the power connection, for example by an energy adviser.

The following are measured throughout the entire baking process:

- Preheating
- Loading
- Steaming
- Baking

A single measurement cannot be used to infer further consumption values.

This in fact depends on the following factors:

- Product type (pretzels, rolls, croissants, etc.)
- Condition of the product (product defrosted, product frozen, etc.)
- Sequence of the products/product groups during baking (may have to be cooled down because the baking chamber is too hot)

To obtain a meaningful measurement, a large number of baking processes should be carried out on several days.

### Simplified calculation of energy consumption

The following rule of thumb can be used to make a rough estimate of how much it costs to bake a single product.

Various factors are not taken into account for this, for example the condition of the product (frozen or defrosted). This makes the theoretically calculated result imprecise.

#### Estimation:

- Energy consumption, preheating: 10 % of the oven power
- Energy consumption, baking: 60 % of the oven power



## FAQ Energy efficiency and energy management

Example for a theoretical calculation for Dibas blue2 M:

baking croissants, baked in direct succession

### Facts:

Oven power [kW]	10.5
Number of tray supports [pcs]	7
Number of croissant per tray [pcs]	12
Number of baking processes [h]	3

### Theoretical calculation:

#### Number of croissants baked per hour

$7 [\text{trays}] * 12 [\text{croissants/tray}] * 3 \text{ baking processes [1 h]} = 252 [\text{croissants/h}]$

#### Energy

During preheating:  $10.5 \text{ kW} * 0.1 = 1.05 \text{ kWh}$

During baking:  $10.5 \text{ kW} * 0.6 = 6.3 \text{ kWh}$

Total/hour = 7.35 kWh

#### Energy price per product

$\frac{7.35 [\text{kWh}] * 0.30 [\text{€/kWh}^{(2)}]}{252 [\text{croissants/h}]} = 0.0087 \text{ € per croissant}$

<sup>(2)</sup> This calculation is based on a theoretical electricity rate of \* 0.30 €/kWh.

## **FAQ      Energy efficiency and energy management**

---

### **7 Energy topics for maintenance and purchasing of an in-store oven**

#### **Maintenance and care**

Adhere to the maintenance intervals.  
We recommend 6-monthly intervals.

#### **Background:**

- Precious, expensive energy can escape through defective door seals.
- A steaming unit furred up with limescale uses unnecessary excess energy during preheating.

#### **Care:**

- Check the door seal for dirt and product residue.
- Clean it carefully, ideally daily.  
Dirt accumulating in the gaps of the door seal result in the following issues:
  - The oven door does not close tightly.
  - The door seal ages more quickly.

#### **Insulated doors**

When buying an oven, ensure that the doors are insulated.

#### **Background:**

- A double or triple glazed door and a heat reflecting coating improve safety and contribute to energy saving.

#### **Environment – installation location**

Examine the surroundings on site when installing the oven.

It has an influence on energy consumption and service life.

- The correct ambient temperature is between 10 and 40 °C.
- Do not install the oven in the direct vicinity to the following:
  - Heat sources
  - Refrigeration appliances

## FAQ Energy efficiency and energy management

### 8 Keeping the oven ready for operation

How long an oven should be kept in the ready status depends on the following factors:

- Operating principle:
  - Continuous baking
  - Baking on demand
- Oven type
  - Fan oven/deck oven
- Which product will be baked next?

The following example illustrates this situation:\*

#### The facts:

Oven type	E3 L (9/11/12 tray supports)
Steam injection type	Pipe steam injection
Starting temperature	22 °C room temperature
Target temperature	180 °C

#### The result:

Action	Duration	Energy	Notice
Heating the oven from room temperature [22 °C] to target temperature [180 °C]	04:20 min:s	1.26 kWh	
Keeping the oven ready Maintaining the target temperature [180 °C]	30:00 min	1.25 kWh	
Switch off oven, door stays closed	30:00 min	---	37 °C temperature drop
Preheat oven after 30 min 143 to target temperature [180 °C]	01:11 min:s	0.34 kWh	

\* Measurements not taken as per DIN specifications

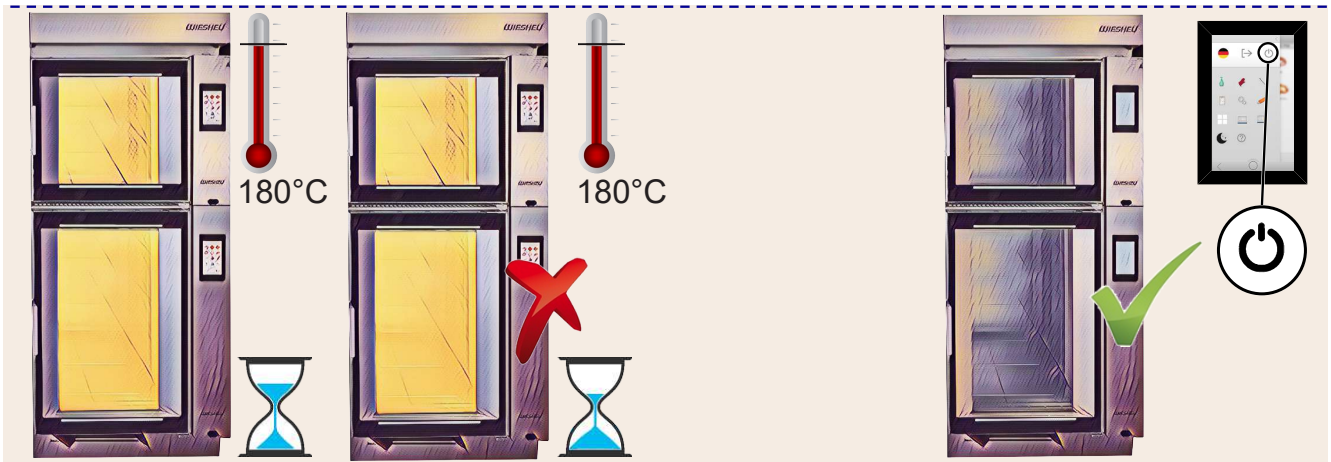
This example shows that 72 % more energy is used in a 30 minute period to keep the oven in the ready status.

We therefore recommend switching off the oven when it is not in use.

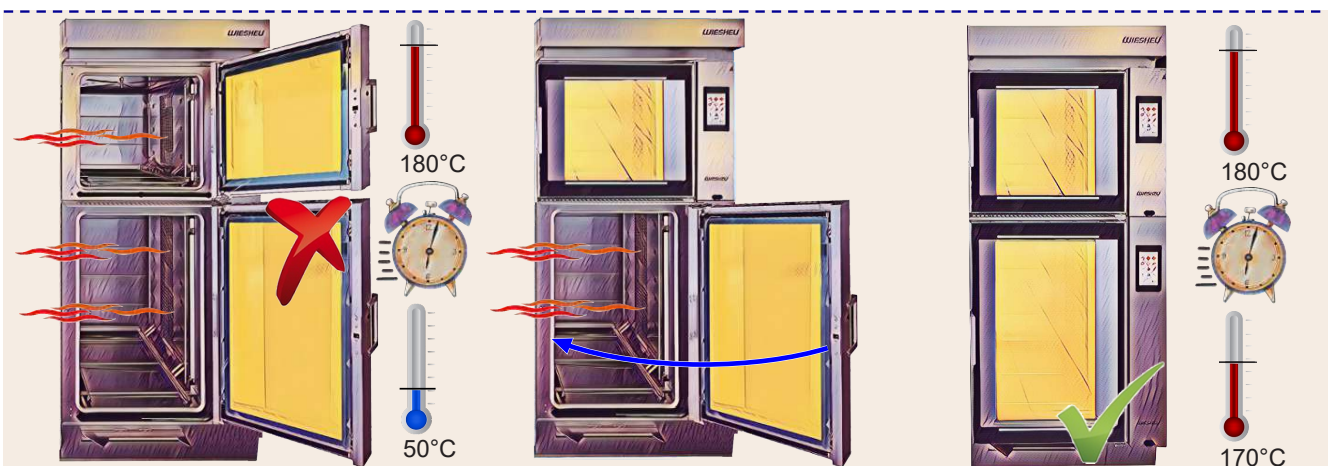
- Fan oven, from approx. 5 min
- Deck oven from approx. 10 min

To do this, use the convenient END PREHEATING option in the ENERGY SAVING menu of the oven control.

### 9 Energy efficient working and handling

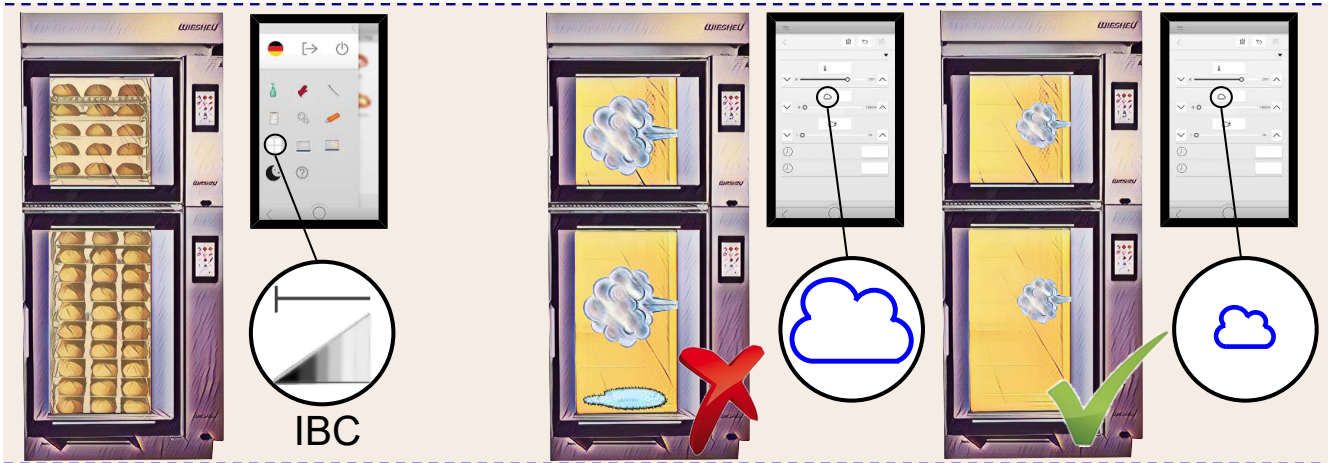


- Do not keep the oven in the ready status unnecessarily when it is not in use.
- Switch off the oven after use when not baking continuously.
  - The vent valve and the ball valve close automatically after the end of the program.
  - The heat remains where it is needed – inside the oven.

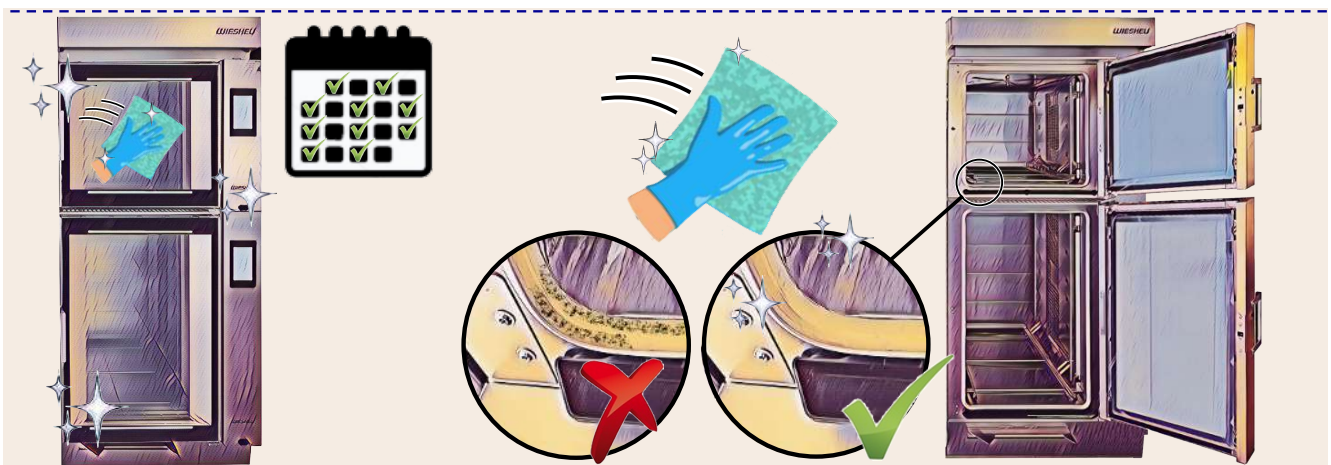


- Avoid leaving the oven door unnecessarily.
- Carefully close the oven door immediately after completing the operation.
  - Any remaining heat will then be available for the next baking process.
  - Good insulation and tightly sealing systems ensure that the oven does not cool down fully even over extended periods.
- Avoid heat loss.
- Load and unload the oven quickly.
- Close the oven door immediately after loading or unloading.

## FAQ Energy efficiency and energy management



- Always bake with the IBS system.
- Check your oven parameters.
  - For example: Reduce steaming to the necessary quantity.
  - Turning water into steam requires a lot of energy.
- Bake continuously without empty phases.
  - Create a baking schedule.
  - A baking schedule avoids expensive cool-down phases.



- Have the appliances serviced and maintained regularly.
  - Limescale on the steaming system consumes more energy than necessary.
  - Use the automatic cleaning system regularly (if available).
- Check the gaps in the door seal regularly.
  - Dirty, leaking oven doors waste energy and increase the risk of scalding.
- Make oven users aware of these facts.
  - Pass on your understanding of good working practices with precious energy.