ENERGY GUIDE

PAVAILLER

Better understanding, better savings

How can you use your oven more efficiently and reduce your bills?

www.pavailler.fr

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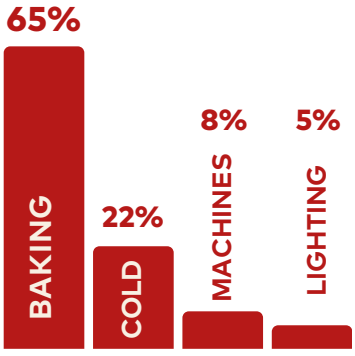
How can I bake faster but consume less?

At the heart of concerns in France and Europe, the difficult context of energy costs is a source of many questions and worries, particularly for bakers.

As baking is the most energy-consuming part of the bakery, Pavailler is committed to helping you control your energy consumption through this explanatory guide and the functionalities of our equipment.

What you need to understand: a low-power oven consumes no less energy than a higher-power oven.

That's a common misconception.



HIERARCHY OF CONSUMPTION AREAS IN THE BAKERY*

Be careful not to confuse :

Power in kW

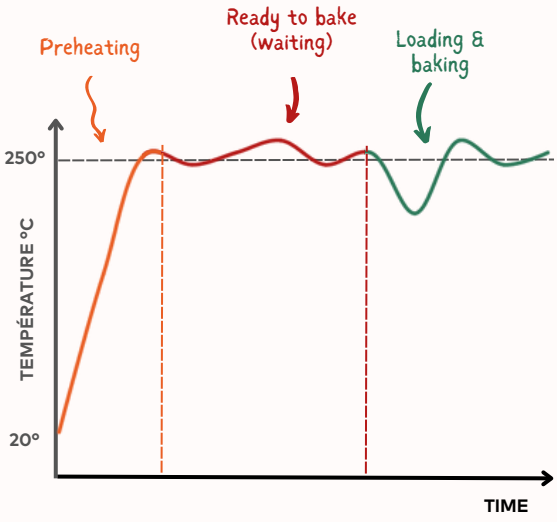
≠

Consumption in kWh

SOURCES : "Guide de sobriété énergétique en boulangerie-pâtisserie" - CNBPF

How does an oven work?
It's pretty simple!

A control commands a heating element to heat up to a given temperature. The heat contained in the baking chamber allows the dough to bake into beautiful breads, pizzas or pastries.



THERE ARE 3 PHASES

- A heating phase (to reach the set temperature) — **PREHEATING TIME**
- A baking phase — **USEFUL TIME**
- Waiting phases (to be recuded) — **WASTE OF ENERGY**

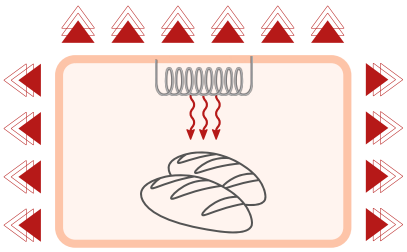
> **The waiting phases correspond to ovens that are heating up without any load.**

Throughout this phase, the oven consumes energy to maintain the required temperature.

This phase can cover from 30% to 75% of the time the oven is running.

Y a-t-il des déperditions de chaleur ?

Yes, it's inevitable, on Pavailler ovens as well as those of our competitors. What are the main causes?



Resistor that emits heat to bake doughs

Heat losses through sides, top and glass panes

GLASS PANES

Whether treated or not, 40% of losses occur through the glass panes.

Pavailler offers a solution for Onyx Fit ovens to limit front heat loss:

Kilowatts trap

These magnetic protections are easy to install and remove on each floor.

They can achieve savings of 20°C, i.e. 130 kWh/month (representing 5 to 10% energy savings).

INSULATION

It depends on two factors : the material used and its thickness.

Our ovens are equipped with one of the best insulation solutions on the market today:

Rock Wool

Density 70kg/m3 and thickness 150mm on Pavailler ovens.

As a result, our ovens rank among the best insulated on the market, and consequently the most economical.

How does a resistor work?

It's a device that transforms electrical energy into thermal energy by the Joule effect. Unlike an electric motor, which transforms electrical energy into mechanical energy (rotation) and dissipates part of this energy as heat: this is the yield.

In the case of a resistor, it's this heat that's sought-after, which is why its efficiency is 100%, regardless of its conception (ceramic, stainless steel, chopper, triac, etc.). It's all a question of regulation (Easy Touch on Pavailler ovens).

What's the right choice?

Heat more over a shorter period or heat less over a longer period?

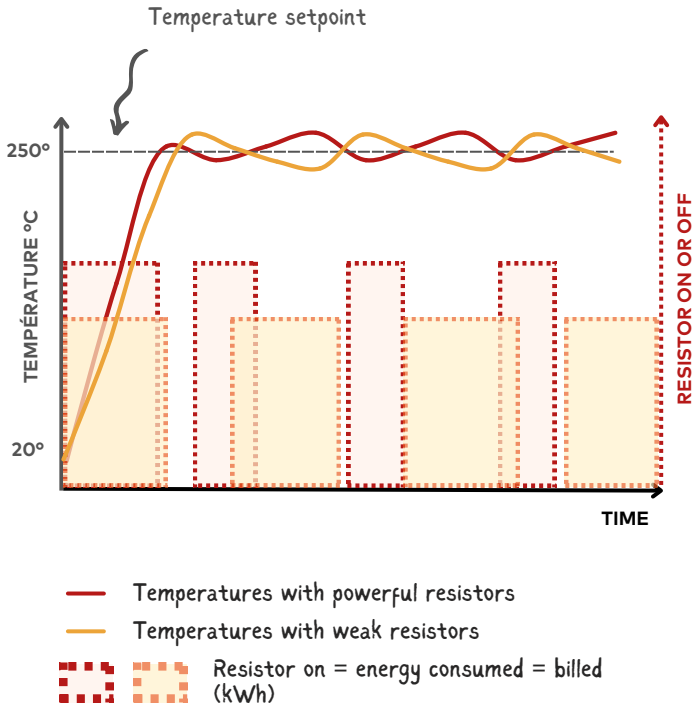
An oven with powerful resistors reaches the set temperature more quickly.

Once the set temperature has been reached, the resistor switches off. The heat will drop by a few degrees (due to unavoidable heat losses), then the resistors will come back on until the required temperature is reached, and so on.

On the other hand, an oven with weaker resistors will take longer to reach the set temperature. It requires less power (connection power linked to the meter (kW ≠ kWh)) but this power does not enable it to heat up quickly.

By heating faster, the resistors don't run as long, and less heat is lost, which means less energy (electricity) consumed, and therefore a lower bill!

Resistor operation and chamber temperature



POWERFUL OVEN
Opale Touch

Connection power indicated on the oven's identification plate.

Requires correct sizing of power cables and circuit breakers.

FASTER HEAT-UP TIME

A powerful oven delivers the same amount of energy as another, but more quickly.

Heat losses are lower (because time is shorter).

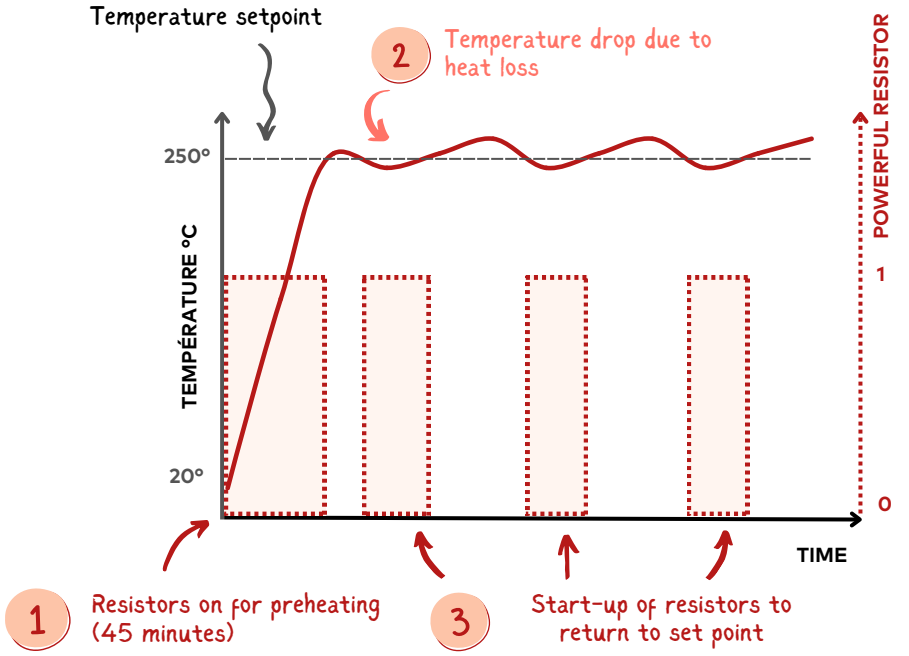
VERY FAST BAKING

REDUCED OPERATING TIME

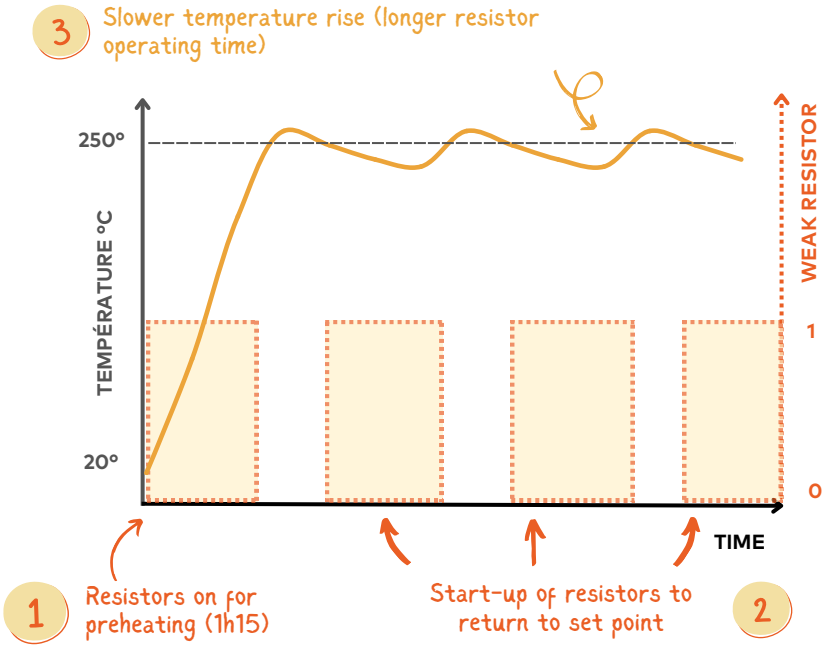
A lower electricity bill

Comparison of two ovens with different connection powers

PAVAILLER OVEN TYPE OPALE TOUCH



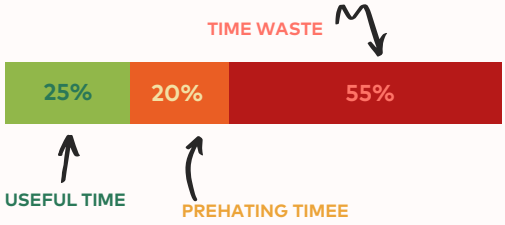
EQUIVALENT OVEN



How to reduce your electricity bill?

Sur quoi peut-on agir ?

Remember the 3 phases !



Oven operating time over one day

according to a study carried out on bakers' ovens.

- **Useful time:** **time needed to bake bread, impossible to reduce.**

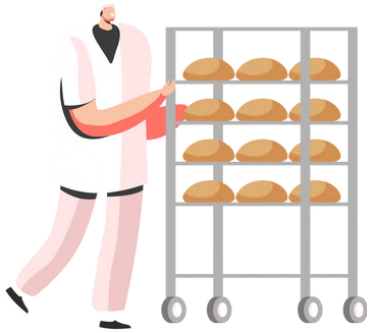
- **Preheating time:** **depends on oven construction (powerful resistors, insulation, etc.)**

→ This means choosing a well-insulated oven with resistors powerful enough for the oven's capacity.

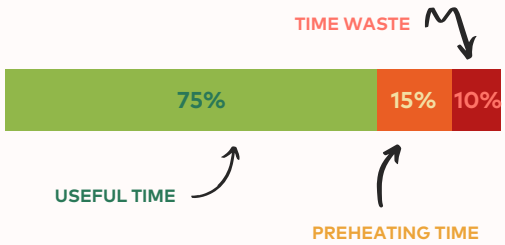
- **Time waste:** **can be significantly reduced, simply by switching off the oven after each use.**

→ It will drop in temperature (about 25°C per hour), but the energy required to raise it will always be less than the energy saved.

> ***An oven consumes less energy when it is switched off (even for a few minutes) and then brought back up to temperature, rather than being left on continuously to heat up.***



What distribution can we achieve?



The design of the oven and the effort made by the baker to switch it off would make it possible to increase the useful time from 25% to 75%, and above all to reduce waste from 55% to 10%.

Questions & Answers

What is a "powerful" oven?

First of all, you need to understand that a powerful oven for a local artisanal baker is not the same as a powerful oven for a bakery producing for several sales outlets!

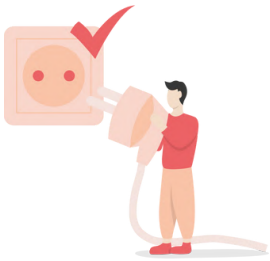
To adapt to your production, you've chosen an oven of a certain size (per m²). A powerful oven can be measured in kW/m², or even in baking capacity per m²: kg of bread/m²/h.

At Pavailler, an OPALE Touch ☀☀☀ can bake 18kg/m²/h, the best value on the market

Should I turn off my oven between batches, even if I don't use it for only 30 minutes?

Yes, it's essential!

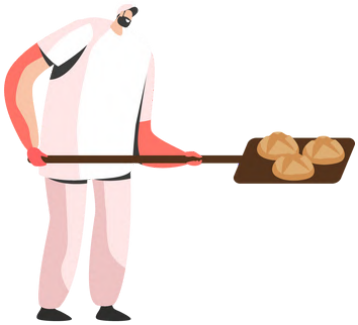
Turning off your oven avoids wasting energy and therefore reduces your energy consumption (your bill).



What is the purpose of the Eco mode on my deck oven?

Eco mode allows you to prioritize floors that are not in "eco" mode.

This mode is equivalent to using your floor as normal, while the others are boosted.



Why can't I see any difference on my meter when my oven is in Eco mode?

This is normal. The power used is always the same, the insulation is always the same, so consumption is identical.

The Eco mode on our deck ovens prioritizes decks that don't have this mode active.

Floors that do not have this mode activated are "boosted", while floors in Eco mode operate normally.

Our deck ovens
Opale Touch

Easy Touch Control
With ECO function for priority management between floors

Thermal insulation
Rockwool panels, up to 150 mm thick depending on the panel.

1 Delayed Start

Program each deck independently and flexibly with the Easy Touch delayed start function.

Make savings on oven preheating by staggering the start-up of each deck by 10 minutes. On a four-deck oven, this represents a saving of 253 hours per year.

2 Low Motion steam generator

Low Motion technology saves water and energy thanks to slower water diffusion and better evaporation.

This means energy savings of between 6% and 13%, or 12 kWh per day (on an Opale Y13, Y14, Y23 or Y24).

3 Energy distribution

The Easy Touch control manages energy savings by optimizing the heating time of each baking chamber and the steam generator.

This management system optimizes total oven power while maintaining excellent responsiveness at each stage.

4 3 power levels

☀	☀☀	☀☀☀
Kg of dough/hour/m² of baking on average		
13 kg	15 kg	18 kg
To bake 1000 baguettes on Y14 (5 m²)		
5,4 h 129 kWh	4,7 h 127 kWh	4,1 h 156 kWh

Our deck ovens
Onyx

Easy Touch Control

With ECO function for priority management between floors

ON ONYX FIT

Kilowatts trap

Gains of 20°C mean savings of 130 kWh/month (5 to 10% energy savings).

1 Delayed Start

Program each deck independently and flexibly with the Easy Touch delayed start function.

Make savings on oven preheating by staggering the start-up of each deck by 10 minutes. On a four-deck Onyx, this represents a saving of 253 hours per year.

2 Low Motion steam generator

Low Motion technology saves water and energy thanks to slower water diffusion and better evaporation.

This means energy savings of between 6% and 13%, or 3 kWh per day.

3 Energy distribution

The Easy Touch control manages energy savings by optimizing the heating time of each baking chamber and the steam generator.

This management system optimizes total oven power while maintaining excellent responsiveness at each stage.

4 Baking chambers

Thanks to its specially designed baking chambers, the ONYX oven bakes baguettes quickly.

This saves you up to 10% baking time per day!

Good practices and gestures to adopt

1 Remember to turn off your oven

After 30min without baking, turn off a deck or the entire oven.

2 Moderate steam injections

Don't forget to use the recipes programmed on the Easy-Touch.

Calculate the power consumption of your Low Motion steam generator

3 Lower the temperature

Reduce your baking temperature by 5°C.

4 Group your baking

Fill your oven and improve your yield **(on average over a production run, a 2-deck oven is only 50% occupied).**

5 Defrost the products

Defrost your products before baking.

6 Calculate the required preheating time

Remember to take into account the different possible start temperatures.

7 Shift the delayed start

Stagger the delayed start from one floor to the next according to the order of the first batches **(do not use the delayed start function on the Topaze Opéra convection oven).**

8 10min before the end of your last baking time

Turn off your oven and use its falling heat for products requiring low temperatures, such as meringue.

9 Use the ECO mode

As soon as a deck is little or not used, activate ECO mode on the Easy-Touch control.

10 Turn off the light

Turn off lights on unused floors.

CHOOSING THE OVEN?

Size the oven to your production (number of baguettes/hour). If you have the same number of doors, choose the oven with the lowest number of decks.

See our producst ranges at www.pavailler.fr

WHAT ABOUT MAINTENANCE ?

- Adjust and clean your oven's gas or oil burners.
- Clean your oven's glass doors and lighting.
- Descale the injection tubes of your steam appliances.
- Check the condition of door seals and insulation panels.