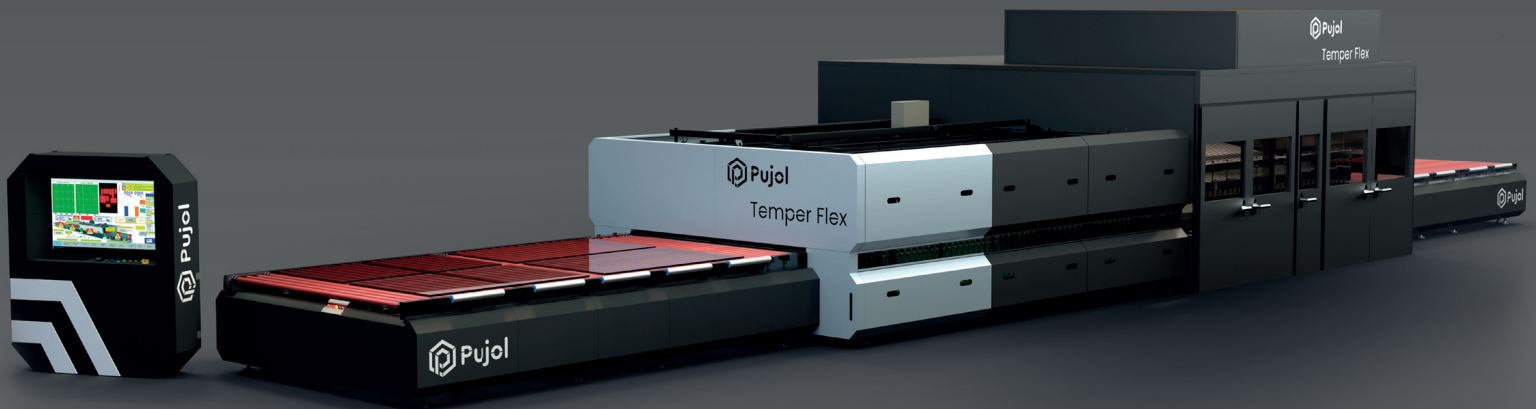




Pujol

Temper Flex

engineered by **Teknokil**



Temper Flex

The first glass tempering oven in the market with high productivity and high installed power that is able to adapt and produce at low consumption and low installed power if required by customer.

Temper Flex is a high value-added product designed to provide real answers to the needs of professionals based on 5 main axes:



1. High flexibility & lower consumption.

- **Temper Flex** can work at a double range of installed power and at a double speed (“ECO” or “PRO”).
- Able to process any type and thickness of glass
- High flexibility on the tempering any kind of new high performance technical products.

2. High quality of the finished product.

- Better planimetry and anisotropy in the glass, due to:
 - Reduction of the diameter and pitch between rollers
 - Better heat uniformity
 - Exhaustive regulation of the fan motor speed and advanced cooling control
 - Advanced aerodynamic design of tempering nozzles.
 - Production optimization software.

3. Greater savings and higher profitability per sqm of produced glass.

- Greater energy efficiency thanks to:
 - Elimination of steel protective soler of resistors
 - Superior resistors designed by high-performance matrix panels
 - Use of the latest generation of high-tech super -insulating materials.
 - Continuous convection system.
 - Software to control the required transformer power

4. Low maintenance costs.

- Long durability of the resistors with an average useful life of more than 10 years. 5-year Pujol warranty.
- Complete maintenance manual.
- Integral furnace design for fast and reactive maintenance.

5. Fast return on investment.





High flexibility & lower consumption

TEMPER FLEX is the first high-production oven in the market with two different speeds. The ECO and PRO speeds let you adjust the energy to the current production and reduce consumption. Some jobs need death time, so it is better to slow down production and use less energy to avoid bottlenecks. The greater the flexibility, the greater the opportunity to maximize profits.



- It is used when the customer's required power is limited and cannot grow and/or when the full power of the contracted transformer is not initially available.
- Helps grow with demand.
- The oven has the capacity to grow with no need to change it.
- Higher sales revaluation in case of sale as a used oven. The higher the range, the greater the possibility of sale and the higher the profit or return.
- Lower consumption and lower installed power reduces our carbon footprint.



- The higher the production, faster the return on investment.
- Increase production capacity means greater business opportunity, in terms of better service shorter delivery times and increased customers' portfolio.
- Improvements in tempered glass production through the use of high quality materials and components designed for higher production speed and intensive and demanding furnace use.

TemperFlex meets the demands of professionals in terms of products that are increasingly performances which are more sensitive to process, adapting easily to unstable and fluctuating market demand.

The software developed by Pujol, allows to adapt the experience of the operator or user of the oven, who depending on the experience, will need to have a rigid system that allows him minimum fails, offers high initial support or a free system for the high experience ones.



High quality finished product

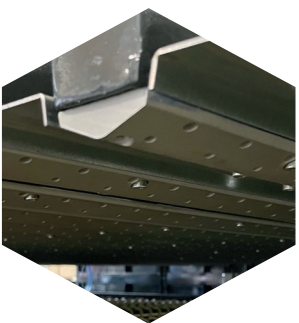
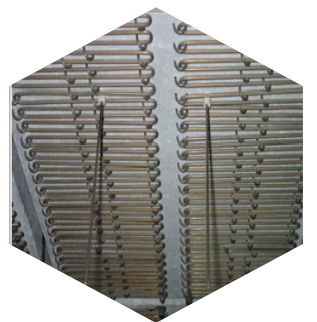
TEMPER FLEX, is an oven designed to obtain a glass quality with very high planimetry but low anisotropy. Planimetry requires precise control of both heating temperature uniformity and cooling homogeneous airflow distribution. Better anisotropy in the glass is obtained by reducing internal stresses and visual distortions caused mainly by uneven cooling, by having an advanced aerodynamic design in the blow nozzles.

TEMPER FLEX has been precisely designed, obtaining unique quality standards in the market to provide the best planimetry and low anisotropy rates thanks to:



Reduction of rollers diameter. Thanks to the high thermal insulation system the inner distance between the oven walls can be reduced, this prevents and minimize the bending of the rollers and the distance between roller centers. The smaller the diameter of the rollers, the smaller the distance between centers, allowing a better heat transmission and avoiding undulations on the glass.

Improved heat uniformity thanks to the innovative system of embedded and matrix heating elements that make the oven surface radiate homogeneously and independently according to the load requirements.



Advanced cooling control thanks to an advanced aerodynamic design of adjustable air nozzles on the entire surface of the glass, and to an exhaustive regulation of the fan motor speed in cooling according to the thickness and output production of the glass to be tempered allows to produce uneven stresses surface quality of the tempered glass.

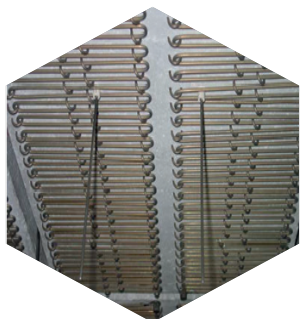
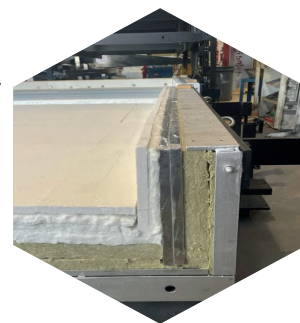
Greater savings and higher profitability per sqm of produced glass.

A good energy efficient design means lower energy costs and an accelerated return on investment. To this end, TEMPER FLEX has been designed to make the best use of heat and increase the profit per unit produced:



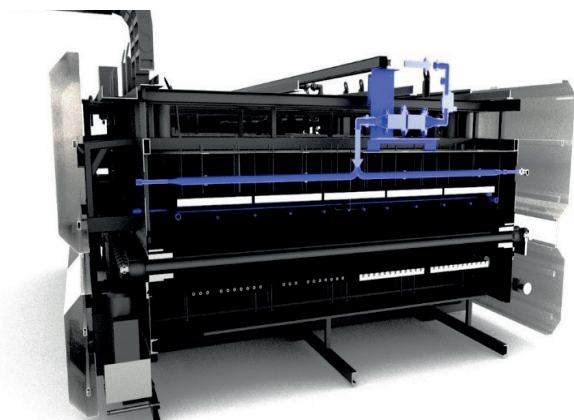
Elimination of the protective steel floor of resistors. Temper Flex has eliminated the metal plate that other furnaces in the market install to avoid the deterioration of the heating elements after a glass breakage. An advanced design of lower heaters based on a system of ceramic modules with high density embedded heaters, improves the direct heat transfer to the rollers, increasing the thermal transmission by conduction while reducing consumption and providing speed to the process by switching the kiln on and off, changing temperatures, etc. Additionally, it offers a reduced intervention time in the event of breakage and offers working durability in the event of unscheduled shutdowns.

High-quality, latest-generation insulating materials that helps to reduce energy consumption, maintaining thermal stability and reducing energy loss costs. In addition, it minimizes wear and tear of internal components extending equipment working life.



The design of superior resistors by high performance matrix panels together with the integration of a series of KANTHAL rod resistors of large diameter and high power W/cm^2 avoid the mechanical deformation of the resistors, reduce the cost of maintenance and at the same time increase the life of the heating equipment to a period exceeding 10 years, as a differential factor and confidence in our designs and products, PUJOL offers an extended warranty of 5 years of useful life of the resistors.

Software control of the required transformer power allows a flexible adjustment of the furnace according to the desired production or consumption or the installed power. Working at two speeds ("ECO" or "PRO") allows to adapt the installed power and to optimize the rate to the times of the auxiliary machines in order to reduce the consumption per sqm and to avoid production bottlenecks..



Continuous convection system The **Pro-Conv** are specially design for a combination of either float glass or coated glass,: thanks ot it's unique designs offers a high convection uniform heat distribution all over upper side of the glass, avoiding over heat or cold spots.

The precise control of temperature and flow rate improves flexibility, speed and quality, allowing the tempering all types of coatings, low emissivity, selective and 0.01 coefficient. glasses.

Advanced control system and remote control

Easy and intuitive programming by an Smart Supervisory System for furnace operator management process. By using a large 55” screen, the temperature of all sections isre controlled and the thermal profile of the interior furnace can be performed.



Termper Flex incorporate  **Pujol e-Connect** which allows remote and secure tracking and record of the process, addingas well remote assistance and production control services.

Product range

Model	Maximum dimensions	Minimum dimensions	Thickness 4-19			Thickness 3-19		
			Required Power ECO (KW)	Required Power PRO (KW)	Installed Power	Required Power ECO (KW)	Required Power PRO (KW)	Installed Power
32x16*	3200x1600	32x16*	350	530	650	475	835	935
36x16	3600x1600	36x16	400	600	700	520	930	1100
36x21	3600x2100	36x21	430	680	820	620	1030	1230
42x23*	4200x2300	42x23*	450	700	970	700	1160	1450
45x25	4500x2500	45x25	510	730	1130	750	1280	1550
50x25*	5000x2500	50x25*	650	1050	1250	960	1520	1695
64x25	6400x2500	64x25	900	1400	1670	1070	1780	1900
64x32*	6400x3200	64x32*	1000	1650	1800	1200	1800	2100

*NON-STANDARD models - special manufacture / higher cost

Productivity

Glass thickness	Load/hour	36 x16-sq. m/h	45x25-sq. m/h	64x25-sq. m/h
3	26	150	290	--
4	22	116	245	352
5	18	97	202	288
6	15	81	168	240
8	11	59	123	176
10	9	48	101	144
12	7	37	78	112
15	6	32	65	96
19	5	27	56	64
PRO MODE Speed				



“Our ambition is to get the best solution for each need. There is no limit in glass creation”

Jorge Pujol
CEO Pujol Group

Hornos Industriales, Pujol, S.A is a  **Pujol** company
Group