

## Cooltemper *Firejet* Convection Flat Glass Tempering Furnace 2500mm - 4200mm (2 Fans Overhead)



**Maximum bed loading size:** 2500mm x 4200mm

### QUALITY STANDARDS:

To toughen / temper from 4 - 19mm thick glass inclusive. To meet EN 12150, ANSI Z97.1, CNS R3046, GB9963-88 and JIS R 3206 tempered glass for architectural and flat automotive glass.

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|------------|-------------------------|-------------------------------------|-----------------|
| <b>1.1</b> | <b>Min. glass size:</b> | 120 x 300mm                         |                 |
|            | <b>Max. glass size:</b> | 4 - 5mm                             | - 2150 x 3050mm |
|            |                         | 6 -19mm                             | - 2500 x 4200mm |
| <b>1.2</b> | <b>Thickness range:</b> | 4.0 (±0.2) - 19mm                   |                 |
| <b>1.3</b> | <b>Production area:</b> | 10.5 M <sup>2</sup> maximum @ 100%. |                 |

**1.4 Production capacity:**

GLASS THICKNESS		Heating times in seconds		
		Clear-Float	Hard-Coat (E > 0.15)	Soft-Coat (E > 0.02)
5/32"	4mm	120-145	144-160	150-176
3/16"	5mm	160-185	180-200	200-220
1/4"	6mm	190-220	216-246	246-272
5/16"	8mm	250-290		336-360
3/8"	10mm	340-380		420-450
1/2"	12mm	432-460		

**Please note:** When tempering low E glass  $<0.02$  the heating time will increase by 5-10%

**1.5 Overall dimension:**

Blowers at the side:	<b><u>Long:</u></b> 20198mm	<b><u>Wide:</u></b> 6957mm	<b><u>High:</u></b> 6500mm
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**1.6 Power capacity:** 3 ~ Earth, 415V, 50Hz

- 1.6.1 Heating: 860KW
- 1.6.2 Top Circ. Fans: 2.25KW x 8
- 1.6.3 Lower Convection: 22.5KW
- 1.6.4 Quenching: 186KW x 2 ( 1 controlled by inverter system)
- 1.6.5 Compressor: 3.7KW To be replaced with 1000ltr air receiver
- 1.6.6 Other: 19.7KW

**Please note compressed air to be supplied by Safestyle**

**Total connected load: 1300KW**

**Production peak power: 975KW**

**Production average: 750KW**

COOL TEMPER

## EQUIPMENT DESCRIPTION:

### **2. Loading / unloading tables:**

- 2.1 Dimensions: 4475m (L) x 3060mm (W) x 960mm (H).
- 2.2 Loading table: Drive rollers 50mm Ø x 2888mm long metallic coated with NBR rubber at 115mm pitch.
- 2.3 Unloading table: Drive rollers 50mm Ø x 2888mm long fitted with 3mm kevlar rope at 115mm pitch.
- 2.4 Drive system: Both tables have a separate drive motor for loading / unloading controlled by the operators and both tables are interlined with a solenoid clutch system.
- 2.5 Loading system: Both tables are fitted with a removable caster ball table operated by pneumatic pistons and side loading rollers for loading and unloading large heavy glasses.
- 2.6 The loading table is fitted with two glass length-measuring sensors enabling glass to oscillate the full oven length at all times regardless of bed loading.
- 2.7 Unloading table fitted with a ten second pre glass movement audible and visual siren.

### **3. Furnace:**

- 3.1 Overall dimensions: 6606mm (L) x 3670mm (W) x 2810mm (H).
- 3.2 Internal dimensions: 5609mm (L) x 2630mm (W) x 1620mm (H).
- 3.3 Drive rollers: 54 pcs of 90mm Ø precision fused silica rollers at 115mm pitch.
- 3.4 Heating element: Sweden Kanthal AF, fixed on protective pipe in a zoned matrix arrangement. Total: 16 blocks with 80 heating elements for both top & bottom. Bottom heating elements protected against damage with a perforated St/St tray.
- 3.5 Heating insulation: Utilises 200mm thick ceramic fibre, the outer layer is framed with 50mm hard board. Furnace surface temperature is lower than 65°C (149°F).
- 3.6 Entrance and exit gates: 40mm high, operated by pneumatic piston controlled by PLC.
- 3.7 Heating oven: Built in two parts (top & bottom) with an adjustable screw jack lifting system opening to a height of 500mm for easier access and maintenance.
- 3.8 Controlled at 80 points top & bottom, and 12 at the front and rear to measure temperature. Individual heater elements can be adjusted by % power input enabling independent control and profiling of the bed top and bottom.
- 3.9 Exit speed of glass variable from 300 - 800mm per second.
- 3.10 Roller transmission: 10mm Ø PUR non slip belts & St/St drive pulleys.
- 3.11 Fitted with 4 heat release chimneys enabling the oven to cool rapidly when changing from thin to thick glass substances or in an emergency situation.
- 3.12 Supplied with automatic UPS battery backup emergency power system.
- 3.13 Fitted with an automatic date and time heater start up control system.

#### 4. **Firejet convection system:**

Fitted with **Firejet** hot air recirculation system, to shorten production times and offer unrivalled coated glass quality. Utilising 8 x 3HP hot air recirculation fans on the top and **Jetstream RT profiled** convection air to the bottom surface, air is forced over power-adjusted heaters and onto the glass. Each heater can be adjusted to profile the bed according to the glass load to give improved control on larger panes. Compressed air is not required for the convection system, saving the requirement for costly compressed air and associated maintenance requirements of compressor systems.

#### 5. **Quench & cooling sections:**

- 5.1 Overall dimensions: 5295mm (L) x 3650mm (W) 2500mm (H).
- 5.2 Quench / Cool dimensions: 4700mm (L) x 2580mm (W).
- 5.3 Drive rollers: 49mm Ø x 2888mm long at 100mm pitch. Rollers driven by 10mm Ø PUR belts
- 5.4 Quenching blower: 250HP (x2) for tempering 4.0mm (±0.2) – 19mm thick glass. One Motor controlled by inverter drive system to adjust the running speed of the fan and provide impressive savings to energy costs.
- 5.5 Fitted with a quench area digital setting system, this automatically adjusts the air delivery pipes from the glass surface for each program selected.
- 5.6 Fitted with percentage ratio setting to auto adjust the air pressure.
- 5.7 Supplied with removable glass cullet collection trays under the quench area.
- 5.8 Fan systems fitted with vibration monitoring system.
- 5.9 Fitted with attenuation system at 80DB around the quench / cooling section.
- 5.10 Fitted with fast opening quench system for removal a cullet.

#### 6. **Transmission system: 4 stages**

- 6.1 1st stage: Loading table (1 stage speed, non-stage adjustable).
- 6.2 2nd stage: Heating zone (3 stages speed, non-stage adjustable, reciprocating).
- 6.3 3rd stage: Quenching zone (2 stages speed, non-stage adjustable, reciprocating).
- 6.4 4th stage: Unloading table (1 stage speed).
- 6.5 Speed and working procedures are controlled by programmable logic controller (PLC).
- 6.6 The transmission systems in different sections are open type with a safety guard and can be dismantled.

#### 7. **Control system:**

- 7.1 **Cooltemper's** "Smart" Windows based control system, with temperature controlled in 80 set points individually; glass positioning is controlled by the PLC.
- 7.2 Self-timer scanning / recording is built into the control system & is equipped with an interface card
- 7.3 User-friendly YES/NO selection control for the operators.
- 7.4 Fitted with automatic and semi-automatic option of control the furnace.
- 7.5 Built in machine fault data recording system with code and description for fast easy fault diagnostics.