



Cooltemper *Jetstream PLUS* Convection Flat Glass Tempering Furnace 2150mm - 4200mm



QUALITY STANDARDS:

To toughen / temper from 4 - 19mm thick glass inclusive EN12150, ANSI Z97.1, CNS R3046, GB9963-88, JIS R 3206 tempered glass for architectural and flat automotive glass.

1. SPECIFICATION:

- | | | | |
|------------|-----------------------------|------------------------------------|-------------------|
| 1.1 | Min. glass size: | 120 x 300mm | |
| | Max. glass size: | 4 – 5mm | - 2150mm x 3050mm |
| | | 6 -19mm | - 2150mm x 4200mm |
| 1.2 | Thickness range: | 4 - 19mm | |
| 1.3 | Production area: | 9.03 M ² maximum @ 100% | |
| 1.4 | Production capacity: | | |

GLASS THICKNESS		Heating times in seconds		
		Clear-Float	Hard-Coat ($E \geq 0.15$)	Soft-Coat ($E \geq 0.03$)
5/32"	4mm	130-170	150-200	175-230
3/16"	5mm	165-210	190-250	215-280
1/4"	6mm	195-250	230-300	260-340
5/16"	8mm	270-350	350-420	385-495
3/8"	10mm	345-450	440-510	480-560
1/2"	12mm	415-540		
5/8"	15mm	565-790		
3/4"	19mm	855-1100		

Please note: When tempering low E glass <0.03 the heating time will increase by 5-10%

1.5 Overall dimension:

Blower at the side: **Long:** 20300mm **Wide:** 7000mm **High:** 4000mm

Please note: Width is at the widest point and includes the suggested Fan Room dimensions within the overall width.

1.6 Power capacity: 3 ~ Earth, 415V, 50Hz

1.6.1 Heating: 610KW
 1.6.2 Quench / Cool: 335KW (Controlled by inverter)
 1.6.3 Compressor: 75KW (Supplied by Buyer)
 1.6.4 Other: 10.5KW

Total connected load: 1030KW

Peak running load: 772KW

Average running load: 618KW / Hr

EQUIPMENT DESCRIPTION:

2. Loading / unloading tables:

- 2.1 **Dimensions:** 4475mm (L) x 2750mm (W) x 1000mm (H).
 2.2 **Loading table:** Drive rollers 48mm Ø x 2576mm long metallic coated With NBR rubber at 115mm pitch.

- 2.3 **Unloading table:** Drive rollers 48mm Ø x 2576mm 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 warning comprising of an audible and visual siren.

3. **Furnace:**

- 3.1 **Overall dimensions:** 6420mm (L) x 3350mm (W) x 1850mm (H).
- 3.2 **Internal dimensions:** 5320mm (L) x 2290mm (W) x 570mm (H).
- 3.3 **Drive rollers:** 58 pcs of 80mm Ø precision fused silica rollers at 100mm pitch.
- 3.4 **Heating elements:** **Cooltemper** heating system: Swedish Kanthal AF, coil type around a ceramic tube in parallel arrangement to forward glass direction. 34 sets of heating elements for both upper and lower heating and 8 additional sets of auxiliary elements to control furnace ends. Lower heating elements protected against damage by a perforated stainless steel tray configuration.
- 3.5 **Heating insulation:** Utilises 200mm thick ceramic fibre, the outer layer is framed with 50mm hard ceramic 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 52 points in the upper and lower oven in total to measure and provide highly accurate temperature control. Individual heater elements can be adjusted by varying the temperature and percentage power input to give unlimited profile options.
- 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. **Jetstream PLUS convection system:**

Oven area fitted with the new **Cooltemper** top & bottom **Jetstream PLUS**, pre heated, five step convection system. Designed and tested on all currently available high performance soft-coated and reflective glass products from 2.85 to 12mm thick. Mounted close to the glass for optimum efficiency and energy saving, the hot air convection pushes the heat into both surfaces of the glass for faster cycle times

and improved product quality load after load with little or no heater recuperation time required between bed loading. Each specific glass type & thickness program is supplied with its own stepped convection program pre loaded to ensure faultless glass quality at impressive cycle times.

5. Quench & cooling sections:

- 5.1 Overall dimensions: 5235mm (L) x 3320mm (W) 2500mm (H).
- 5.2 Internal dimensions: 4700mm(L) x 2280mm (W)
- 5.3 Drive rollers: 41mm Ø x 2584mm long at 115mm pitch.
- 5.4 Quenching blower: 450HP for tempering 4 - 19mm glass.
Fan 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.

6. Transmission system: 4 stages

- 6.1 1st stage: **Loading table** (1 stage speed, can be incrementally moved).
- 6.2 2nd stage: **Heating zone** (3 stage speed, non-stage adjustable, reciprocating).
- 6.3 3rd stage: **Quenching zone** (2 stage speed, non-stage adjustable, reciprocating).
- 6.4 4th stage: **Unloading table** (1 stage speed, can be incrementally moved).
- 6.5 Speed and working procedures 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 for easy maintenance.

7. Control system:

- 7.1 **Cooltemper "Smart"** IMMI control system, with temperature controlled in 52 set points individually; glass positioning is controlled by the PLC.
- 7.2 Self-timer scanning / recording is built in to the control system & is equipped with an interface card.
- 7.3 User-friendly YES/NO selection control for the operators.
- 7.4 Fitted with fully automatic / semi-automatic options for furnace control.
- 7.5 Built in machine fault data recording & alert system for rapid fault diagnostics.

Item	Description	Comment
Quench Room PYRO	80dBA Quench Room Pyrometer Heat Measuring System	Included as standard Included as standard

VSD	Inverter controlled Quench Fan	<i>Included as standard</i>
HST	Heat Strength Program	<i>Included as standard</i>
UPS	Emergency furnace protection system	<i>Included as standard</i>

10. Delivery and installation:

- 10.1 November 2025. A specific delivery schedule will be given at the time of order.
- 10.2 The typical installation and commissioning period is between 3 and 4 weeks.

11. Exclusions / customers responsibility:

- 11.1 Site building works including air intake louvers & machinery access holes.
- 11.2 Customers floor must be level to 25mm (1") spanning the length & width of the furnace and able to support the weight of the furnace.
- 11.3 Fan room structure / building.
- 11.4 Electrical mains supply.
- 11.5 Internal electrical cabling including customers switch gear to **Cooltemper** panel & compressor system.
- 11.6 So2 Gas bottle.
- 11.7 Compressor / Dryer / Receiver
- 11.8 Oil/Water separator and water drainage system for the air dryer.
- 11.9 Setup test glass of different sizes types & thicknesses.
- 11.10 Fork Lift Trucks for unload / positioning

Unilam Machinery Ltd