COOLTEMPER Safety Glass Systems

ISO 9001-2000 certified manufacturer





Horizontal Tempering Furnaces
Chemical Tempering Furnaces
Glass Bending Furnaces
Print Drying Furnaces
PVB Lamenting Lines
Heat Soaking Ovens
Glass Washing Machines



Who We Are

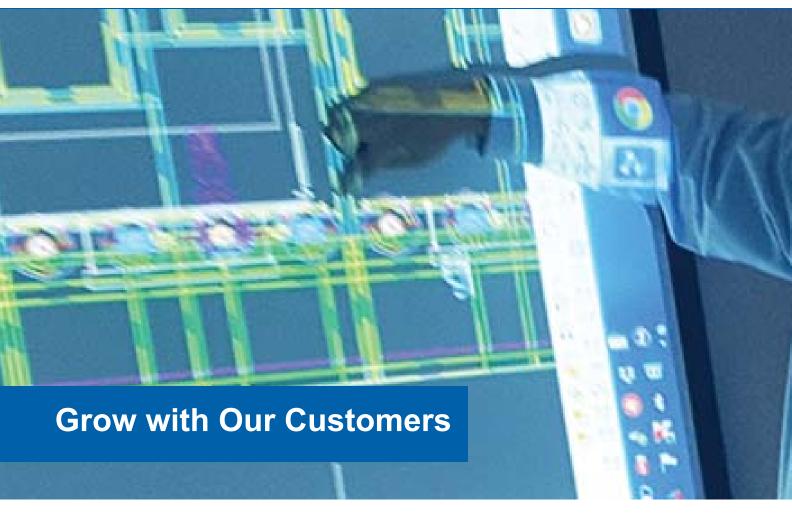
Founded in 1976, COOLTEMPER is synonymous for manufacturing quality, glass tempering furnaces using advanced technology. As a major supplier to the world's leading glass companies, today we are a globally renowned and trusted strategic partner.

Cooltemper has 24,000 M² (258,500 ft²) of manufacturing capacity, across three modern factories, along with 200 highly skilled technicians, engineers and administrative staff. Supplying to over 35 different countries Cooltemper are an ISO 9001-2000 certified company, complying to CE, UL, ASME & CSA standards.



With a company policy of constant reinvestment in products and new technology, COOL-TEMPER aims to keep a minimum of five years ahead of its competitors. Cooltemper are internationally renowned for supplying reliable, well-built and energy efficient products. Utilizing advanced, quality components on our equipment is also critically important as no company can manufacture everything. For this reason, our component suppliers are market leaders with the best technology in their area of expertise.

With offices and agents situated around the world, we pride ourselves on offering localized support helping your business moving forward towards a brighter more profitable future.



What We Do

Cooltemper are a supplier of both standard and bespoke, one-off project, designed machines requested by our customers.

We manufacture glass processing equipment for:

Architectural Glass

Resident ial Glass

Interior Glass

Insulated Unit Glass

Furniture Glass

Home Appliance Glass

Small Size Glass

Ultra Thin Glass

Heat Treated Glass

Curved Glass

Solar Panel Glass

Monitor Display Glass

Mobile Device Glass

Optical Device Glass

Touch Screen Panel Glass

Automotive Glass

Transportation Wind Shield

Pharmaceutical Containers



What We Offer

RazorJet Series 2.5mm Thin Glass Tempering Furnace

FireJet Seires Re-Circulated Blower Convection Tempering Technology

Jetstream Series Compressor Convection Tempering Technology

PowerJet Series Compressor Convection Tempering Technology

MiniJet Series Specialized Mini Horizontal Tempering Furnace

Lumina Series Series Chemical Tempering Furnace

DryJet Series Glass Print Drying / Firing Oven

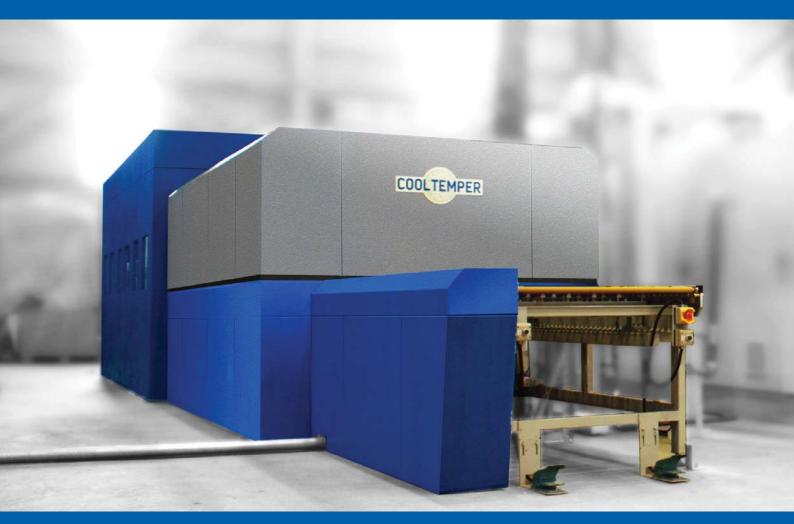
SoakJet Series Convection Heat Soaking Oven

LaminJet Series PVB Glass Laminating System

WashJet Series Horizontal Glass Washing Machine

CurvJet Series Glass Bending Oven

ScanGuard Smart Production Data System



RazorJet Series

Tempering Furnaces for 2.5mm Thin Glass Tempering to EN12150

RazorJet is supplied to manufacture fully tempered 2.5mm to EN 12150 standards and heat strengthened 2.0mm glass products for the photo-voltaic and white goods industry. Glass stress levels of 120 mpa can be achieved.

Our aspirated convection technology is used in the oven section and Cooltempers' unique quenching system guarantees industry leading glass surface and optical quality.

- Special quench design for thin glass tempering.
- Zonal, forced air aspirated convection delivery system.
- Energy efficient insulation, heaters, quenching systems, drives and controls.
- Block matrix heaters using energy saving, pulse power input modules.
- · Windows based operator interphase controls.



RazorJet

Single chamber oven

- Maximum glass sheet size: 1000 x 2000mm (40" x 80")
- Glass thickness: 2.0~6mm
- Production speed: Clear float glass 2~2.5mm (5/64"): 95 sec/load, 38 loads/hr.

RazorJet DC

Double chamber oven

- Maximum glass sheet size: 1000 x 2000mm (40" x 80")
- Glass thickness: 2.0~6mm
- Production speed: Clear float glass 2~2.5mm (5/64"): 45 sec/load, 80 loads/hr.

RazorJet CT

Continuous oven

- Maximum glass sheet size: 1000 x 2000mm (40" x 80")
- Glass thickness: 2.0~6mm
- Production speed: Clear float glass 2~2.5mm (5/64"): 36 sec/load, 100 loads/hr.



FireJet Series

Tempering Furnaces with Re-circulated Convection Blowers

The new FireJet tempering furnace incorporates re-circulated zonal convection fans on the top of the oven and a turbo blower fan feeding the bottom convection system. Along with other unique advanced technology features this enables the furnace to temper float glass at a faster production rate than all its competitors whilst maintaining the absolute best glass quality.

- **FireGUARD** energy efficient zonal hot air re-circulation delivery system incorporating low maintenance clean air technology to the top of the oven.
- JetGUARD energy and temperature efficient lower convected air delivery system.
- ScanGUARD real time and recorded production monitoring plus reporting system.
- MotionGUARD specialist glass oscillation technology.
- PowerGUARD electrical energy monitoring and recording system to minimize power consumption.
- **ProTemp** advanced low temperature tempering system for unrivaled tempering quality.



- Tempering clear float at 30 sec/mm and soft-coat at 40 sec/mm continuously.
- Heat strength program 3 ~ 10mm (1/8" ~ 3/8") thick glass
- Patented Dynamic quench (energy saving system) available as an option.

FireJet

Full convection furnace.

- Glass widths: 1.2 ~ 3.3M (47" ~ 130") (Standard and Customized Sizes Available)
- Glass lengths: Maximum 8M (315")
- Glass thickness: 2.8 ~ 19mm (1/8" ~ 3/4") (with 25mm 1" option)

FireJet CT

Continuous oven

- Glass widths: 0.8 ~ 2.2M (31" ~ 86") (Standard and Customized Sizes Available)
- Glass thickness: 2.8 ~ 10mm (1/8" ~ 3/8")
- Production speed: Depends on quality: 100 ~ 300mm/sec (4" ~ 12" per sec)

Please note: Models available in Single Chamber, Double Chamber, Double/Single Chamber combination, Triple Chamber.



Jetstream Series

Tempering Furnaces with Compressed Convection Systems

The Jetstream series of furnaces are designed with volume and versatile production in mind. They offer superior glass quality, fast cycle times, extremely low running costs and little maintenance. It is the perfect all-rounder for both large and small glass production facilities. Technically advanced in design but simple to use & operate.

- Top and bottom, aspirated convection system with program pressure profiling controls.
- **JetGUARD** block matrix heaters (RT) using energy saving, pulse power input modules.
- Space saving single quench/cooling fan design or pass-through quench system.
- CycleGUARD mixed furnace bed loading system with inCycle technology enabling no loss of production when changing glass types/thicknesses and maintaining ultimate glass quality (RT model).
- MotionGUARD specialist glass oscillation technology.
- PowerGUARD energy monitoring and recording system to minimize power consumption.
- Windows based interphase controls.



- Heat strength program 3-10mm (1/8" ~ 3/8") thick glass.
- Patented Dynamic quench (energy saving system) available as an option.

Jetstream+ Incorporating line heaters and cross bed convection technology

- Glass widths: 1.2 ~ 3.3M (47" ~ 130") (Standard and Customized Sizes Available)
- Glass length: Maximum 8M (315")
- Glass thickness: 2.8 ~ 19mm (1/8" ~ 3/4") (with 25mm 1" option)

Jetstream RT Incorporating block matrix heating and convection technology.

- Glass widths: 1.2 ~ 3.2M (47" ~ 130") (Standard and Customized Sizes Available)
- Glass length: Maximum 8M (315")
- Glass thickness: 2.8 ~ 19mm (1/8" ~ 3/4") (with 25mm 1" option)

Jetstream Continuous (Jetstream+ and Jetstream RT)

- Glass width: 0.8 ~ 2.2M (31" ~- 86") (Standard and Customized Sizes Available)
- Glass thickness: 2.8 ~ 10mm (1/8" ~ 3/8")
- Production speed: Depends on quality: 100 ~ 300mm/sec (4" 12" per sec)

Please note: Available in Single, Double, Double/Single or Triple Chambers



PowerJet Series

Compressed Convection & Matrix Heating Systems

The latest PowerJet tempering furnaces incorporate updated Matrix heating and aspirated compressed convection systems with Window based touch screen control system. It allows speedy production with high tempering quality for wide ranges of glass types. It also requires minimum effort in terms of maintenance and low running cost.

- Top and bottom, Matrix compressed air convection system.
- Self-adjusting block matrix heating systems.
- Energy efficient insulation, heaters, quenching systems, drives and controls.
- · Space saving single quench/cooling fan design.
- Inverter driven quench/cooling fan.
- · Automatic quench air balance adjustment system.
- Independent top & bottom quench area nozzle adjustment.
- · Automatic, multi position, self-tracking glass load system.
- Windows based, touch panel control station.
- Internet modem connection.



• Glass widths: 1.2 ~ 2.5M (47" ~ 96") (Only Standard Sizes Available)

• Glass length: Maximum 4.8M (190")

• Glass thickness: 4 ~ 19mm (5/32" ~ 3/4")

4896	PJ4	4~19mm		7296	PJ4	4~19mm		84160	PJ4	4~19mm
	PJ5	5~19mm			PJ5	5~19mm			PJ5	5~19mm
	PJ6	6~19mm			PJ6	6~19mm			PJ6	6~19mm
48120	PJ4	4~19mm		72120	PJ4	4~19mm		96144	PJ4	4~19mm
	PJ5	5~19mm			PJ5	5~19mm			PJ5	5~19mm
	PJ6	6~19mm			PJ6	6~19mm			PJ6	6~19mm
6096	PJ4	4~19mm		72144	PJ4	4~19mm		96160	PJ4	4~19mm
	PJ5	5~19mm			PJ5	5~19mm			PJ4S	4~19mm
	PJ6	6~19mm			PJ6	6~19mm			PJ5	5~19mm
60120	PJ4	4~19mm		84120	PJ4	4~19mm		96190	PJ6	6~19mm
	PJ5	5~19mm			PJ5	5~19mm			PJ4S	4~19mm
	PJ6	6~19mm			PJ6	6~19mm			PJ5	5~19mm
60144	PJ4	4~19mm		84144	PJ4	4~19mm			PJ6	6~19mm
	PJ5	5~19mm			PJ5	5~19mm				
	PJ6	6~19mm			PJ6	6~19mm				

Please note: Only available as a Single chamber machine.



MiniJet Series

Mini Horizontal Tempering Furnace for Specialized Glass

MiniJet was designed specifically for tempering tight tolerance/specification, small glass sizes requiring an extremely high-quality optical surface. Products to be tempered would include pressure gauges, viewing glasses and computer touch screens.

- Top and bottom, aspirated convection system with program specific pressure profiling.
- Small roller diameter with tight roller pitch enabling small glass sizes to be tempered.
- Energy efficient insulation, heaters, quenching systems, drives and controls.
- · Automatic quench air balance adjustment with inverter driven quench/cooling fan.
- Independent top & bottom quench area nozzle adjustment.
- Glass width: 0.6 ~ 0.8M (23" ~ 32") (Standard and Customized Sizes Available)
- Glass length: Maximum 1 ~ 1.2M (40" 47")
- Glass thickness: 2.8 ~ 19mm (1/8" ~ 3/4") (with 25mm ~ 1" option)
- Minimum glass size: 50 x 50mm (2" x 2")



ScanGuard

Smart Production Data System

• Glass Temperature Online Monitor: Fast and simple recipe optimization Full area glass temperature monitor.

Automatic process, no manual interaction.

Temperature adjustment of scanner for low-E glasses.

• Production Reporting: Improvement of productivity

Production efficiency for each batch/load.

Analysis of shift, operator, glass thickness & type and selected time.

Automatic report creation per day, week, month and year.

• Quality Reporting: For certification and complaint management

Full production documentation.

Heat-up, convection, quench & cooling monitor.

Fast and easy interpretation of numbers and diagrams.

• Energy Reporting: For cost calculation, pricing and energy saving

Energy consumption per m², (ft²) batch, shift, operator.

Energy efficiency and 15min peak.

Compressor run time monitoring (if applicable).



Lumina Series

Multiple & Single Chambers Chemical Tempering Furnaces

Chemical tempering furnaces are used to manufacture thin glass products requiring zero optical distortion via the process of iron exchange. This is achieved by immersing the glass into a Potassium Nitrate chemical bath. During this process the sodium irons close to the glass surface are replaced by larger potassium ion atoms. As a result of this chemical exchange the glass surface obtains a stronger surface layer. Products using chemically tempered glasses include mobile phones, digital cameras, photocopier machines & aircraft, boat, and train windscreens.

- Preheating glass tanks.
- Reaction time of between 3 8 hours (dependent upon stress level required).
- Multi point temperature measurement ±5°C (41°F)
- Heating time: 90~120 minutes.
- Cooling time: 90~120 minutes.



Lumina M

High-volume multiple chambers chemical tempering furnace used in mass production.

- Max glass size (Metric):
 0.8x2M / 1.2x1.2M / 1.5x2.0M / 1.8x2.0M / 1.8x3.0M / 2.0x2.5M / 2.0x3.0M
- Max glass size (Imperial):
 31x78" / 47x47" / 60x78" / 70x78" / 70x120" / 78x98" / 78x120"

Lumina S

Low production volume chemical tempering furnace suitable for specialty products or product R&D.

- Max glass size (Metric): 0.5x0.5M / 0.7x0.7M / 0.8x1.0M
- Max glass size (Imperial): 20x20" / 27x27" / 31x40"

Please note:

Post tempering wash systems are available upon request.

Automatic chemical loading systems are available upon request.

Bespoke sizes and special projects are undertaken.



DryJet Series

Glass Print Drying & Firing Furnaces

DryJet ovens are used to dry paint onto the furnaces of the glass prior to the tempering process. Typically, a common process for architectural and interior glass production.

DryJet+ ovens are used to fire a ceramic paint into the furnace of the glass and re anneal the glass so it can be further processed. Typically, a common process for automotive windows glasses.

- Special oven design to prevent contamination of the product surface.
- Energy efficient insulation, heaters, cooling system, drives and controls.
- Exhaust system enabling extraction of harmful vapor.
- · Low maintenance with easy access to all components.



DryJet

For low temperature drying of the ceramic paint onto the glass surface prior to the tempering process.

- Max glass width (Metric): 0.9M / 2.1M / 2.5M / 3.0M
- Max glass width (Imperial): 35" / 82" / 98" / 120"
- Heating: 200°C (392°F)
- Speed: 0.4 ~ 4M/min (16" ~ 157" Min)

DryJet+

For high temperature drying, firing glass paint onto the glass surface in the first stage and annealing the glass in the second stage for post processing.

- Max glass width (Metric): 0.9M / 2.1M / 2.5M / 3.0M
- Max glass width (Imperial): 35" / 82" / 98" / 120"
- Heating: 200 ~ 600°C (392 ~ 1112°F)
- Speed: 0.4 ~ 5M/min (16" ~ 197" Min)



SoakJet Series

Convection Heat Soaking Oven

SoakJet ovens are used to test and record tempered glass for nickel sulfide intrusions in compliance to EN 14179-1:2005 (Glass in building. Heat-soaked thermally toughened soda lime silicate safety glass)

SoakJet+ ovens are used to test and record tempered glass for nickel sulfide intrusions in compliance to EN 14179-1:2005 (Glass in building. Heat-soaked thermally toughened soda lime silicate safety glass). The SoakJet+ is also equipped with a laminating system for production of EVA laminated glasses.

- Energy efficient heating & cooling system with multi zone heating convection system
- Special design glass carrying A frame system to ensure even heating through each load.
- Online recording of glass loads to customers' server system in PDF print off format.
- Interlocking door system.
- Single door, single A-frame rack as standard. Two door entry and movable A-frame rack designs available on request.



SoakJet Oven used to test and record tempered glass for nickel sulfide intrusions.

- Max glass size (Metric):
 2.1x3.6M / 2.1x4.0M / 2.5x4.0M / 2.5x3.0M / 2.5x4.5M / 3.0x6.0M / 3.3x8.0M
- Max glass size (Imperial): 84x144" / 84x157" / 98x120" / 98x177" / 118x236" / 130x315"
- Heating: Oven temperature ~ 290°C in 120min (554°F)
- Cooling: 290 ~ 60°C in 120 min (55 ~ 140°F)
- Temperature evenness: +- $3 \sim 5$ °C (± 37.4 41°F)

SoakJet+ Oven used to test and record tempered glass for nickel sulfide intrusions and manufacturing EVA laminate glass.

- Max glass size (Metric):
 2.1x3.6M / 2.1x4.0M / 2.5x4.0M / 2.5x3.0M / 2.5x4.5M / 3.0x6.0M / 3.3x8.0M
- Max glass size (Imperial): 84x144" / 84x157" / 98x120" / 98x177" / 118x236" / 130x315"
- Heating: Oven temperature ~ 290°C in 120min (554°F)
- Cooling: 290 ~ 60°C in 120 min (55 ~ 140°F)
- Temperature evenness: +- 3 \sim 5°C (± 37.4 41°F)
- For EVA Laminating the vacuum pump, special rack and vacuum pipes are included.
- EVA laminate max glass width 2.0M (86") and max length 4.0M (160")
- EVA laminate temperature and process times to suit the EVA film.



WashJet Series

Horizontal Glass Washing Machine

Designed with high volume continuous trouble-free production in mind using the very best component parts and materials. WashJet can also be integrated into a production line and controlled through an IPC system, whether a laminating line or tempering furnace, eliminating double handling, increasing productivity, and saving labor.

Key features:

- Prewash system with motorized loading table and six adjustable, anti-cut nylon brushes
- Three, removable, stainless steel hot water tanks with filters
- Stainless steel, brass and aluminum components inside the machine.
- Energy efficient drives, drying fans and control systems
- Variable speed from 1 to 4.0M/min (160" min) with PLC control system
- Screw jack wash section opening system for thickness adjustment and maintenance.

Sizes/details:

- Max glass width (Metric): 1.2M / 1.8M / 2.2M / 2.8M
- Max glass width (Imperial): 47" / 70" / 86" / 108"



LaminJet Series

Horizontal PVB Laminating System

LaminJet is designed to suit the specific customer's volumes, product type, location and budget constraints. The systems can be used for both EVA and PVB interlayers. Designed and capable of manufacturing, high volume, stock sheets or bespoke shaped, multi-layer products for, lower volume, tempered and annealed glasses.

- Automatic stock sheet loading/unloading with glass washing & drying machine.
- Energy efficient ovens, and drives with automatic film cutting system.
- Clean room and film storage systems with U shape or straight layout
- Auto glass thickness recognition with adjustable width film conveyor for easy application. Sizes/details:
- Max glass size (Metric): 1.5x3.0M / 2.5x4.0M / 2.5x5.0M / 2.5x6.0M / 3.0x6.0M
- Max glass size (Imperial): 60x120" / 96x160" / 96x200" / 96x240" / 120x240"
- Heating: 100 ~ 300°C (212 ~ 572°F)
- Speed: 0.5 ~ 4M/min (20" ~ 157" min)
- Min glass thickness: 3+3mm (1/8" + 1/8")
- Max glass thickness: 60mm (2 1/3")



CurvJet Series

Horizontal Glass Bending Oven

CurvJet is a glass bending oven designed to manufacture annealed glass bends for a variety of applications. The system is used to bend architectural facade glass, curved glass display case, interior partition, glass furniture and automotive windshield. The bent glass can then be laminated to make a safety glass post bending.

Key features:

- Single, double, or triple loading carts/ovens to suit customer volumes.
- Automatic cycle changeover with easy loading/unloading for glass products.
- Maximum temperature of 650°C (1200°F)
- Fixed and/or flexible bending modules for volume or bespoke products.
- Energy efficient heating system with variable/adjustable heater positioning.

Oven sizes/details:

- Max glass size: 3.3M x 6M (130" X 236")
- Heating temperature: 650°C (1200°F)
- Glass thickness: 2 ~ 15mm (5/64" ~ 5/8")



Bespoke Solutions

Customized Projects for Various Heat Treatment Applications

We are able to offer customer's bespoke solutions for unique projects. Our engineering capacity allows us to custom design, manufacture, install & commission specialized industrial furnaces for various heat treatment applications for glass and metal. Based on technical requirements, exacting product demands and required capacities, we can provide bespoke technical solutions geared to your Company's needs.

Furnace Projects:

- · Glass heat treatment line
- · Glass coating line
- Glass super tempering furnace (Fire Rated Glass)
- Continuous chemical tempering line
- Super alloy heat treatment line
- · Metal heat treatment furnace
- Porcelain enameling furnace



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Serving Global Industries for More Than 45 Years



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