



TAMGLASS
ProE MAGNUM™
Flat Tempering

Glaston is your glass processing technology One-Stop-Partner providing Bavelloni, Tamglass and Albat + Wirsam products and services.

glaston
seeing it through®

Comprehensive expertise in safety glass processing

Tamglass is known as the reliable brand in safety glass machinery for the architectural, solar, appliance and automotive glass industries. Tamglass has delivered over 2,000 safety glass production lines to more than 70 countries during its close to 40 years in operation.

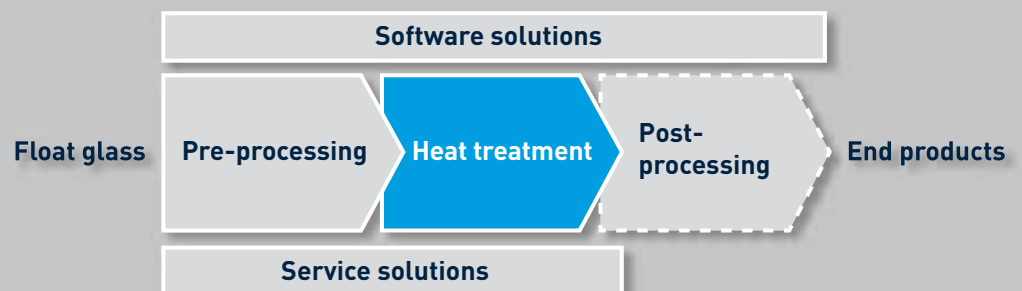
Tamglass is a trademark of Glaston Corporation. Glaston is the leading supplier of high-quality glass processing technology. Its customer service network is the largest in the glass processing industry, with over 30 local units around the world.

Glaston Corporation is a solid, growth-oriented technology company listed on the NASDAQ OMX Helsinki Ltd's Mid Cap List.



Glaston's One-Stop-Partner solutions

Glaston is your One-Stop-Partner for glass processing technology, offering a wide range of machines and services under the brand names Albat+Wirsam, Bavelloni and Tamglass. Whether the request is for a single machine, production line or complete factory with production control, completed with the best service network and pre-processing tools, we have the right solutions for you to choose from.



High processing capability for architectural and jumbo size glass tempering

The concept of ProE is based on the core know-how of Tamglass. ProE was developed to meet the growing need to produce multi-functional Low-E and super Low-E glass. In order to achieve the required production flexibility Tamglass has utilized its unique know-how in convection-profiled heating to create a top-of-the-line furnace. ProE MAGNUM™ is based on the ProE success story and is a tailor-made solution for tempering extra large glass sizes.

High flexibility and easy operation

ProE MAGNUM™ is designed for tempering large glass sheets but demand for various glass products and different thicknesses is taken into account in the design. ProE MAGNUM™'s excellent heating uniformity achieved with a patented convection system facilitates the tempering of all commercial temperable glass types, including hard coated Low-E and soft coated super Low-E in extra large sizes. This is packaged with easy-to-use process control, a must in a process which requires extensive flexibility and adaptability.

High reliability and equipment reliability

ProE MAGNUM™ process reliability, combined with minimized down time and high yield, is a result of Glaston's process know-how, furnace design, local service and preventive maintenance program, Glaston Care. Using ProE MAGNUM™, all major components that require servicing are located outside the furnace for easy access. Moving parts are well protected from dust and heat, but easily accessible. With over 250 deliveries, ProE concept has established itself on the global market as the top-performing processing system for advanced architectural glass.

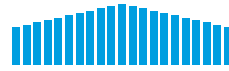
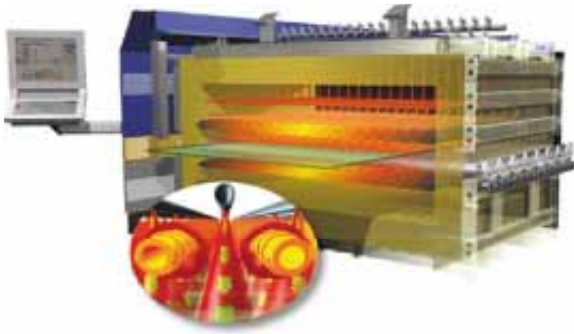


We are at your service

Glaston seeks to establish long-term business relationships through highly professional services prior to, during and following delivery. Our Service Solutions has established itself in several locations around the world, in order to serve customers locally with a variety of services and products.



ProE MAGNUM™ – Fast and focused tempering solution



Temperature profile



Convection profile



Convection Pressure profile

01



ProE MAGNUM™ advantages at a glance

ProE MAGNUM™ produces high optical glass quality with a patented built-in and focused convection system, including super Low-E and extra large glass sheets. In addition, it enables real savings in operating costs

due to its low peak power, small transformer size and flexible layout with a small footprint. With ProE MAGNUM™ you can ensure technical leadership, reliability and future upgrading with new built-in features that fulfill changing market requirements.



02



03



04



Image 01
ADVANCED HEATING SYSTEM
Excellent heating uniformity, especially for Low-E glass guaranteed with the patented CGS™ focused top convection system.

Image 02
AUTOMATIC HEATING CONTROL
Fast processing of various glasses (e.g. multiple pieces, coated glasses, different shapes).

Image 03
UNIQUE BLOWER SYSTEM
High production efficiency with a unique blower system according to the customer's product mix.

Image 04
HIGH EFFICIENCY QUENCH
High capability to temper and heat-strengthen all glass types and sizes, including super Low-E. Minimum footprint required.

Designed for flexibility, built for productivity



Succeed in glass processing

Glaston offers the widest customer service network for the glass processing industry. We are committed to serving you efficiently, no matter what the continent or time zone - and in most cases in your own language. Our expertise as an original equipment manufacturer offers you improved performance and machine availability through deep knowledge of machine operation and processes. To guarantee your fluent and continuous production, Glaston Service Solutions provide services including spare parts, service agreements, service work, training & consultation and machinery upgrades throughout the lifetime of your machinery.



Main components

- Loading and unloading conveyors with lifting tables
- Complete heating furnace system with focused convection and optimized glass edge quality with Overheat Protection System OPST™
- Integrated quenching / cooling section
- Vibrating cullet conveyor under quenching section
- Unique blower system and duct work for quenching/cooling
- Complete and independent drive system
- Emergency cooling and battery backup system with DC drive
- Microprocessor control system with user-friendly graphical interface
- Electrical cabins with internal wiring
- Complete set of manuals for operation and maintenance
- Installation supervision with operation and maintenance training
- Layout design for customer's factory

Utilities supplied by the buyer

- Electric power supply for heating, drives and blowers; 4 wire system (3phases and earth)
- Compressed air 8 bars (800kPa)

Main dimensions of the Tamglass ProE MAGNUM™

TAMGLASS ProE MAGNUM™	Total length [m]	Total width [m]	Total height [m]
ProE MAGNUM™ - 2848	23,3	5,8	3,1
ProE MAGNUM™ - 2860	28,1	5,8	3,1
ProE MAGNUM™ - 3360	30,4	6,4	3,1
ProE MAGNUM™ - 3372	34,6	6,4	3,1

NOTE:

Dimensions for two chamber furnaces will be given separately. Location and dimensions of the blower room according to the factory layout and final configuration. With noise reduction cabin total height is 3.1m / LpA =85dB (A), 3.6m / LpA =82dB (A).

Technical capabilities of the Tamglass ProE MAGNUM™

TAMGLASS ProE MAGNUM™	Loading area = maximum sheet size W x L [mm]	Minimum glass size W x L [mm]	Capacity (m ² /h)/ glass thickness [mm] (ANSI Z97.1 for architectural purposes; max. glass size: 865 x 1930 mm)						Installed power at sea level [kW]			
			3 mm (ANSI)	4 mm (ANSI)	6 mm (ANSI)	8 mm (ANSI)	12 mm (ANSI)	19 mm (ANSI)	Heating and drives	Quench	Total	Added power for boost unit
ProE MAGNUM™ - 2848	2800x4800	100 x 250	328	294	224	168	112	57	950	630	1580	250
ProE MAGNUM™ - 2860	2800x6000	100 x 250	328	294	280	210	140	71	1135	630	1765	250
ProE MAGNUM™ - 3360	3300x6000	250 x 400	-	-	290	217	145	83	1430	320	1750	-
ProE MAGNUM™ - 3372	3300x7200	250 x 400	-	-	348	261	174	100	1630	370	2000	-

Optional features (indicator in parenthesis)

- Boost unit for tempering of thin glass sheets down to 3.0 mm thickness according to ANSI Z 97.1 and BS 6206, down to 3.2 mm thickness according to EN 12150-1 and ECE R 43 **(BC)**
- Boost unit for tempering of thin glass sheets down to 2.8 mm thickness according to ANSI Z 97.1 and BS 6206, down to 3.0 mm thickness according to EN 12150-1 and ECE R 43 **(AB)**
- Readiness for the boost unit **(B)**
- Low-E tempering system acc. to EN 12150-1, obtaining 3.8 mm ECE R 43 by blowers **(C20)**
- Energy efficient frequency converter controlled blower system for thick glass tempering up to 19 mm thickness **(S)**
- Heat strengthening system up to 10 mm glass acc. to EN 1863 **(HS10)**
- Heat strengthening system up to 12 mm glass acc. to EN 1863 **(HS12)**
- Noise reduction cabin around the quench/cooling section for max. noise pressure level of LpA = 85 dB or LpA = 82 dB (A) **(N85), (N82)**
- Cullet removal conveyor system with cullet container **(M)**
- Motorized integrated pyrometer system, measurement on top **(MR)** or underneath **(MRB)**
- Integrated glass quality measurement system **(SCA)**
- External PC terminal for backup, monitoring and printing of the process data **(PC)**
- Capacity and capability booster CGSB™ for high performance architectural glass tempering **(CGSB)**
- Quality monitoring system QMST™ for ISO 9001 / ISO 9002 **(QMS)**
- **CARE** - Glaston Care maintenance and consultation contract with remote online service ROLS™

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SUSTAINABLE GLASS PROCESSING TECHNOLOGY



Glaston takes into account the entire lifecycle of its machines. One key issue is to design and manufacture the constructions to tolerate heavy use. Upgrades and relocations also extend the lifetime of the machine in the market place. Special attention has been paid to the recyclability of materials, particularly to wearing components and parts.

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