

vision 900





Core Business

An overview that makes the difference. What characterizes Keraglass as a worldwide leader in the glass industry is its “all around” approach.

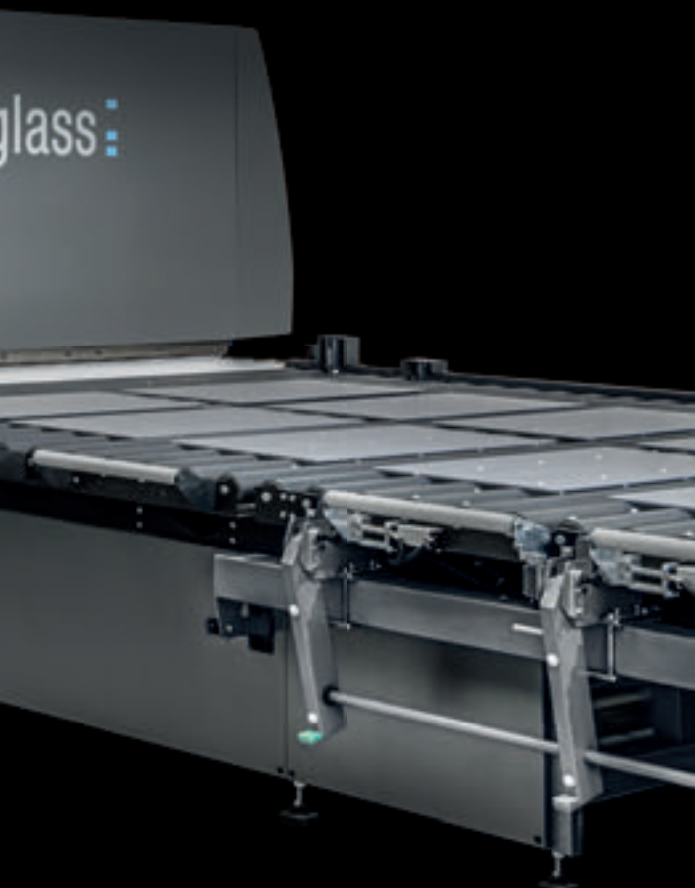
With innovative, functional and customer oriented solutions. Developed around a deep and direct analysis of the issues that may arise in glass processing on flat and curved tempering, screen printing, roller-coating and laminating.

Value and elegance

Keraglass presents Vision: the new line of glass tempering furnaces. A result of an innovative project which introduces new features and new design, keeping all milestones that have always distinguished Keraglass.

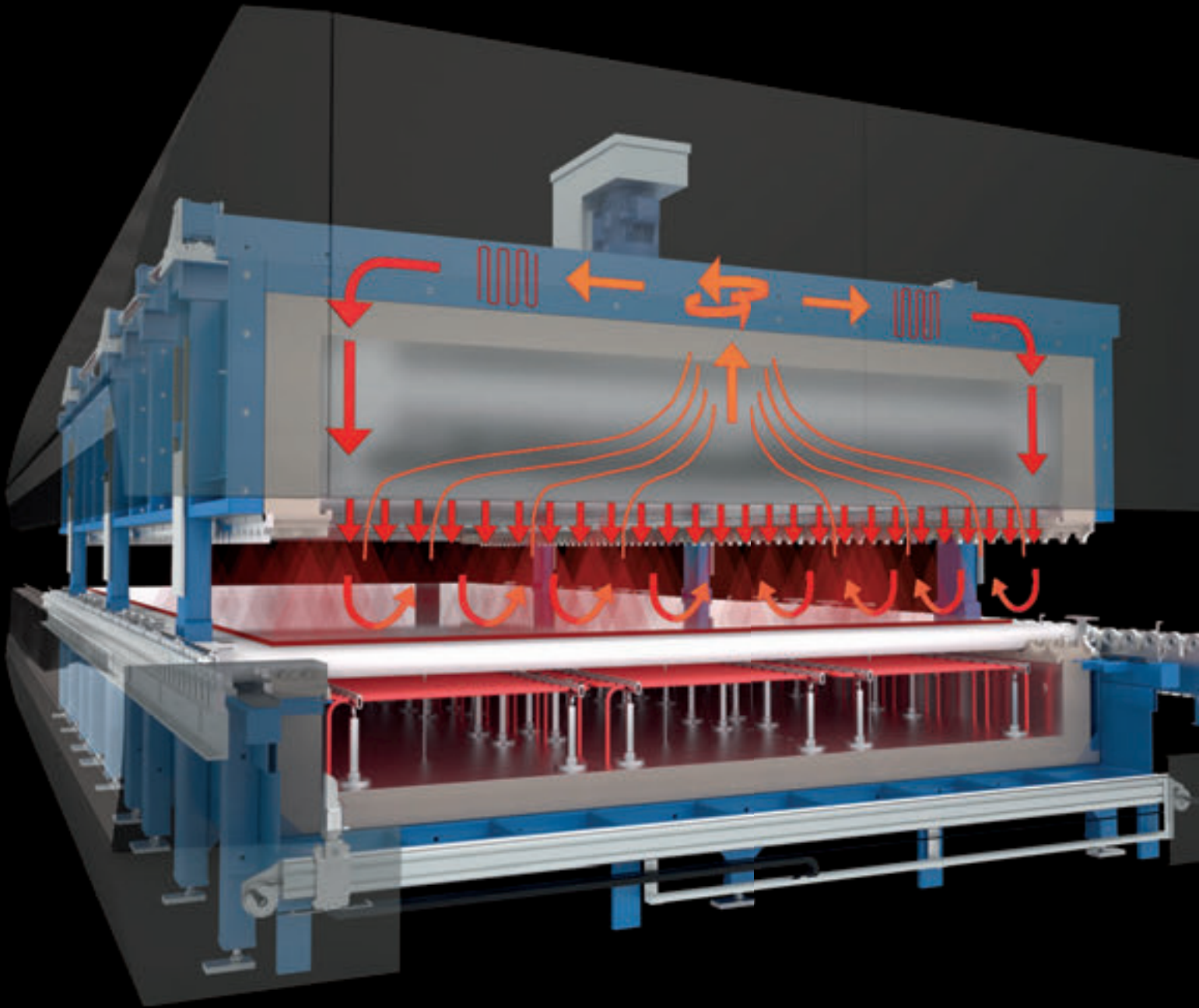
Vision 900

Super innovative tempering furnace for flat glass: equipped with a PRE-HEATING convective chamber, it has been validated and certified by STAZIONE SPERIMENTALE DEL VETRO, matching all the requirements of UNI standards. Achieved targets: capability of tempering LOW-E glass of latest generation up to $e = 0.01$, increased production capacity, increased tempered glass quality level and significant reduction of energy consumption. The ideal machine for medium and large companies with high quality standards, specially in the markets of architectural glass, household appliance, automotive and solar, providing solutions tailored to customers.



Headquarters

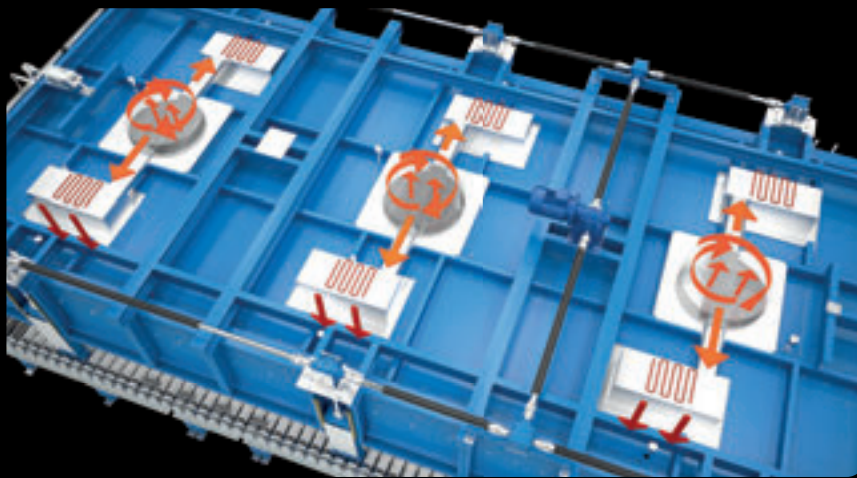
The headquarter in Baiso (Italy), with an area of 10,000 sqm includes executive offices, production workshops, R&D, warehouses in addition to the technological Showroom. All these aspects are the real flagship for technology and innovation.



pre heating

First in the world

- Vision 900 is equipped with an exclusive system composed by an additional full convection chamber located before the main chamber, which pre-heat the glass at 500° C, before entering in the main heating chamber. Using a very efficient recirculation hot air convection system, to assure low energy consumption and best performances.
- This solution is suitable for all types of low-e glass of new generation as well as for thick glasses, to avoid unexpected breakages in the heating chamber.
- It is designed to guarantee a better optical quality of the glass and also allows tempering any type of glass, it has the advantage of reduce the heating cycle from 40 sec/mm to 30 sec/mm, with an increase of productivity of 25% .



- ✓ **Super Low-e glass E=0.01**
- ✓ **Increased production capacity**
- ✓ **Higher quality**
- ✓ **Reducing consumption**



Super Low-e glass E=0.01

Vision 900: Reduced optical distortions of the glass

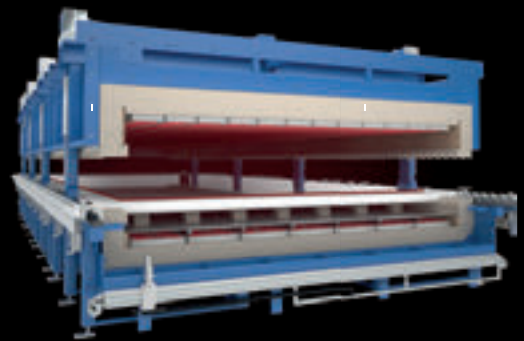
To minimize optical distortion from a heat treatment process means improving the aesthetic of the final product. Roller waves and end kink are sources of optical distortion that can be generated by tempering or heat strengthening, and that can influence the appearance of the final product.

The roller waves distortion and end kink may occur during the heating cycle in an oscillating horizontal furnace.

Roller waves and end-kink distortion only happen in the last few moments of heating when the glass is very soft.

With both end-kink and roll wave, the hotter the glass, the lower the viscosity and therefore the easier it is to distort the glass from its optically flat condition.

supervision intelligent

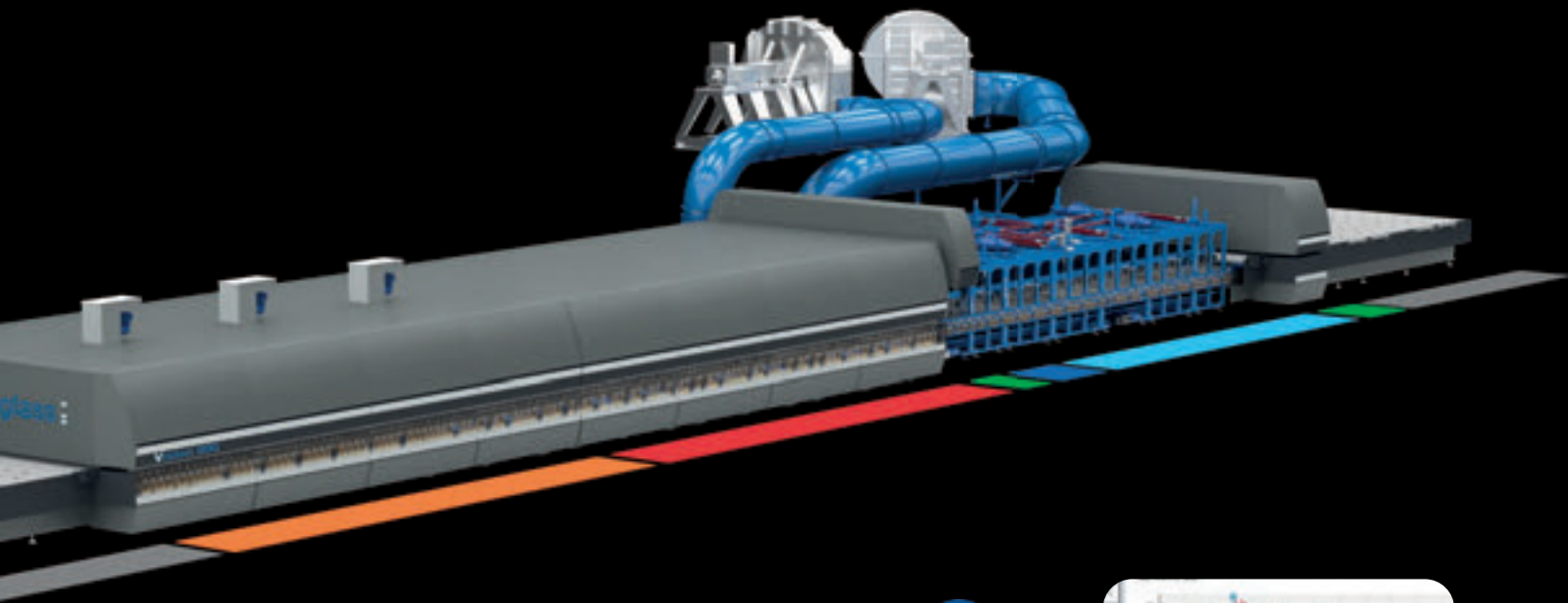


The intelligent vision

- A wide touch-screen monitor with a new user friendly graphic interface, allows total control of the furnace, including the control of the double star system, the heating cycle management and all the control instruments installed on the furnace.
- It includes a power consumption monitoring system and user manual with automatic troubleshooting system, minimizing the machine downtime.

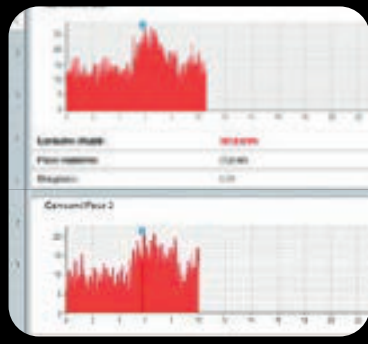
DYNAMIC HEATING CYCLE (DHC)

The new software function DHC allows to obtain a more heat homogeneity on the glass. The function of dynamic heating DHC adapts during the heating phase all control parameters (temperature set point and power) independently for each individual heater, creating variable profiles of temperature and power. Target: heat up the glass only where needed, depending on the type of processed glass. The function is completely configurable by the operator, and it is essential for the new generation glasses and improves the performance of the oven while tempering thick or coated glass.



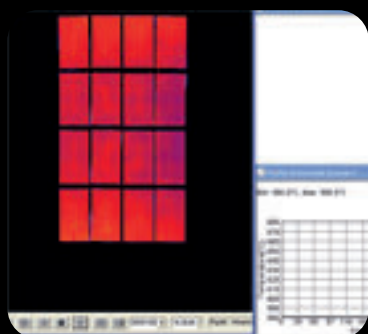
SERVICE
Scheduled maintenance plan

The system will automatically notify the operator, through the interface, about the maintenance operations aimed to keep in efficient conditions all parts



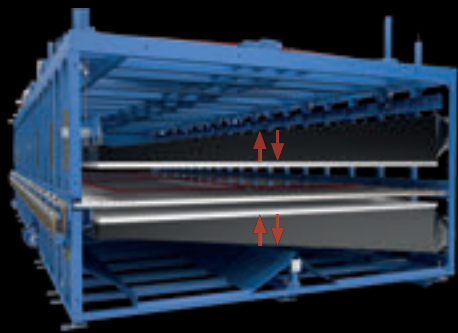
KERASOFT

Software interface that tracks and registers the electrical power consumption



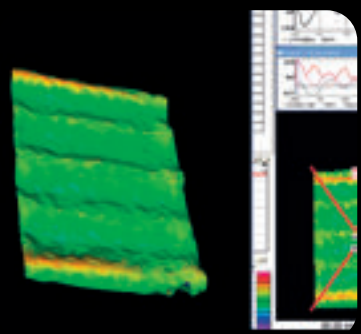
SCANNER CONTROL

Device for measuring the temperature of the glass, at the furnace exit. This innovative system allows the operator to have the complete control of the heating zone by providing precise temperature of all batches. Thanks to the "scroll" function it is possible to compare the results between batches in any point the glass. In this way it is possible to keep over time the same quality of the temper.



TEMPERING AND COOLING HOODS MOVEMENT

Actual glass tempering step, in which the load performs numerous transitions in reciprocating motion under the pressure of air that comes out from the calibrated nozzles. The flow of pressurized air cools the glass and consequently supports the tempering process.

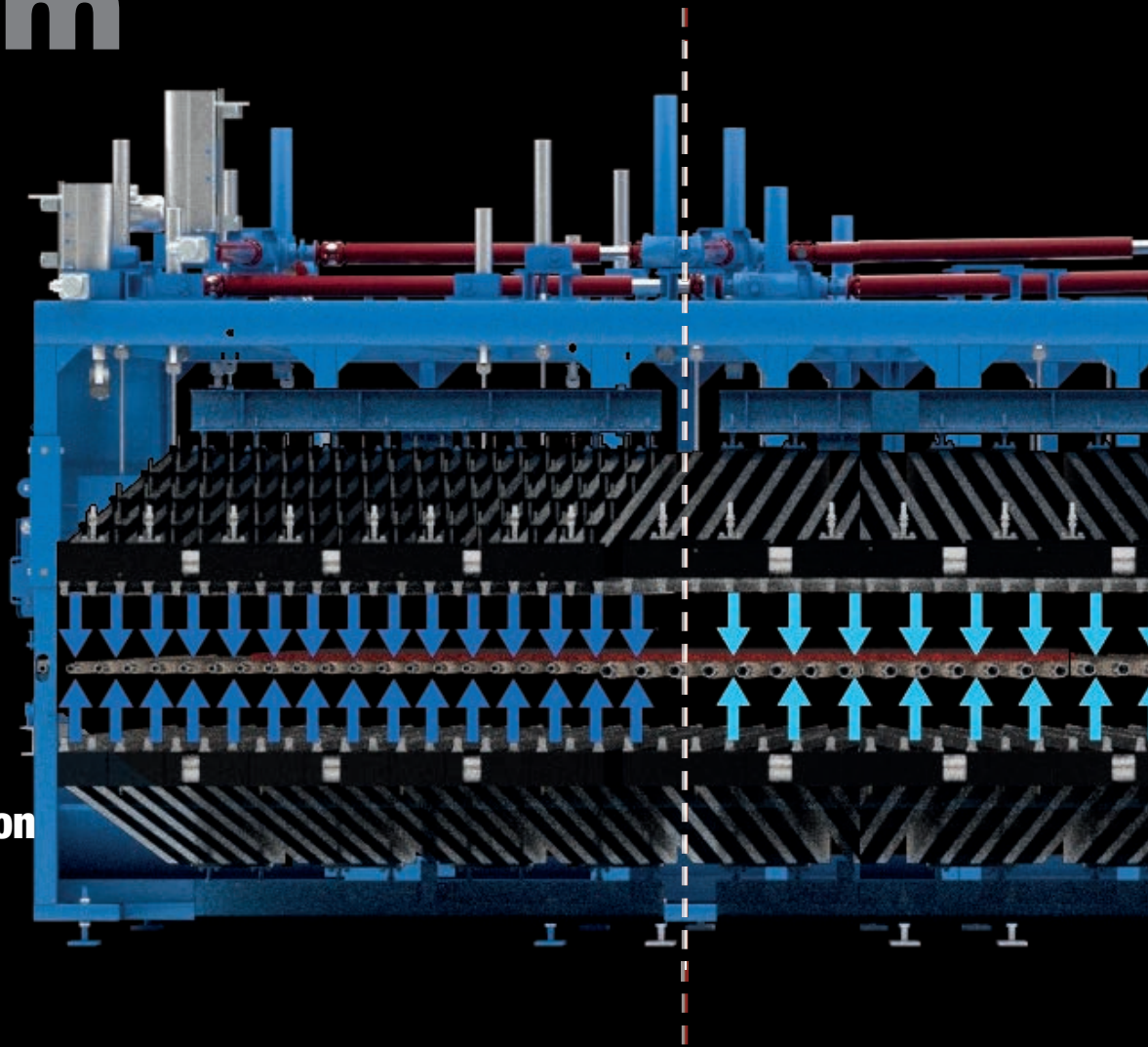


K-INSPECTOR

The K-Inspector system shows directly on Supervision Intelligent the realtime information related to the optical distortion of the glass. The operator can perform the corrective interventions of the various recipes directly during the tempering process.

tekno system

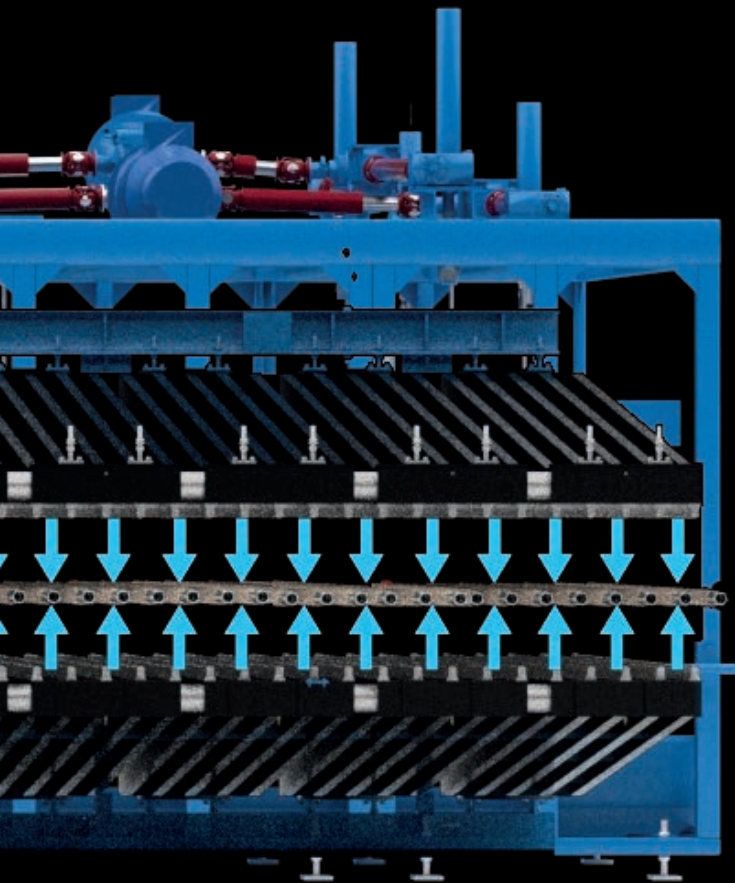
- + pressure
- + quality
- consumption
- anisotropy



Pass through tempering

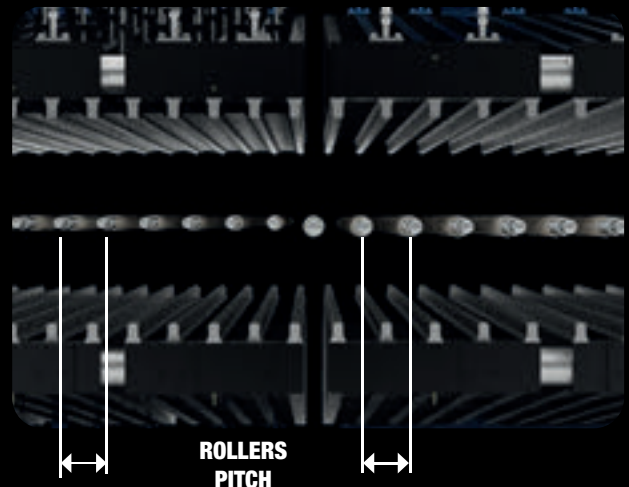
- The pass through tempering area is characterized by an additional independent quench module, served by its own blower with independently moving hoods that permits a narrow pitch of the rollers and a higher pressure in a narrow area.
The reason for this technical choice lies in the improved control of the tempering conditions, mainly depending on the glass flatness.
- So the “tekno system” offers sure benefits, summarized below:
 - Improved flatness and optical quality of tempered glass
 - Ability to temper thin glass without size limitation
 - Reduced energy consumption, thanks to the use of variable speed motors for the blowers, and to the software management of the heating and tempering phases.





TEMPERING

COOLING



Vision 900: Glass anisotropy

Tempered glass anisotropy is a dreaded phenomenon which may look very unpleasant on a glazed façade. The mechanical stress created by the tempering process slightly modifies the optical properties of the glass: its refractive index is slightly modified, and depends on light direction. Such a material is called a birefringent material, and has strong effects on polarized light, such as blue sky or light reflected on the glass surface under angle. Keraglass improves this defect thanks to the use of this system, having a special nozzle distribution on the blowers which are of smaller diameter compared to a standard nozzles, improving the quality of air distribution in tempering step.

Blowers with independent movement.

Depending on the glass thickness, the central control unit provides to change the tempering fan speed to obtain the correct operating pressure. It also vertically adjusts the distance from the glass of the upper and lower quenchers that, thanks to two separate drives, may have an independent movement. The reason for this technical choice lies in the improved control of the tempering conditions, mainly depending on the glass flatness.

main elements



1250° Insulation

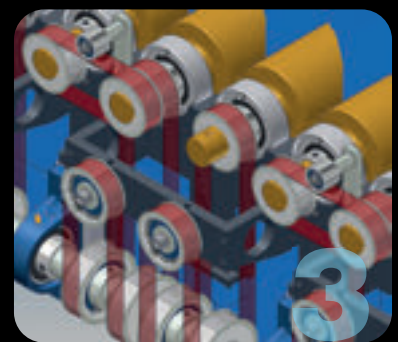
The thermal insulation of the walls, roof and bottom of the heating chamber is made by insulating panels tested for temperatures up to 1250°C. The most relevant characteristic is the internal walls lining with Cordierite refractory plates, featured by smooth and compact surface, which provides important advantages both in terms of internal cleaning and structural stability of the furnace.



HEATING

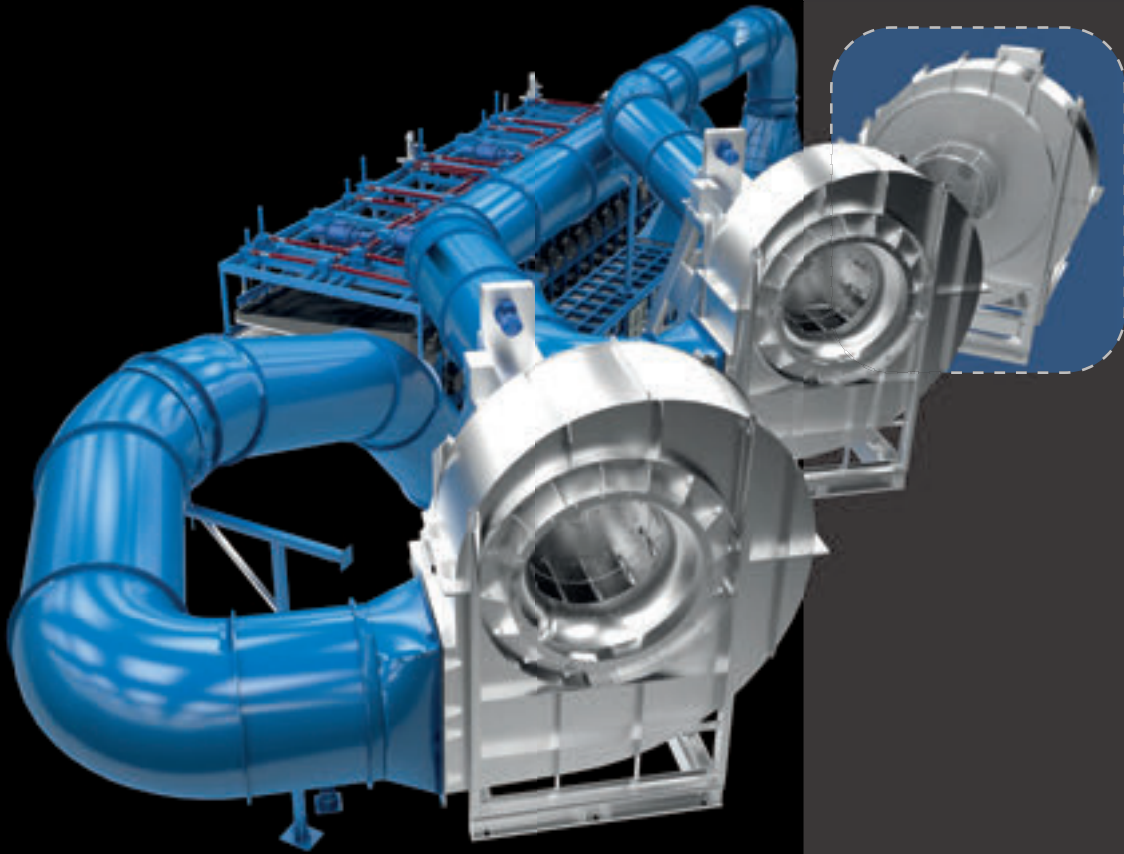
Keraglass furnaces are lined with radiant panels, placed side by side, independently controlled by thermocouple and operated through SCR in %. The electrical heating elements, with filaments of large diameter are synonymous with long-life guarantee. The matrix arrangement allows a wide range of radiation differentiated in both directions, longitudinally and transversely.

Advantages: large differentiated radiation; optimal management of the heating cycle; reduced energy consumption; low maintenance cost



DRIVING SYSTEM

Realized with special toothed timing belts it ensures an uniform and smooth motion of the ceramic rollers, without slacks, to ensure a perfect glass quality. All conveyors are independently driven, in order to optimize the production changes.



6

FANS

The furnaces are equipped with variable speed motors. This solution enables the maximum flexibility in speed regime and is suitable for all thickness values of treated glass. This provides a substantial benefit in terms of energy saving, since the blower will always operate in the optimal speed. The 3rd fan, optional, allows performing the tempering of the 2.8 mm glass.



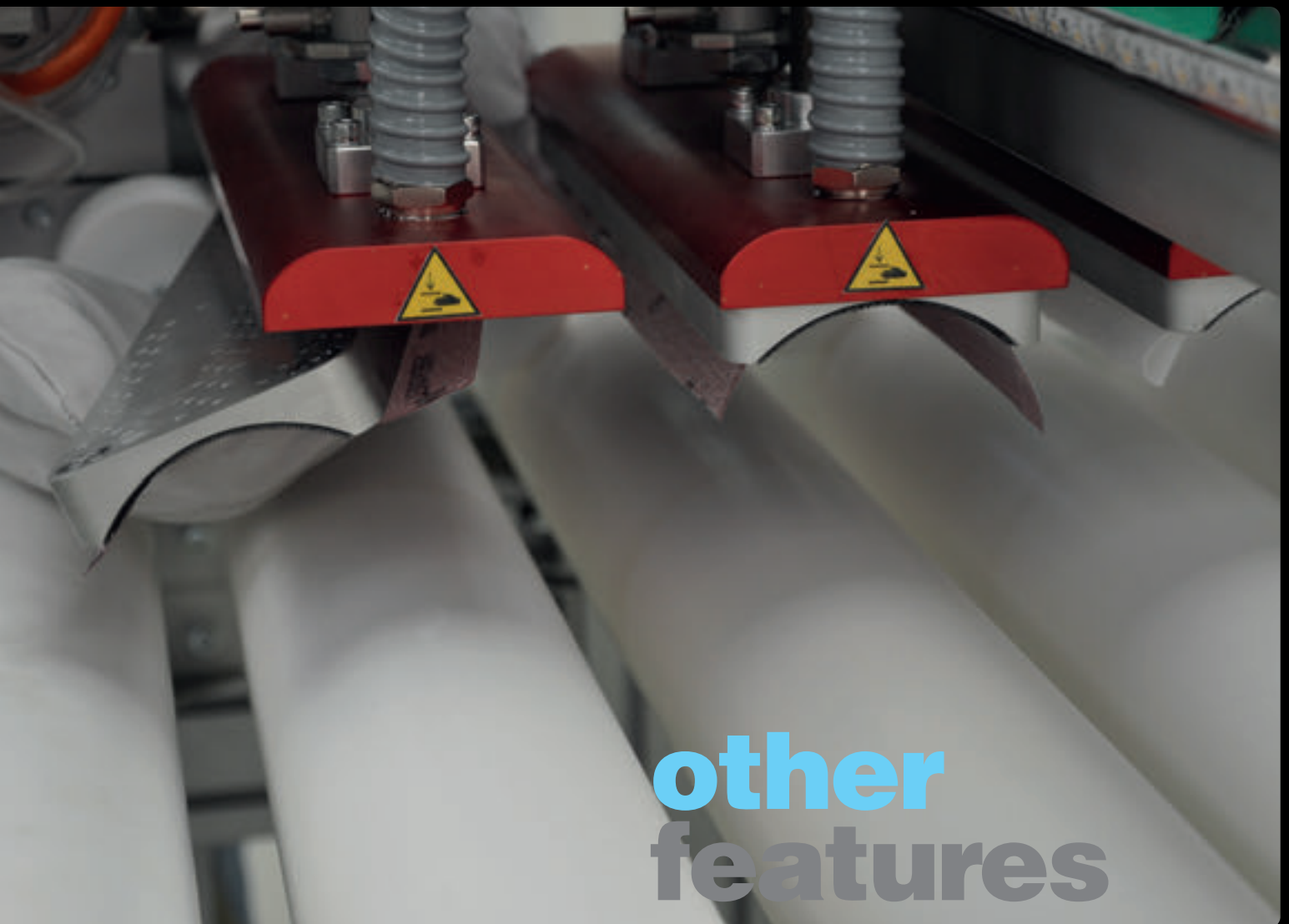
UPS

The emergency system is based on the use of a UPS group, which supplies the furnace cabinets in case of electricity loss.



CULLET CONVEYOR

In case of accidental breaking of the glass during the tempering or cooling cycle, the cullets are collected to the bottom of the cooling section by means of a robust automatic metal mesh conveyor.

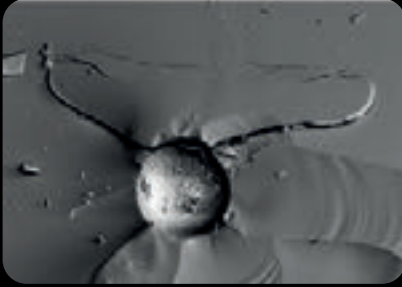
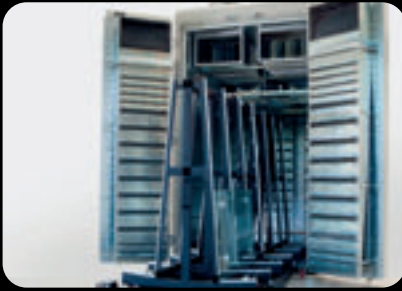


other features



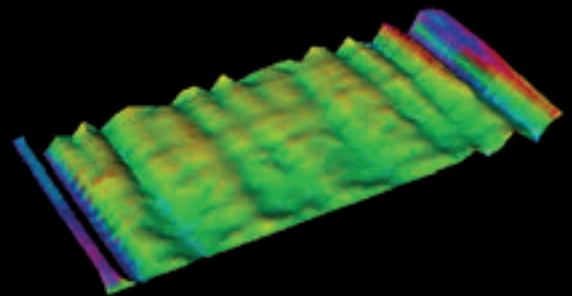
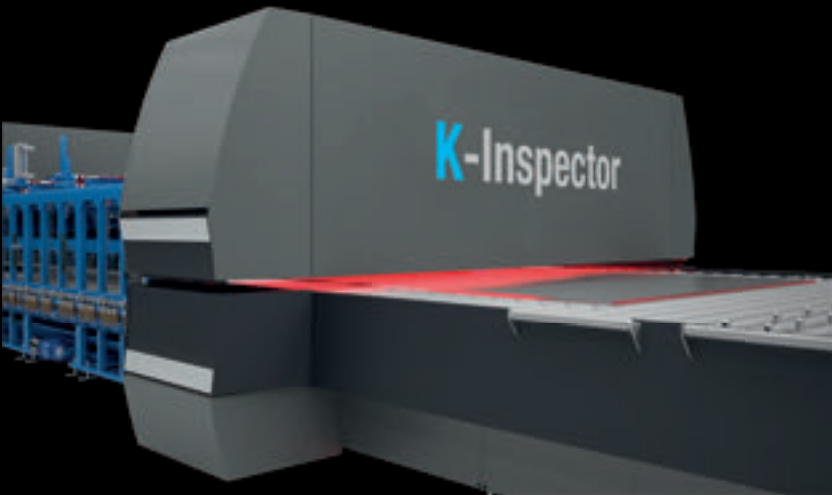
Rollers cleaning system

- RCK thoroughly cleans rollers with a rapid system of interchangeable pads: abrasive, vacuuming and washing. The extremely precise cleaning takes place directly on the system without the need of disassembling the rollers. This optimizes the working times and allows ease of operation than ever before. This machine can eliminate the glass residues stuck to the roller, polish it and aspirate the excess parts. A special option allows to pass from one roller to another in a completely automatic way. The innovative system proposed by Keraglass is adaptable to any type of furnace, pitch and diameter of the rollers.
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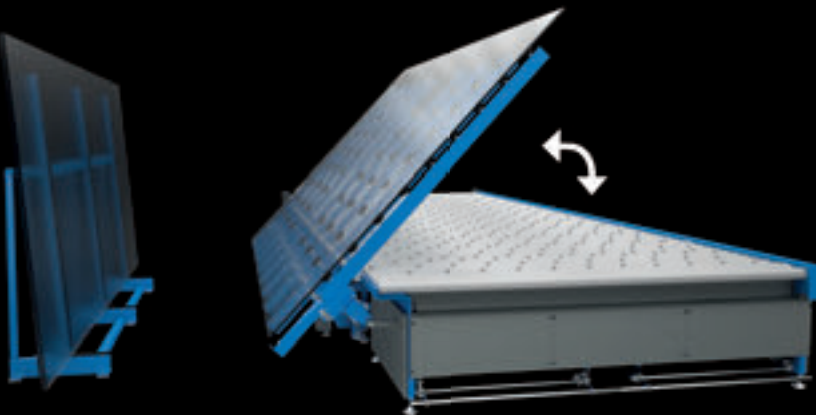
HST

Heat Soak Test furnace: the best guarantee to prevent sudden and unexpected explosions of tempered glass sheets due to Nickel-Sulphide impurities present in the initial float glass sheets. The HST furnace is the ideal tool to meet the safety standards on the use of tempered glass. The Keraglass furnace for HST, certified according to DIN-EN14179-1 standards, allows users to place a certified product on the market.



K-INSPECTOR

Provides the real optical measurement thanks to an advanced instrument. This system measures all types of optical distortion, including roller waves, edge kink, local bow, hammer and many others. It improves the quality and reduces the final product breakage. The real-time information sent directly to the beginning of the furnace in the SUPERVISION INTELLIGENT allows the operator to better control the process.





LOADER/UNLOADER

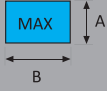
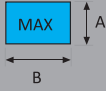
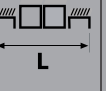
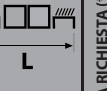
Optional device for load and unload the entry and exit conveyors



data sheets

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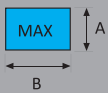
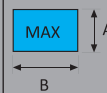
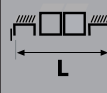
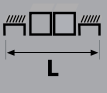
 SPESSORE THICKNESS mm	CLEAR GLASS						LOW-E GLASS			
		2,8	3,2	4	6	8	10	12	4	6
 N° CARICHE LOAD NR.	42	37	30	20	15	12	10	20	13	10
CONSUMO ENERGETICO ENERGY CONSUMPTION kW/m ²	1,7	1,85	2,3	2,9	3,3	4,4	5,7	2,5	3,2	3,7

 (A x B) CARICA MAX. MAX LOAD cm	 (A x B) CARICA MAX. MAX LOAD in	 LUNGHEZZA LENGTH m	 LUNGHEZZA LENGTH in	POTENZA RICHIESTA (*) POWER REQUIRED kw	PRODUZIONE PRODUCTION m²/h					
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125/240	49x94	18.10	712	330	126	111	90	60	45	36	30	60	39	30
160/320	62x125	23.95	942	360	215	189	154	102	77	61	51	102	66	51
230/360	90x141	24.18	952	522	348	306	248	166	124	99	82	166	107	82
230/420	90x165	27.54	1084	610	406	357	290	193	145	116	97	193	125	96
230/520	90x204	31.76	1250	723	502	442	359	239	179	143	120	239	155	119
230/620	90x244	38.46	1514	905	593	528	428	285	214	171	143	285	185	142
260/420	102x165	27.47	1081	718	459	404	328	218	164	131	110	218	141	109
260/520	102x204	31.74	1250	832	568	500	406	270	203	162	135	270	175	135
260/620	102x244	38.91	1532	1015	677	596	484	322	242	193	161	322	209	161
290/520	114x204	33.09	1303	925	-	557	452	301	226	180	150	301	196	150
290/620	114x244	39.61	1559	1130	-	665	539	359	269	215	179	359	233	179
321/620	126x244	38.20	1504	1224	-	736	597	398	298	239	200	398	258	199
321/800	126x314	48.10	1894	1477	-	950	770	514	385	308	257	513	333	256
335/620	131x244	40.90	1610	1355	-	-	623	415	311	249	207	415	270	207
335/900	131x354	54.12	2131	1806	-	-	904	603	458	361	301	603	391	301
335/1200	131x472	68.58	2700	2290	-	-	1206	804	603	482	402	804	522	402

Note: The above-mentioned productivity data are based on 100% useful charge, on a hour constant production and with glass size according to standard rules. Actual productivity depends on the operator's efficiency, size of the glass, shape and quality standards requested by the customer.

vision 900

					CLEAR GLASS							LOW-E GLASS		
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 N° CARICHE LOAD NR.		42	37	30	20	15	12	10	20	13	10			
CONSUMO ENERGETICO ENERGY CONSUMPTION kWh/m ²		1,8	2	2,5	3,2	3,6	4,7	5,7	2,7	3,4	4			
 (A x B) CARICA MAX. MAX LOAD cm	 (A x B) CARICA MAX. MAX LOAD in	 LUNGHEZZA LENGTH m	 LUNGHEZZA LENGTH in	POTENZA RICHIESTA (*) POWER REQUIRED kW	PRODUZIONE PRODUCTION m²/h									
125/240	49x94	15.80	622	350								126	111	90
160/320	62x125	21.28	838	380	215	189	154	102	77	61	51	102	66	51
230/360	90x141	22.36	880	572	-	-	248	166	124	99	82	166	107	82
230/420	90x165	25.72	1013	660	-	-	290	193	145	116	97	193	125	96
230/520	90x204	30.54	1202	773	-	-	359	239	179	143	120	239	155	119
230/620	90x244	36.64	1442	955	-	-	428	285	214	171	143	285	185	142
260/420	102x165	25.78	1015	768	-	-	328	218	164	131	110	218	141	109
260/520	102x204	30.65	1207	882	-	-	406	270	203	162	135	270	175	135
260/620	102x244	36.87	1451	1065	-	-	484	322	242	193	161	322	209	161

Note: The above-mentioned productivity data are based on 100% useful charge, on a hour constant production and with glass size according to standard rules. Actual productivity depends on the operator's efficiency, size of the glass, shape and quality standards requested by the customer.



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