

Laminated Cut



Laminated Cutting Line

54

EN

Flat Glass Technology

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we • glass

we • glass

As a global leader in flat glass and hollow glass processing technology, we have been helping to shape one of the most beautiful and useful materials in the world for over 60 years. Its unique qualities, combined with the passion for technology and innovation, guide us in seeking for newer and more effective solutions to improve and expand its use.

We cut glass

The value of a unique experience

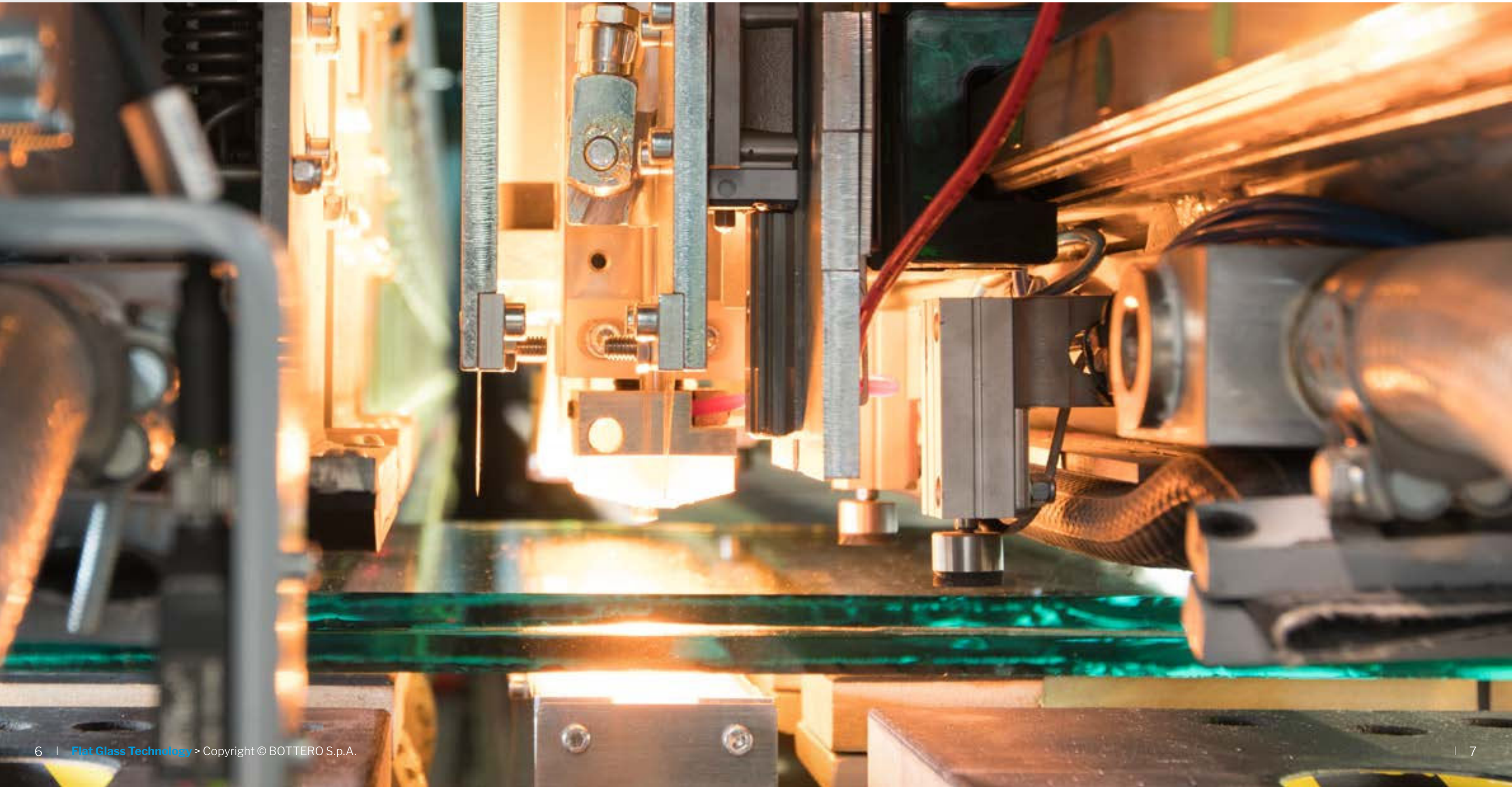
Bottero was among the first companies in the industry to believe in the potential of laminated glass, and started developing automatic cutting machines as early as the '70s. For over 25 years, Bottero has been and still is the only company in the world with the know-how and organisation required to manufacture both machines and lines for the production of laminated glass, and can therefore provide its customers with a unique experience, which turns into excellent processing results and extremely reliable solutions.



The range of applications of laminated glass is becoming more and more interesting and diverse, thus offering architects and designers unprecedented expressive opportunities. Bottero is committed to promoting the development and popularity of this material by constantly researching and developing new technological solutions able to improve its processing opportunities and thus increase its possible range of applications.

The Range

Bottero's portfolio of laminated glass cutting products meets any possible production needs in terms of formats and thickness, and ensures excellent cutting results even in case of 12+12 mm sheets.





511 LAM-S

511 LAM-S machine is the ideal solution for customers starting up a laminated glass production and looking for an easy to use, flexible cutting system. Due to its special frame, this machine offers excellent long term performance and reliability.

Plank Type	Stand Alone
Processed glass	Laminated
Processing	Cut Only
Automation level	★★★★●



515 LAMe

515 LAMe is a versatile and easy-to-use machine, that fits any customer's need for the production of laminated glass. The automatic control of all parameters concerning the glass cut and positioning allows to reach the highest productivity standards.

Plank Type	Stand Alone
Processed glass	Laminated
Processing	Cut Only
Automation level	★★★★●



520 LAMe

520 LAMe is out best-seller meeting any customer's need for the production of laminated glass. The automatic control of all parameters concerning the glass cut and positioning, and the possibility of removing a glass piece of 20 mm only, together with the removal of the low-e are the top class features of this machine.

Plank Type	Stand Alone
Processed glass	Laminated
Processing	Cut Only
Automation level	★★★★●



548 LAM

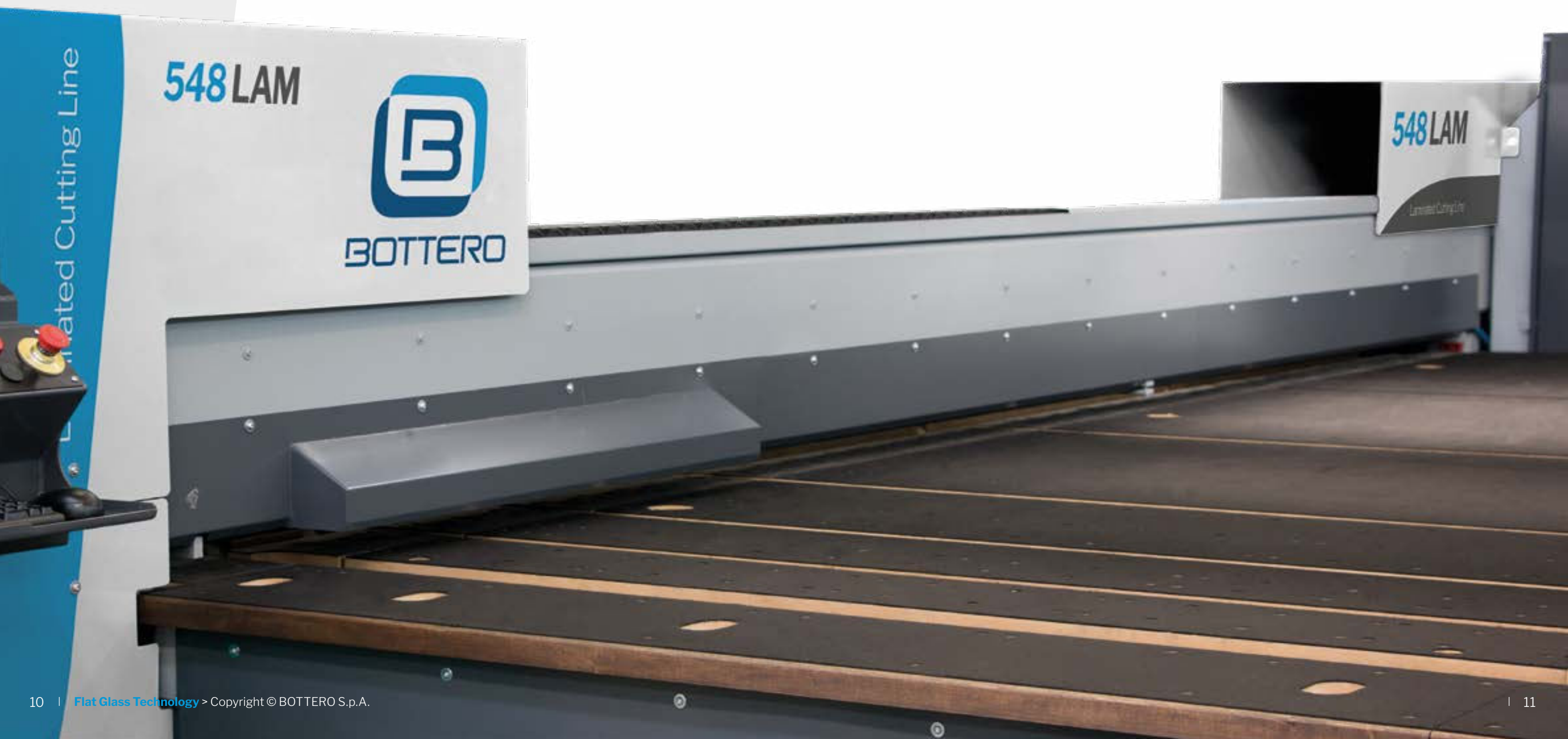
The new model of Lamilinea range, the 548 LAM, comes from the long experience of Bottero in the field of laminated glass cutting and from the improvements and technical solutions of Bottero products. The machine is a concentrate of technology and innovation and is the result of the careful and continuous research of Bottero R&D department.

Plank Type	On-line Cut / Dual line
Processed glass	Laminated / LOW-e & TPF
Processing	Cut + 1 Additional Tool
Automation level	★★★★★

Evaluation based on comparison with other Bottero products of the same category.

Features

Any manufacturing and running feature of the laminated glass series has been designed in order to grant a top level accuracy in glass processing and the highest production level aiming to meet any production need.



511 LAM-S / 515 LAMe / 520 LAMe

1 Positioning bridge

The positioning bridge, manual for 511LAM-S and automatic for 515LAMe and 520LAMe, helps the glass handling operations. The high density felt guarantees the best air floatation and avoids that glass chips get stuck inside with consequent potential scratching on the lower surface of glass sheets.

2 Pneumatically operated arms

The pneumatically operated arms on the working table allow smooth tilt of the glass sheet. Engineered to handle considerable weights and dimensions, these arms are the ideal instrument to efficiently load and unload large sheets.

3 Low-E coating edge deletion system

The optional Low-E coating edge deletion system for 515LAMe and 520LAMe with vertical axis wheel can operate up to 80 m/min speed.

4 Air cushion fan

The air cushion fan is directly fitted on the machine frame in order to obtain the max efficiency on the air cushion system. The shut-off system installed on the fan inlet allows the immediate interruption of the air cushion and, consequently, the risk of glass shifting.



520 LAMe model

5 Laminated glass process

The machine 515LAMe can process laminated glass thicknesses from 2+2 mm to 8+8 mm. On the 520LAMe model it is possible to perform the automatic cut and breakout cycle of minimum 20 mm trim width up to 5+5 mm glass.

6 Blade cutting system

Blade cutting system (optional for 511LAM-S and standard for 515-520LAMe) is the best solution for customers processing glass with thick PVB layers. This system provides several benefits:

- Minimum heat of the glass.
- No waiting time between cuts.
- Avoiding delamination on PVB.
- High quality on the cut.

7 Software

Thanks to user-friendly software, all machine functionalities and parameters can be set in a simple and efficient way. The on-board optimizer and the dynamic visualization of the operations in process help the operator to handle the most complex cutting lay-outs.

8 Control Panel

All adjustments of cutting and breakout pressures are easy to see and operate by the control board. In addition to sheet cutting and breakout control, every single operation of the machine can be driven from the push-button board, for high flexibility and productivity.

9 HP infrared heating element

The HP infrared heating element concentrates the heating focus on the PVB layer rather than on the glass. Reduction of warming on glass surface avoids waiting time between cuts and allows significant savings on processing time. The two independent heating elements are automatically activated by the software according to the length and the position of the cut, thus allowing considerable energy and consequently economic savings.



548 LAM model



548 LAM

Cutting system

The 548 LAM cutting is performed by two independent cutting heads, with HSS steel wheels to score the glass on the two surfaces. The machine can reach a maximum cutting speed of 140 m/min.

Automatic glass rotation



The panel glass rotation is a patented device for fully automatic rotation and positioning of the glass lites. Operated by means of two software-controlled devices, they bring the glass into the correct position for the cutting operation.

Glass breakout

The breakout of the lower glass is performed by a wheel on the upper bridge. The breakout of the upper glass is performed by a bar from 150 mm on.

The breakout of the trims (from 20 up to 150 mm) is provided by double wheel devices mounted on the carriages. Due to the “soft but sturdy” air driven clamping devices, which guarantee an even pressure distribution on any glass size, the breakout quality is excellent.

TTS® cycle

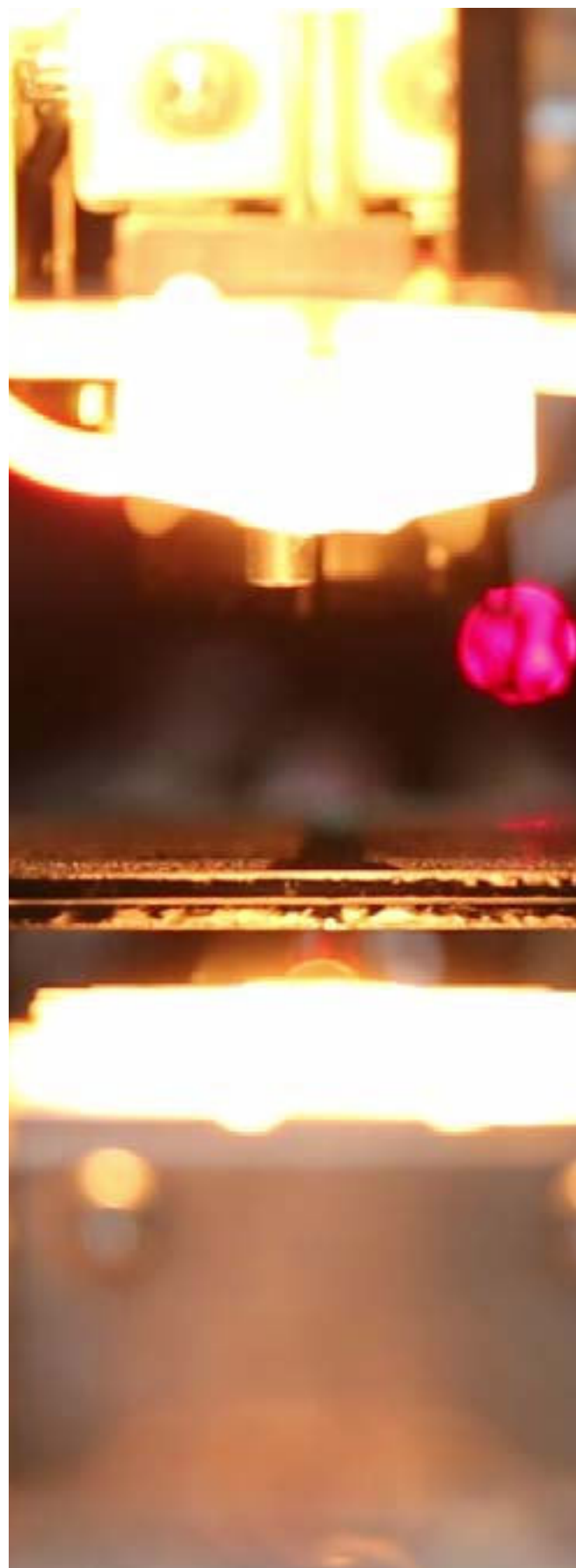
Unmatched cutting quality. Fully NC-controlled cutting, breaking and separation cycle (TTS® cycle). 8 NC-axes for full control of every function. Reverse-convoy / single piece cutting cycles.

Cutting carriages

The cutting carriages of the machine move on high precision guides fixed to processed parts to ensure the maximum cutting precision.

The single units of the carriages in die-cast aluminium are composed of:

- Low-e removal wheel.
- Clamps for sub-plate rotation.
- Breakout wheels.
- Heating system.



Lamp heating system

The heating of the PVB is carried out by a patented IR lamp device of 300 mm length only! Despite the small size of this device, the heating cycle is incredibly quick and consistent and offer amazing advantages for maintenance and spare costs.

Innovative heating system

Patented heating lamp to focus the radiation on the PVB and not on the glass. Proven technology from 2014 in the LAM SHAPE. 36% less power consumed in the process (**). 30% faster heating cycle (**). Easy to change by operator (easy plug-in system) and easy to transport. The use of the “concentrator” device allows you to focus the heating exactly on the PVB and the glass, immediately after separation, is “cold”.

(**): values for 3.3.1 glass on L1000mm cut, compared to 545/546 LAM models.



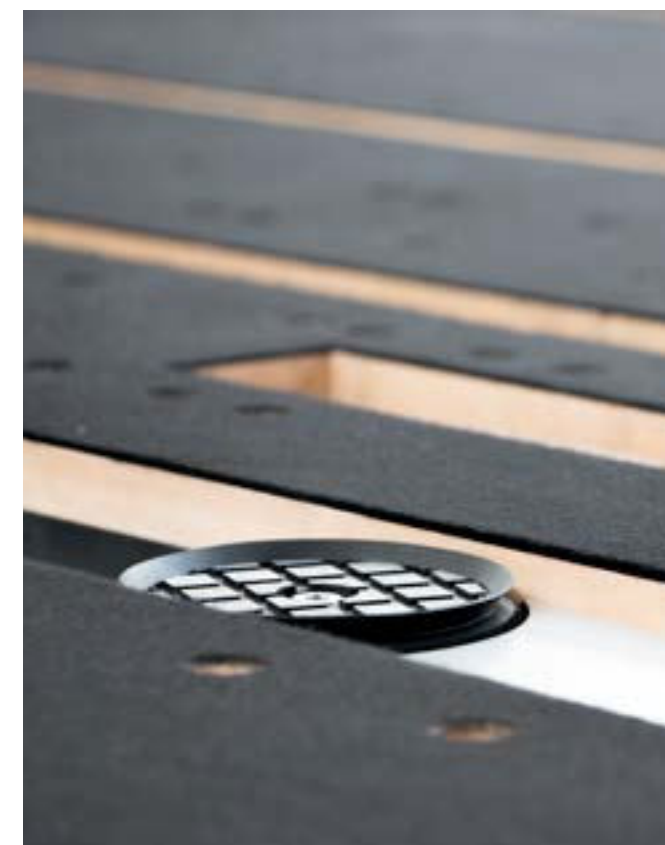
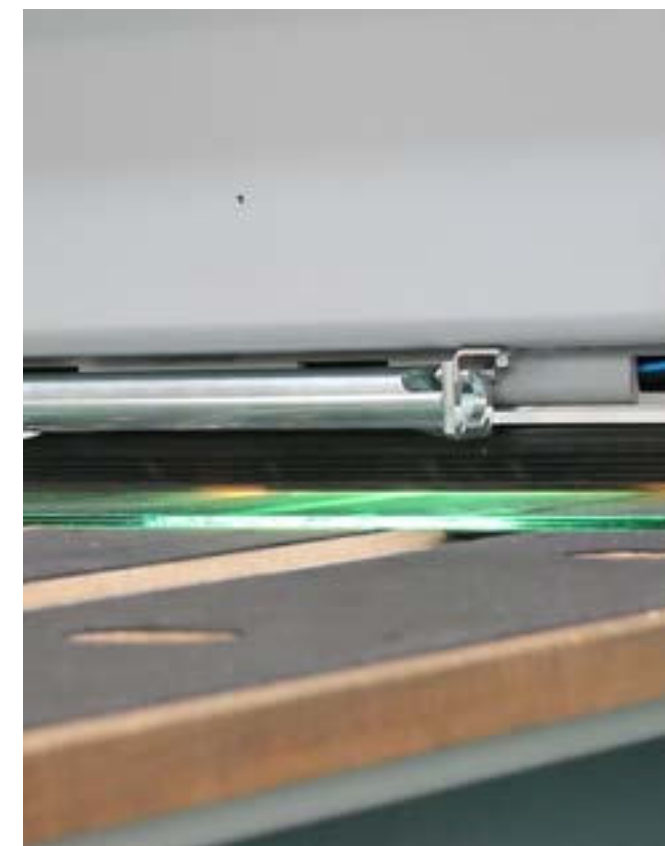
Clamping system

Patented air driven clamping devices (AD.CD®). Adjustable, uniform and smooth pressure distribution on the glass during the entire cycle. Stress-free on the glass surface for excellent cutting quality. Easy and maintenance-free clamping system.



Panel glass transport & positioning

Automatic positioning up to 6000 mm. Minimum piece that can be transported/cut is 300 x 300 mm. Patented squaring device accommodated on both cutting bridges to square and position long but narrow glasses with exceptional precision.



Unloading arms

The unloading of the plates is completely automatic with the option “automatic unloading arms”.

The unloading of the plates up to 1070x1000 mm dimension and up to 6+6 mm thickness is performed by the intermediate lugs. The unloading of plates from 1070x1000 mm dimension is performed by the usual lugs. A security radar prevents any intrusion in the glass handling zone, ensuring total protection to the operator.

High thickness arrangement

Arrangement for the breakout of 10+10 and 12+12 PVB 0.76 ÷ 2.28 for heavy weight.

Opti software

Bottero built-in RE-OPTI software to maximize the productivity of the glass sheet in process. Optimization of diagonal automatic cuts in the pattern. Jumbo sheet cross optimization available (for /61 model).



548 LAM model

Dual Line

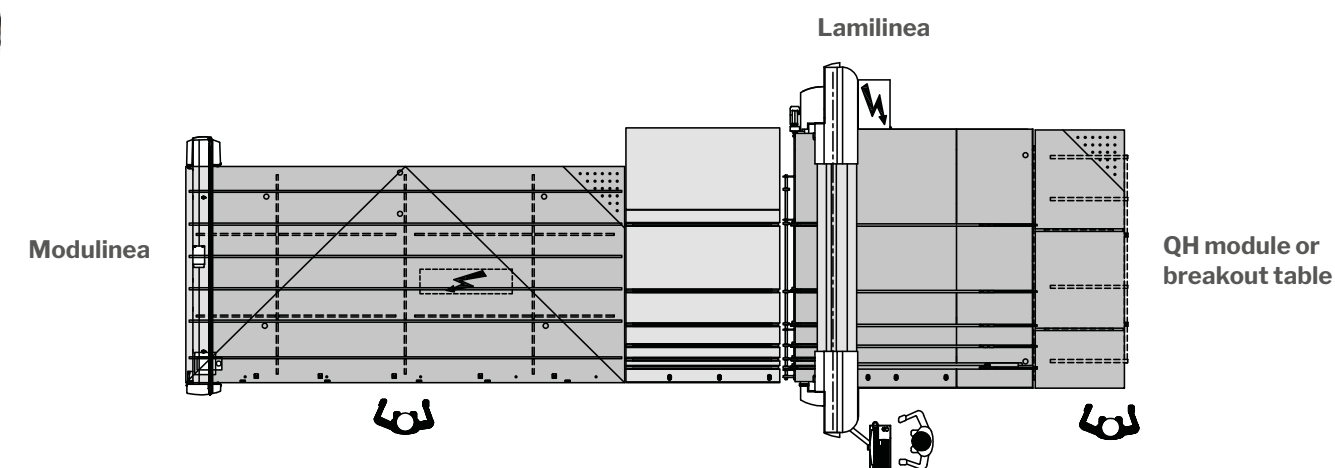
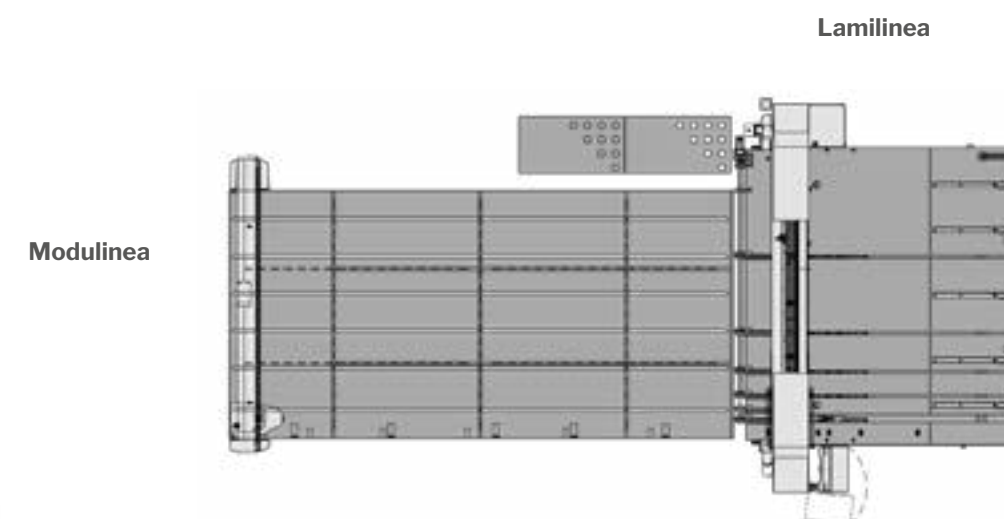
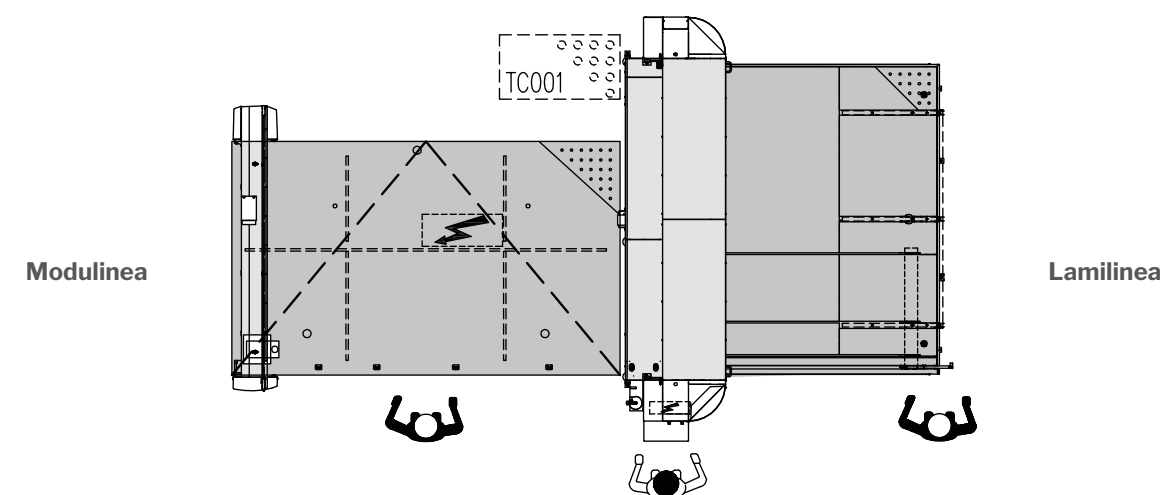
Combined lines for cutting laminated glass and float glass.

Semi-Auto 520 LAMe + 353 BCS

The 520 LAMe cuts and breaks trims with a minimum width of 20 mm. In addition to scoring the float glass, the BCS cutting bridge can be used to label, to cut the laminated glass to shape, to remove the Low-E on all types of sheets based on the chosen set-up (see specific BCS catalogue) and, when combining the two machines, can assist the 520 LAMe during sheet positioning, thanks to a specific suction cup system.

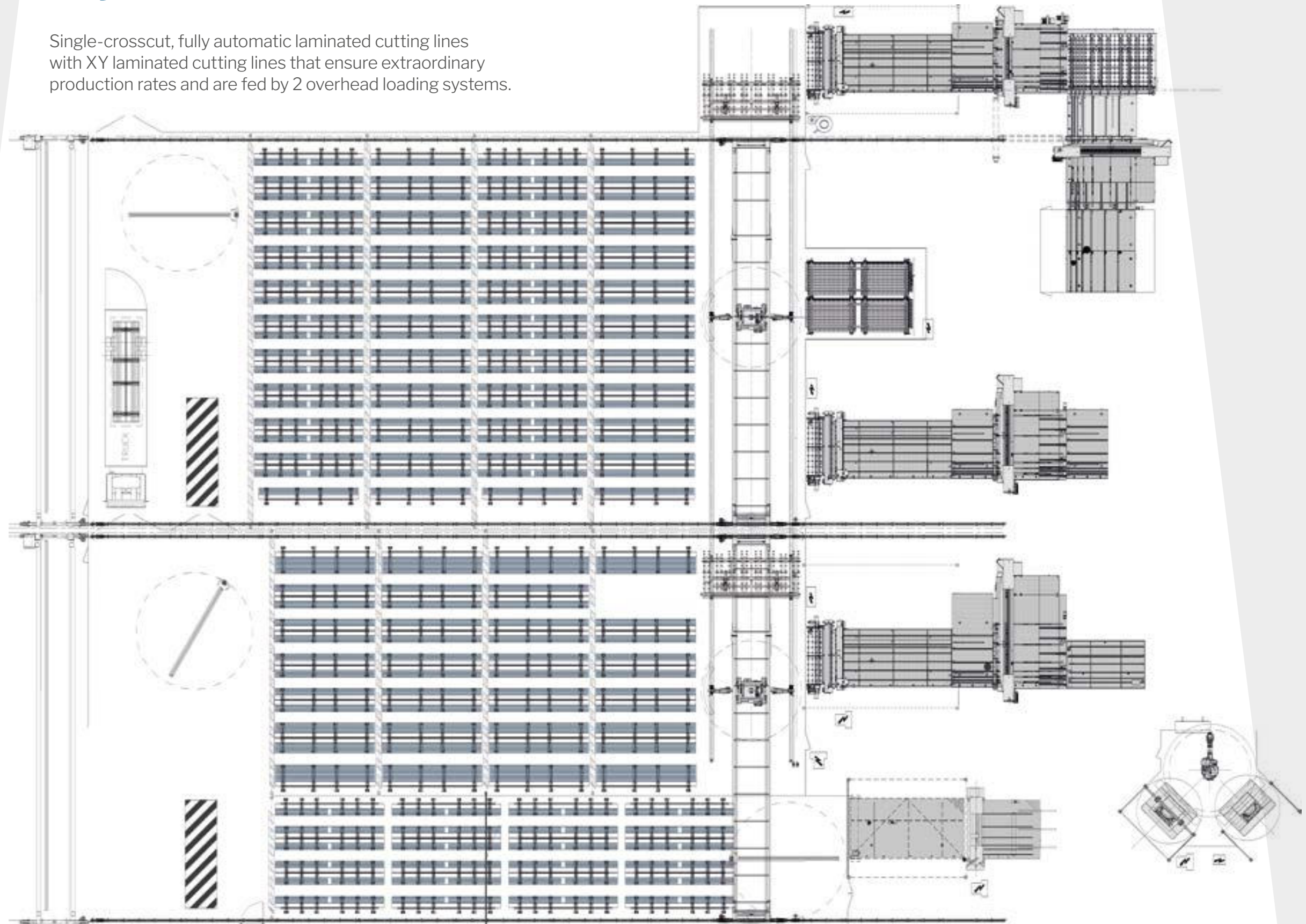
Fully-Auto 548 LAM + 363 BCS/EVO

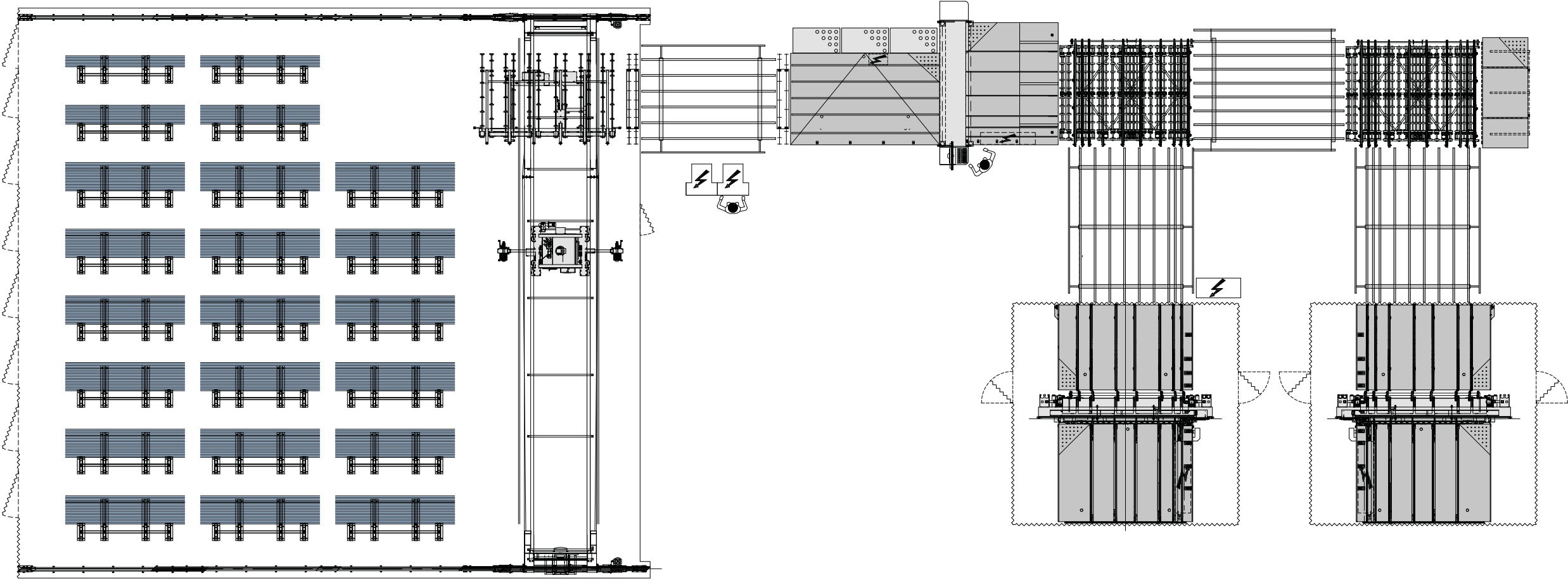
The 548 LAM can be combined with a belt loading table. Breakout and detachment of 20 mm trims and automatic positioning for diagonal cuts ensure fully automatic, high production. If combined with the float glass cutting table, the bridge can also be used to label, to cut the laminated glass to shape, to remove the Low-E on all types of sheets based on the chosen set-up (see specific catalogues BCS/EVO).



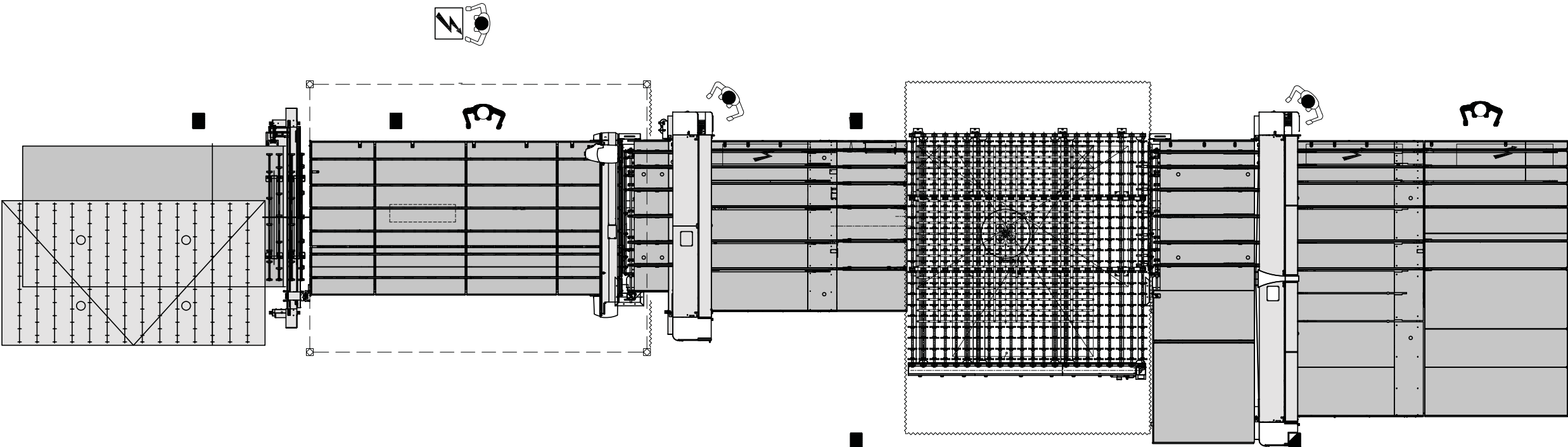
Layout

Single-crosscut, fully automatic laminated cutting lines with XY laminated cutting lines that ensure extraordinary production rates and are fed by 2 overhead loading systems.





Loading, cutting and breakout line consisting of a loading system with automatic storage unit with gantry and X/Y laminated line with one leg in X and 2 parallel in Y. Manual unload.



Loading, cutting and breakout line with fully automatic handling, except unload.

Automatic loading from existing storage unit with gantry. X/Y laminated line in line with rotator. PVB system trimming. Cutting table with grinding wheel for Low-E removal to also handle the float glass sheets.

Performances

Bottero tables provide 360° top level performances in all domains, namely: cycle time speed, accuracy and reliability in the long term.

Technical features

Metric	511 LAM-S	515 LAMe	520 LAMe	548 LAM
Cutting speed	65 m/min	100 m/min	100 m/min	140m/min
Grinding speed with Easy deletion	N/A	N/A	up to 80 m/min*	N/A
Grinding speed con opt. Low-E	N/A	N/A	N/A	140m/min
Max cut	3700 mm	3700 4600 mm	3700 4600 mm	3800 4950 mm 6100mm
Min cut	250 mm	250 mm	250 mm	150 mm
Min thickness	2.2.0,38 PVB mm	2.2.0,38 PVB mm	2.2.0,38 PVB mm	2.2.0,38 PVB mm
Max thickness	8.8.4,56 PVB mm	8.8.4,56 PVB mm	8.8.4,56 PVB mm	8.8.4,56 PVB mm
Opt. thickness	N/A	N/A	10.10.2,28 PVB mm	12.12.2,28 PVB mm
Max squaring length	3210 mm	3210 mm	3210 mm	6100 mm**
Max weight loadable on arms	450 Kg	450 Kg	450 Kg	700 Kg
Tolerance	+/- 0,5 mm	+/- 0,5 mm	+/- 0,5 mm	+/- 0,5 mm
Height of working table	930 +/- 20 mm	930 +/- 20 mm	930 +/- 20 mm	930 +/- 20 mm

Imperial	511 LAM-S	515 LAMe	520 LAMe	548 LAM
Cutting speed	2559 ipm	3937 ipm	3937 ipm	5512 ipm
Grinding speed with Easy deletion	N/A	N/A	3150 ipm*	N/A
Grinding speed con opt. Low-E	N/A	N/A	N/A	5512 ipm
Max cut	146"	146" 181"	146" 181"	150" 195" 240"
Min cut	9,8"	9,8"	9,8"	5,9"
Min thickness	5/64".5/64".0,015"	5/64".5/64".0,015"	5/64".5/64".0,015"	5/64".5/64".0,015"
Max thickness	5/16".5/16".0,18" PVB	5/16".5/16".0,18" PVB	5/16".5/16".0,18" PVB	5/16".5/16".0,18" PVB
Opt. thickness	N/A	N/A	25/64".25/64".0,090" PVB	15/32.15/32".0,009" PVB
Max squaring length	126"	126"	126"	240" **
Max weight loadable on arms	992 Lb	992 Lb	992 Lb	1543,2 Lb
Tolerance	+/- 0,02"	+/- 0,02"	+/- 0,02"	+/- 0,02"
Height of working table	36,6" +/- 0,8"	36,6" +/- 0,8"	36,6" +/- 0,8"	36,6" +/- 0,8"

(*) Depending on type of glass and quality requirements.
(**) With optional unloading table.

Options

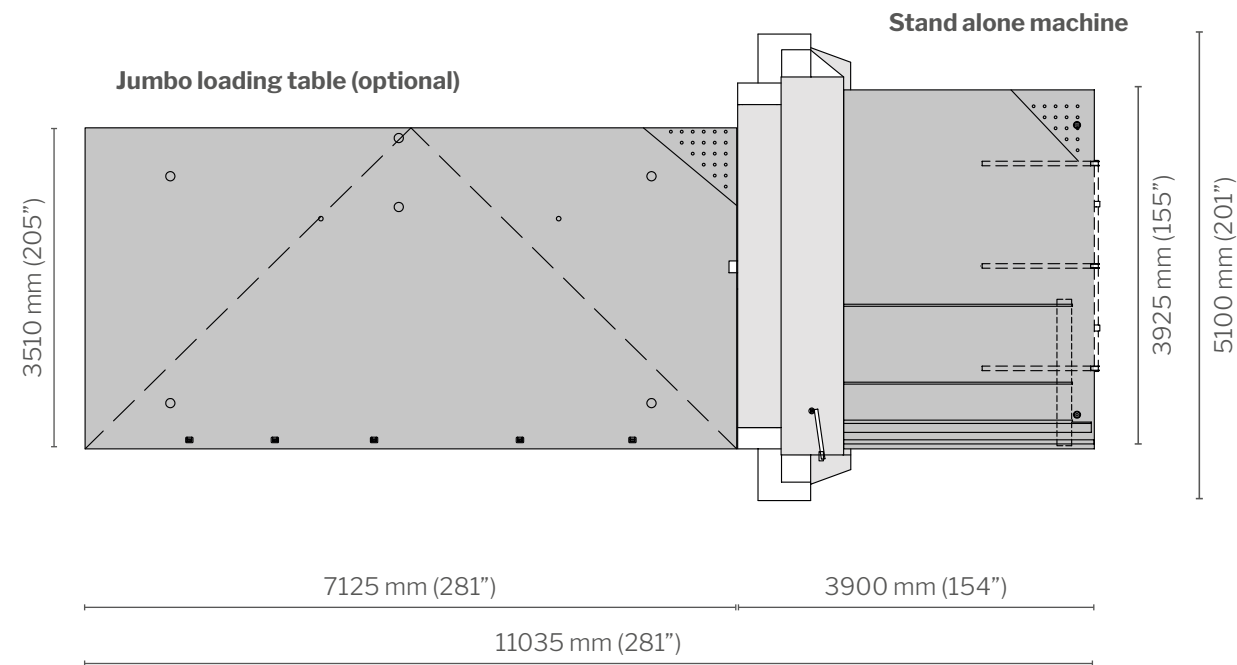
	511 LAM-S	515 LAMe	520 LAMe	548 LAM
HP heating element	•	•	•	•
Two indipendent heading elements		•	•	
Laser reference for diagonal cuts	•	•	•	
Automatic diagonal cut				•
Fan quick shut off	•	•	•	•
Manual PVB cut with blade	•	•	•	
Automatic PVB cut with blade		opt.	opt.	•
Positioning bridge functionality		“one by one” (single entry)	Linked to cutting scheme	•
Personal computer		•	•	•
Optimizer		•	•	•
Network connection				•
Easy deletion		opt.	opt.	
Low-E removal				opt.
Automatic cutting and breakout min trim = 20 mm			•	•
Automatic rotation				•
Focuser/concentrator				•
HP+ combi heating element				•

*Up to 3700mm

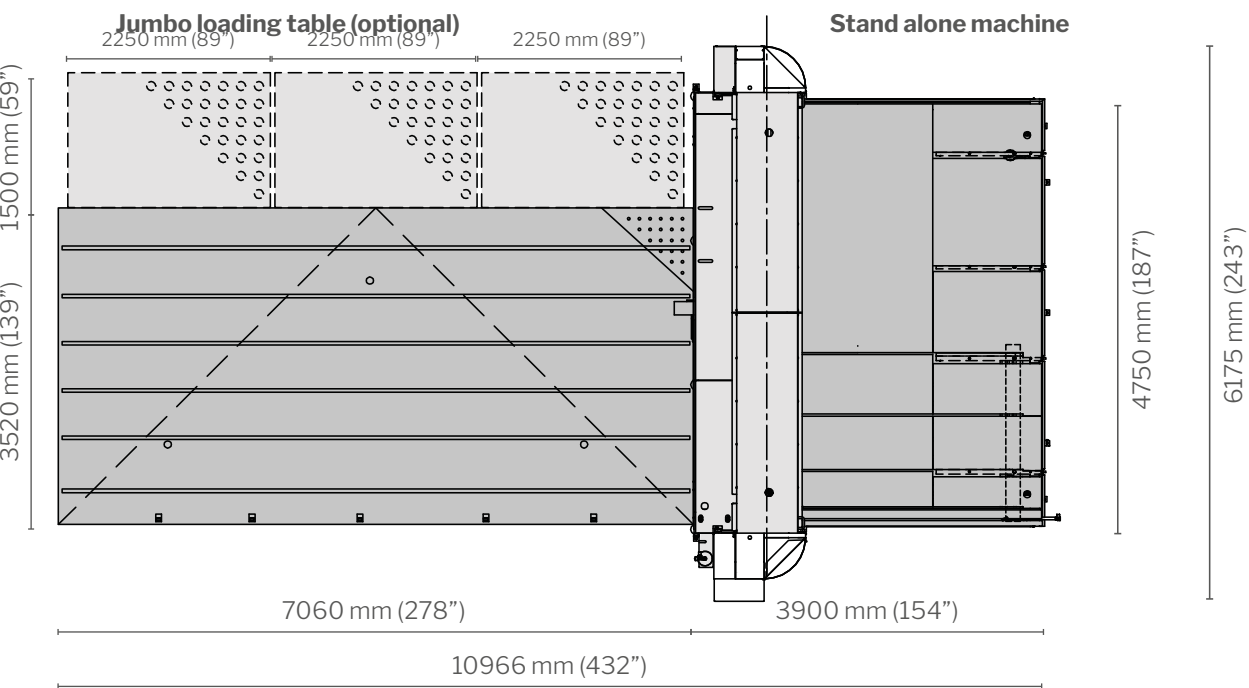
Machine Overall Dimensions



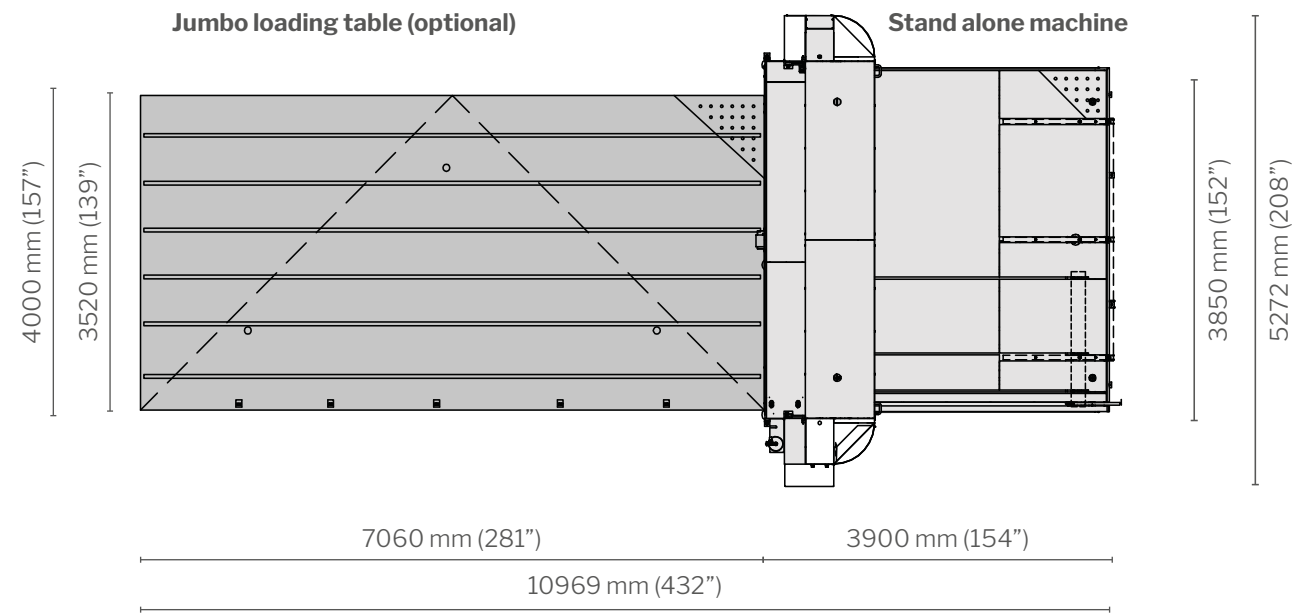
511 LAM-S



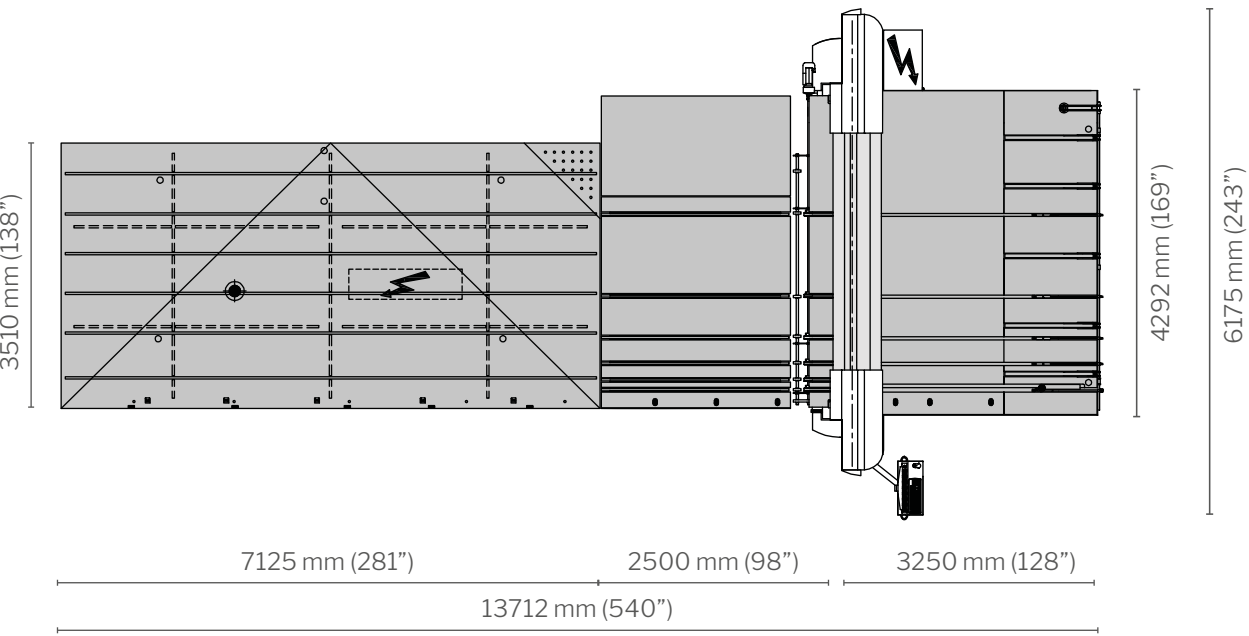
515 LAMe/46 - 520 LAMe/46



515 LAMe/37 - 520 LAMe/37

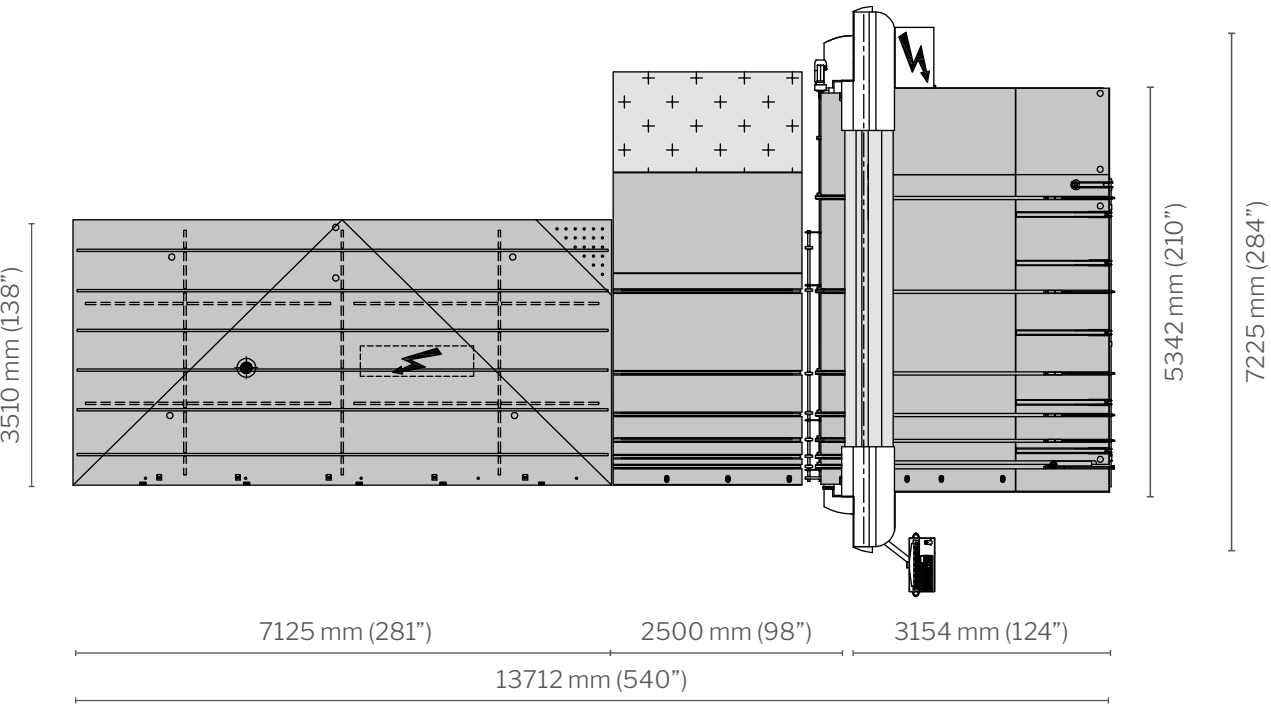


548 LAM/38*



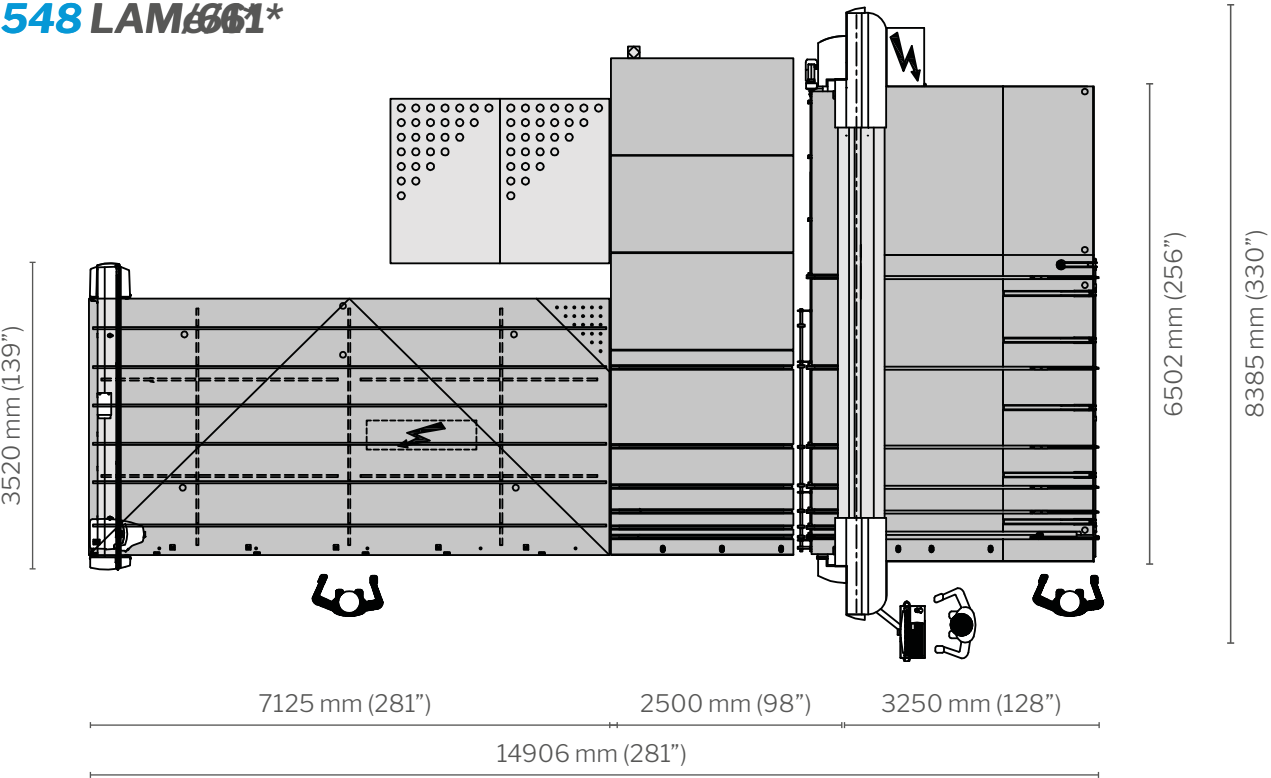
* Machine overall dimension valid also for Dual Line with BCS/EVO

548 LAM/49*



* Machine overall dimension valid also for Dual Line with BCS/EVO

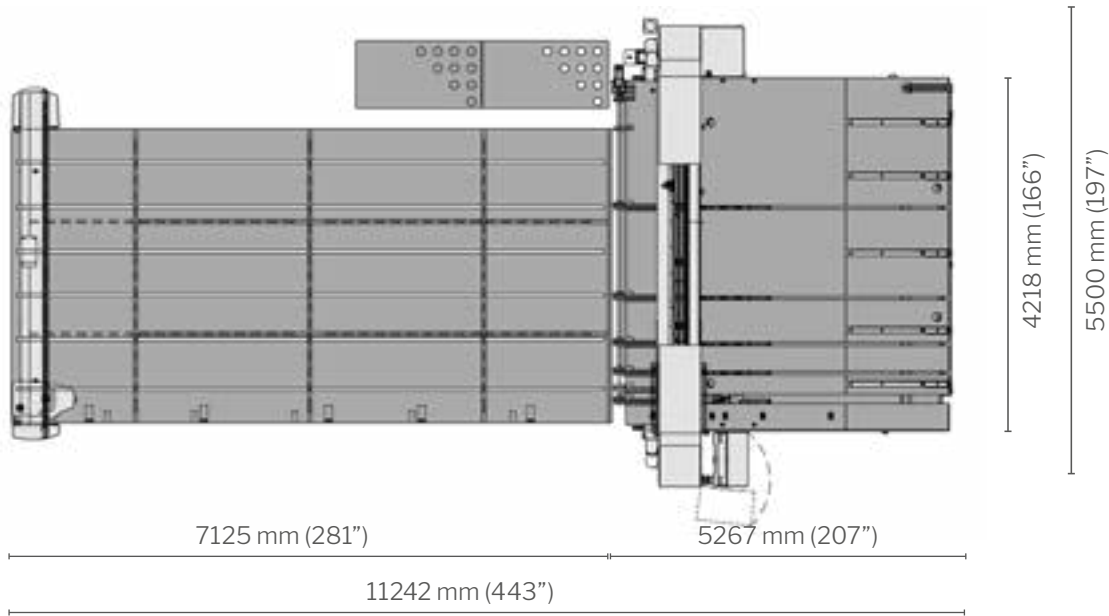
548 LAM/661*



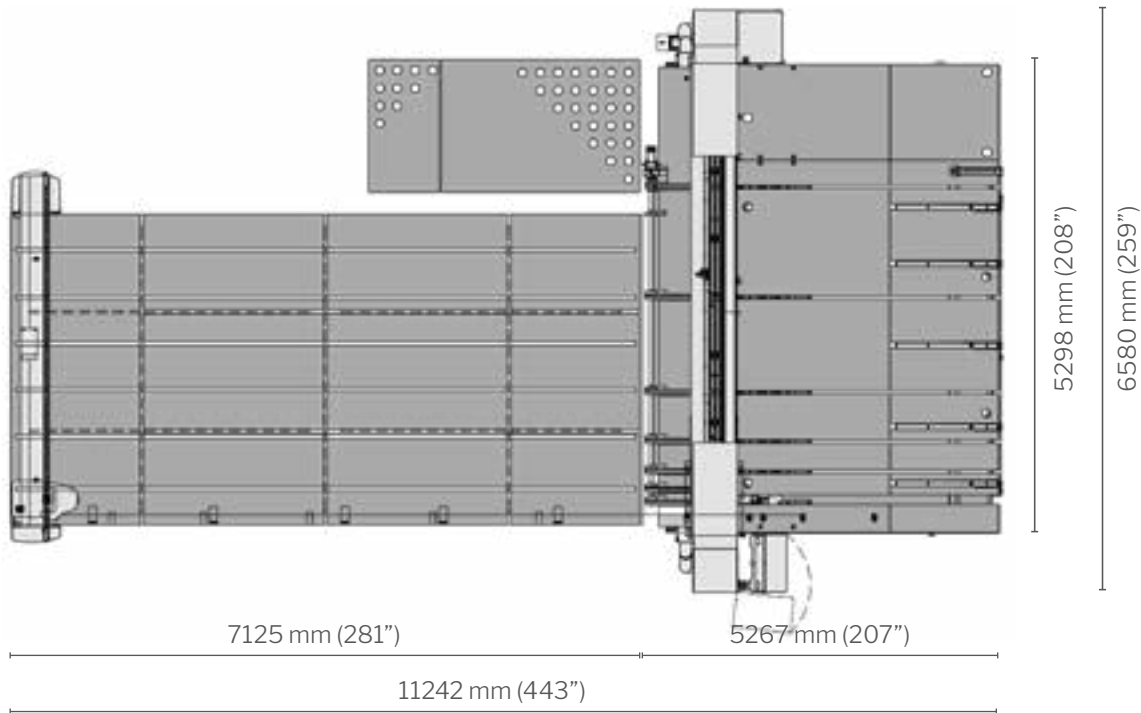
* Machine overall dimension valid also for Dual Line with BCS/EVO



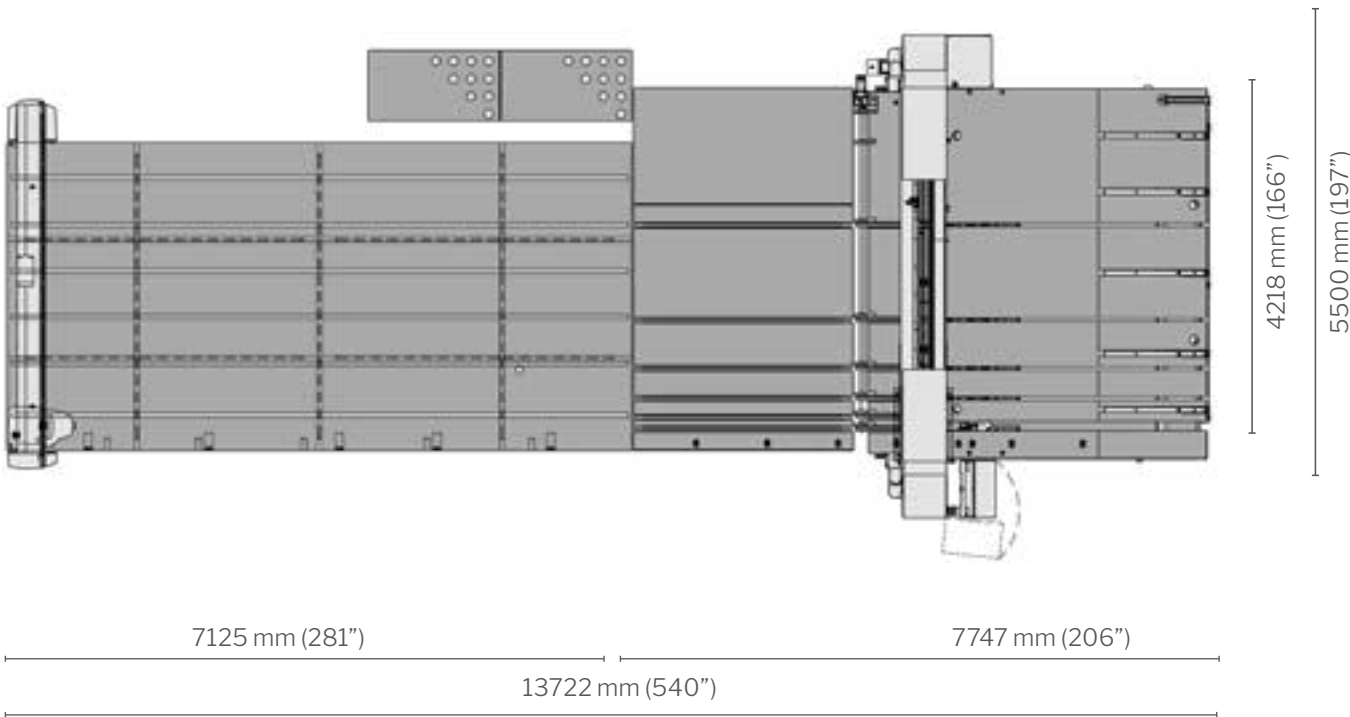
548 LAM 2.0/38 Stacker



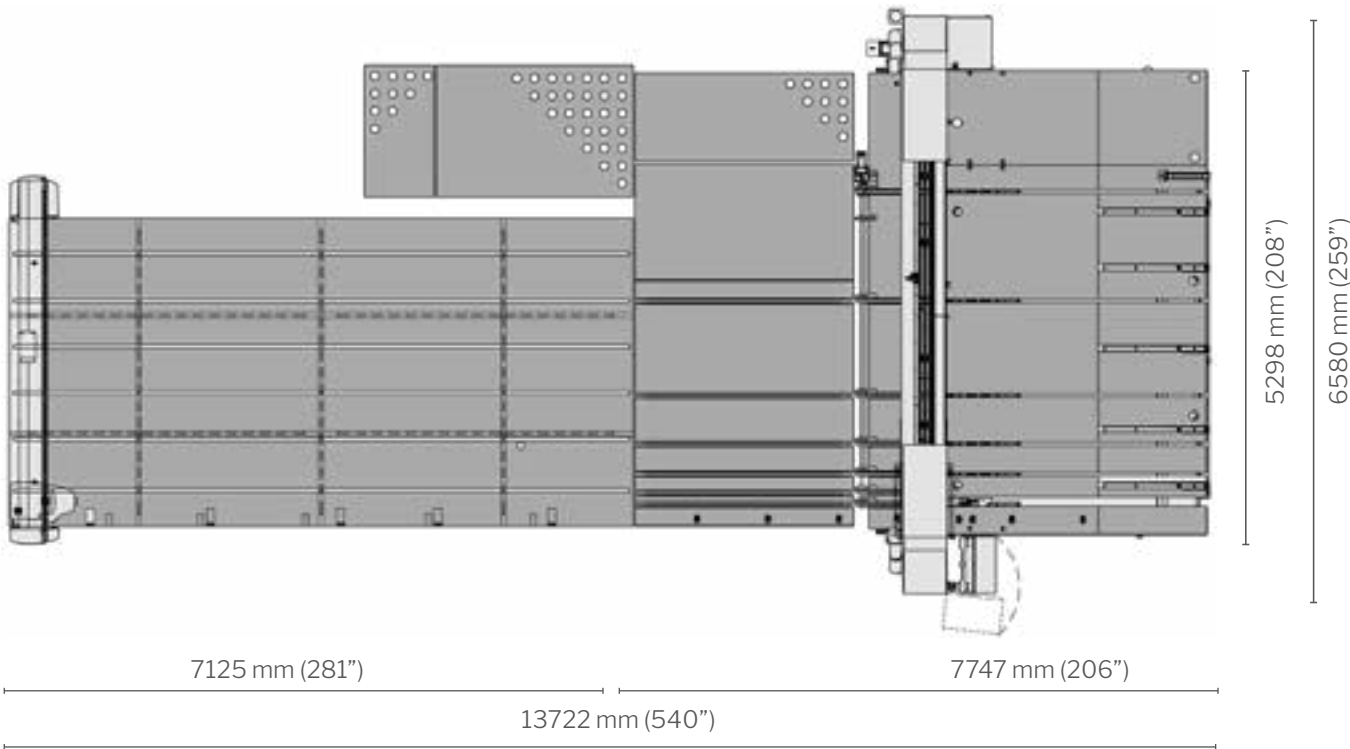
548 LAM 2.0/49 Stacker



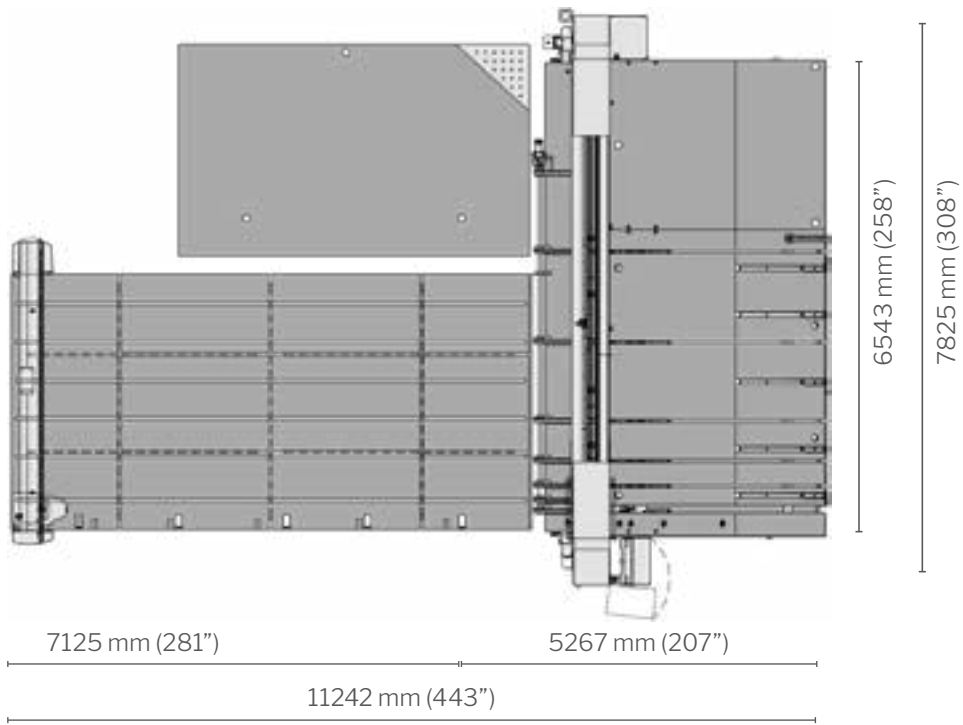
548 LAM 2.0/38



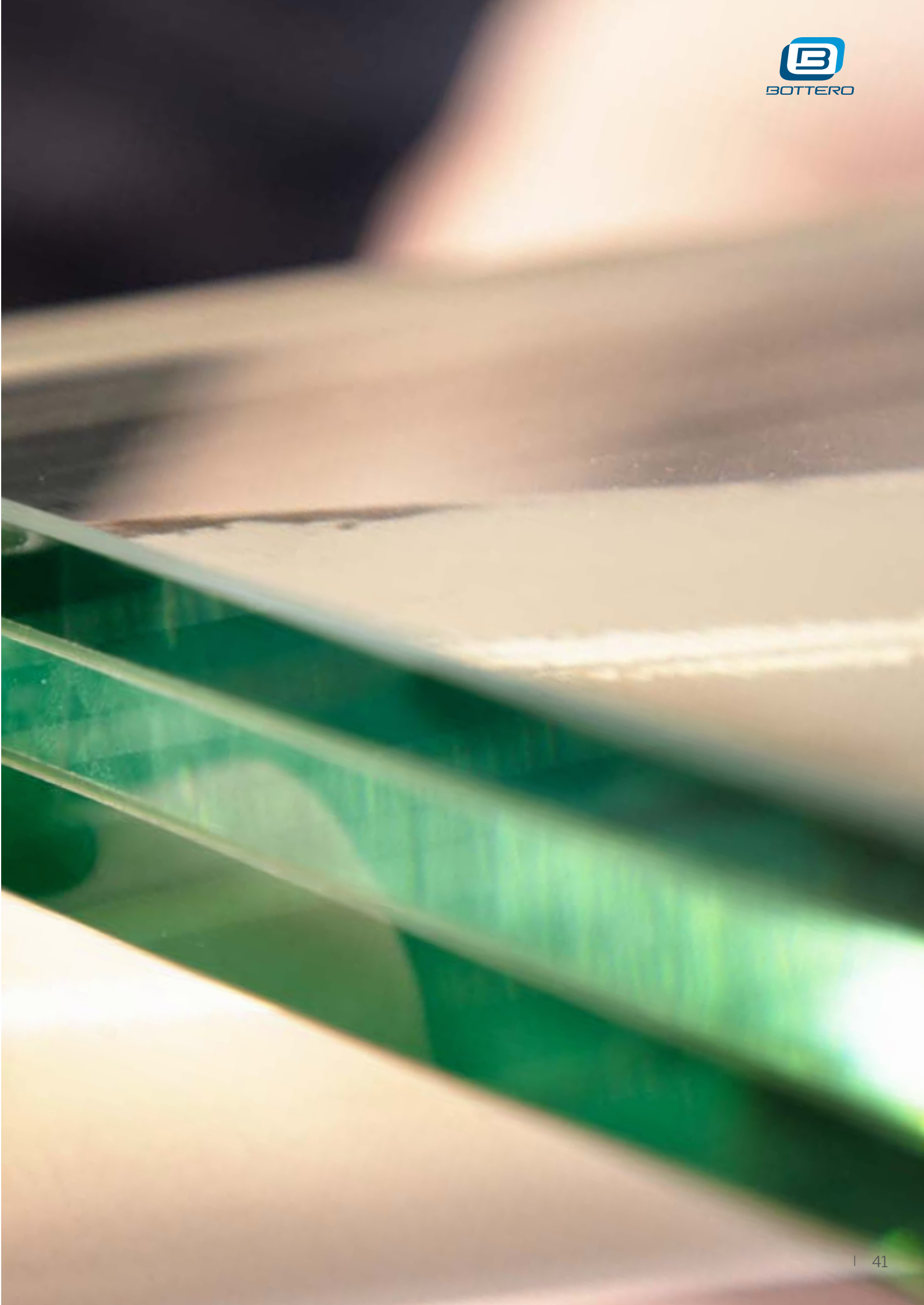
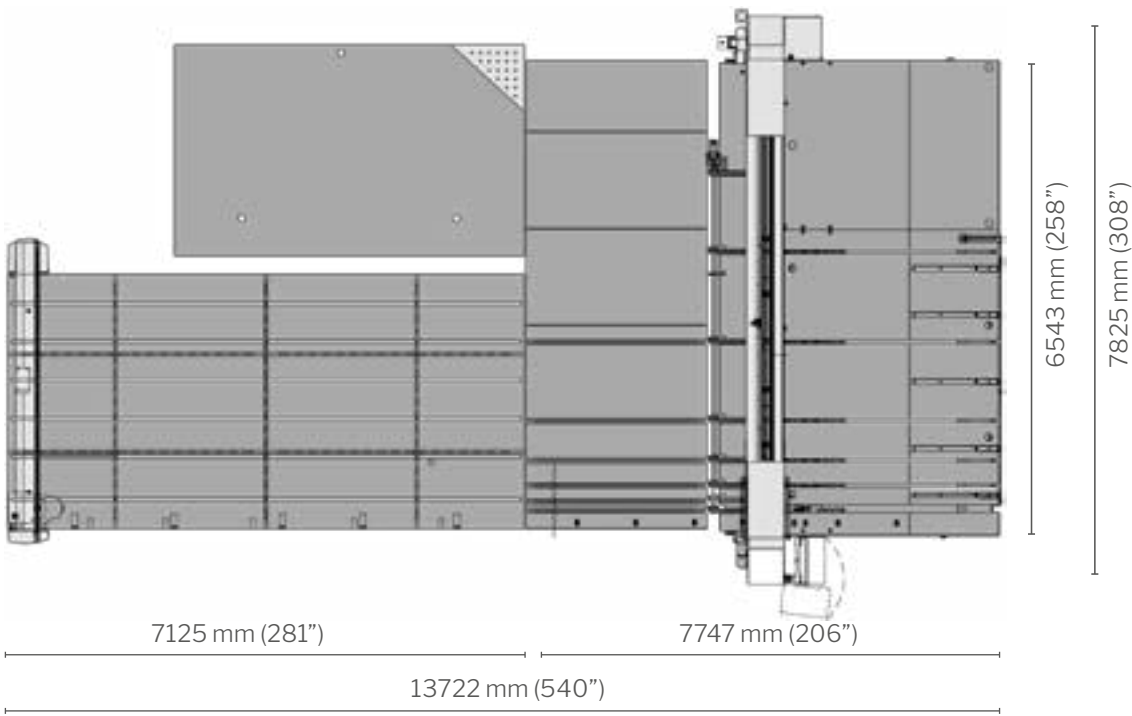
548 LAM 2.0/49



548 LAM 2.0/61 Stacker



548 LAMe/61*
548 LAM 2.0/61



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some high-productivity lines
manufactured by Bottero.

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BOTTERO S.p.A.
via Genova 82
12100 Cuneo Italy
Tel.: +39 0171 310611
Fax: +39 0171 401611

www.bottero.com

