



INSULATING GLASS

"RESIDENTIAL" INSULATING GLASS LINE



FOREL

THE INSULATING GLASS RANGE

Creating solutions for insulating glass unit production has always been Forel's core business. Over the years, the company's commitment to this segment has allowed it to continuously extend its range of specialised insulating glass products with **new product types, new patents and improvements to existing solutions.**

This extensive choice of offerings, which caters comprehensively to every possible need of the glazing sector, has now been reorganised into four distinct product families with different characteristics but all sharing the same quality and attention to detail built into every Forel machine: **High Tech, Residential, High Tech, No Limits.**



"RESIDENTIAL" INSULATING GLASS LINE

The Forel "Residential" insulating glass line is a compact, reliable solution for glazing producers who serve the residential sector above all, which allows them to offer their customers a specific, high-performance product.



THE "RESIDENTIAL" LINE

Created to cater for the specific requirements of the residential market, the "**Residential**" line produces double or triple glazed insulating glass units with standard measurements, thicknesses and characteristics.

This line is intended specifically for glazing producers whose business operations target a clearly defined sector of the market and who need a production solution that ensures **reliability, speed and quality.**

Rectangular units can also be produced in **Self-learning** mode, which uses a set of sensors to acquire the height, width and thickness of the panes processed automatically.

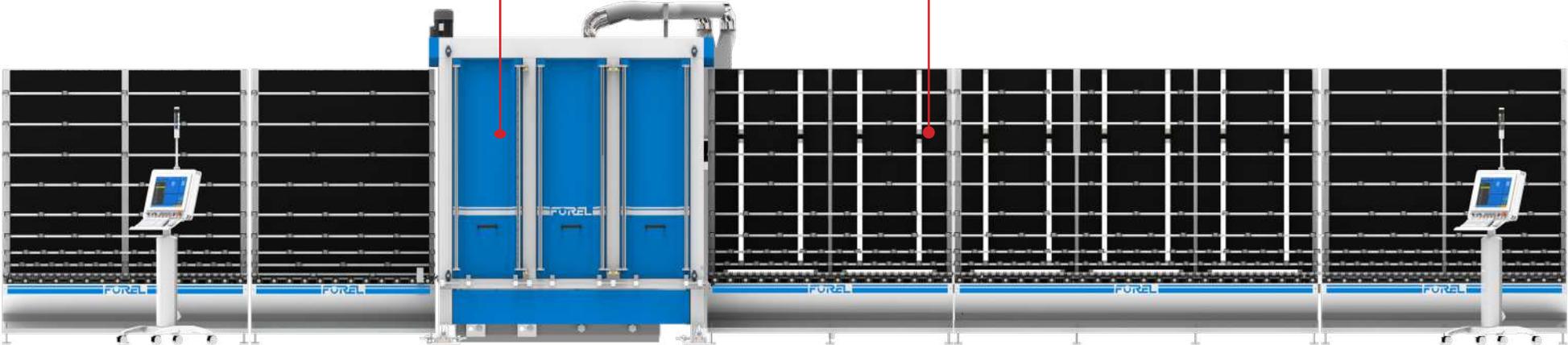
“The tools you use make the difference between COMPETING and STANDING OUT”

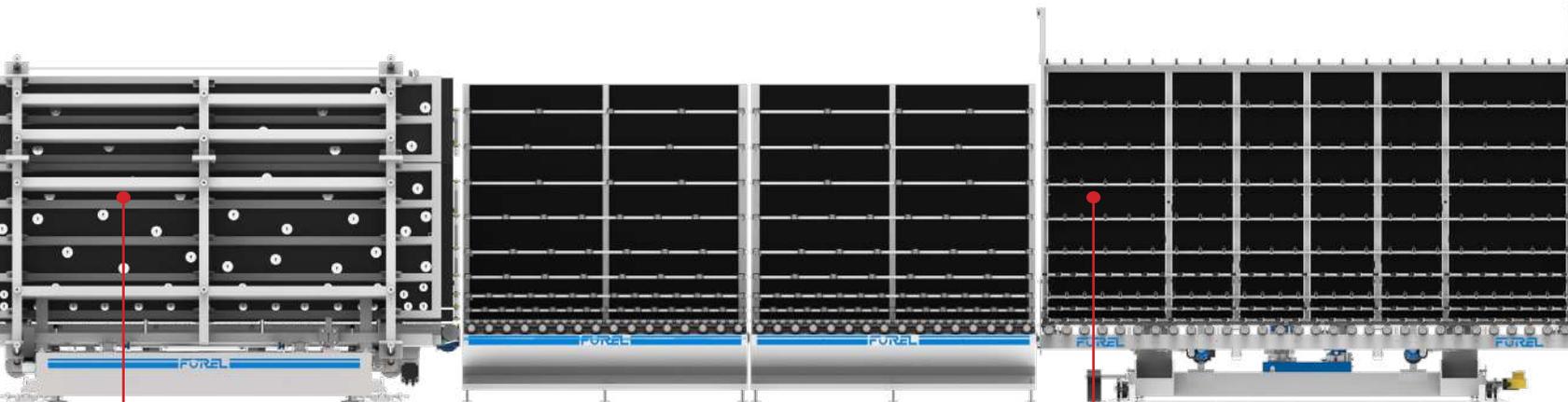


RESIDENTIAL IG LINE CONFIGURATION 1

VERTICAL WASHING MACHINE
Pre-Washing, Washing,
Rinsing, Drying

INSPECTION STATION
AND FRAME POSITIONING





COUPLING PRESS

TILTING TABLE

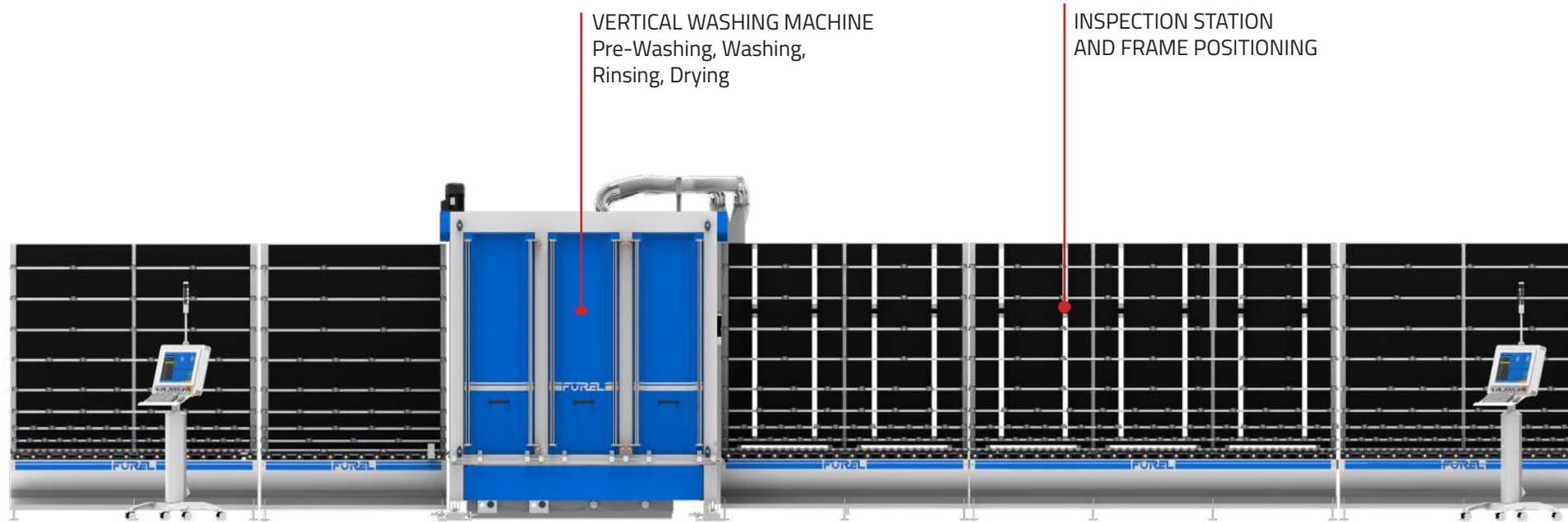


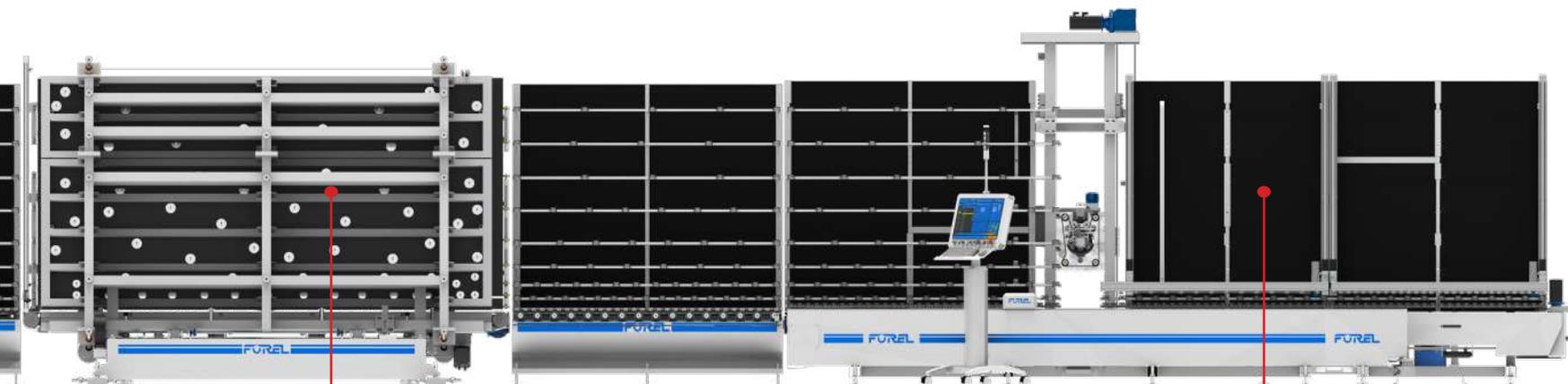
MANUAL SEALING

RESIDENTIAL IG LINE CONFIGURATION 2

VERTICAL WASHING MACHINE
Pre-Washing, Washing,
Rinsing, Drying

INSPECTION STATION
AND FRAME POSITIONING





COUPLING PRESS

SEALING ROBOT

THE RESIDENTIAL RANGE

The key strengths of the Forel "Residential" line include **simplicity of use, superior processing quality, compact dimensions and impressive productivity.**

It's available in two models, capable of processing double glazing units up to 4,000 mm x 2,000 mm or up to 4,000 x 2,500 mm.

The assembled pane can have up to 65 mm overall thickness, with one or two chambers (triple glazing)

The line can be combined with processes alternatives to the traditional rigid spacer, thanks to the solutions dedicated to the **flexible profile**. For markets that favor **"Hot Melt" sealing** is also available a dedicated sealing robot (on the picture on the right).

OPTIONS:

To adapt to all the different needs of companies focused on residential glass business, the line can be customized with a series of options:

- **Gas filling:** a filling system automatic argon gas in the pressing phase of the IG unit.

- **Shaped IG unit production.**

- **Second Sealant:** the sealing robot can use two different products.

- **Tilting Table and Manual Sealing,** as an alternative to the automatic sealing;



THE SOLUTIONS AVAILABLE

The following solutions are part of the **"Residential"** series and can therefore be used in the line:

- line server, for production management;
- Art. VW vertical washing machine (pic on left);
- Art. FP inspection and frame application conveyor;
- Art. AP coupling press;
- Art. SR or SH (Hot Melt) automatic sealing robot;

The following accessory machines for the line are also available:

- Art. CR low-emission coating remover machine;
- Art. SQ quality control scanner;
- Art. AS and AT (pic below) flexible spacer applicators;
- Art. AC and RC rotating conveyors;
- Art. CA cork pad applicator.



LOW-E COATING REMOVER

One of the most delicate steps in the insulating glass production is the **removal of the Low-E low-emissivity coating from the surface of the glass.**

This process demands the utmost precision to ensure that the insulating properties of the coating on the rest of the pane are retained, and that the frame is applied and subsequently sealed correctly.

The **vertical coating remover machine Art. CR** has been developed to remove Low-E coating with total precision, but also to offer a high performance, rapid solution. This has been made possible by its 2 operating heads, which work simultaneously to significantly reduce production times.



INSPECTION STATION

The Residential IG line has different options of inspection stations, to better fit the different needs of the glaziers.

Max glass size up to 3,600 x 2,500 mm

- **Inspection Station Art. IS** - with neon light.
- **Inspection and Frame Positioning Station Art. FP** - with neon light and horizontal and vertical references, for an accurate positioning of the frame on the glass.

Max glass size up to 4,000 x 2,500 mm

- **Inspection Station Art. IS** - complete of led light, rear inspection chamber, automatic reference bars.
- **Inspection and Frame Positioning Station Art. FP:** equipped with led light, rear inspection chamber, automatic reference bars, plus horizontal and vertical references.



FLEXIBLE SPACER OPTIONS

The "Residential" IG Line can be equipped also with the solutions for the application of flexible spacer. They can be installed as an alternative or in addition to the traditional processing with rigid frame. :

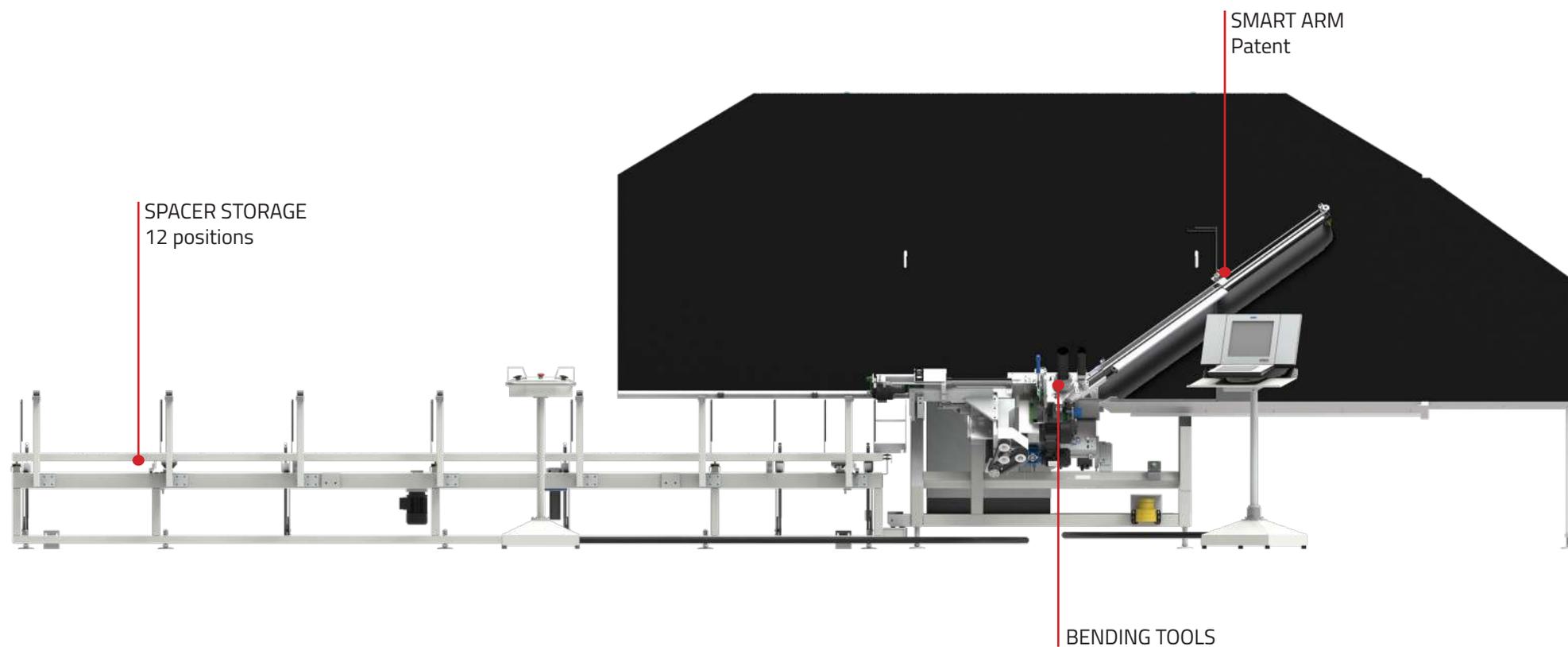
- **Art. AS - Flexible Spacer Applicator (Pic below):** the reel of the flexible spacer of Art. AS is installed directly on the mobile unit. This particular configuration guarantees speed and practicality in reel changeover.

- **Art. AT - "T-Shape" Spacer Applicator:** the spacer is stored in a special hermetic cabin next to the machine. When the glass arrives, the machine automatically removes the protective films on the sides of the spacer and spreads the butyl in the intersections.



SPACER PROCESSING RANGE

PROFILE BENDER MACHINE Art. PB



MANUAL BUTYLER Art. MB



DESICCANT FILLER Art. DF



Art. PB - PROFILE BENDER

A strategic tool for any glazier company, the **Art. PB profile bender** is one of the world's highest performance solutions for preparing spacer frames for insulating glass units.

When it was launched on the market, the Profile Bender Machine Art. PB revolutionised the bending process for large frames. And it is still one of the most requested and acclaimed products of the Forel range.

The **Automatic Profile Bender, Art. PB**, can handle different types of spacer, perfectly calibrating each single bend with the aid of dedicated software.

The machine is equipped with a **12-place storage unit** that not only optimises spacer movements but can also be used to manage the trim cuts.

Its main feature is the patented "**Smart Arm**", a special automated arm which supports the profile throughout the bending process to prevent deformation or breakage, and making it possible to process even large format frames without difficulty.

A number of upgrades have been made to the machine over the years, to improve the performance of the machine and offer more processing options.

The last efforts of Forel R&D Dept. has been focused especially in **plastic profiles bending**. The result is a "2021 model" which boasts new solutions, systems and devices, and offers even more advanced performance than before.

The Profile Bender Art. PB is an high automated solution, but it can operate also in manual mode, if is necessary a step-by-step processing.

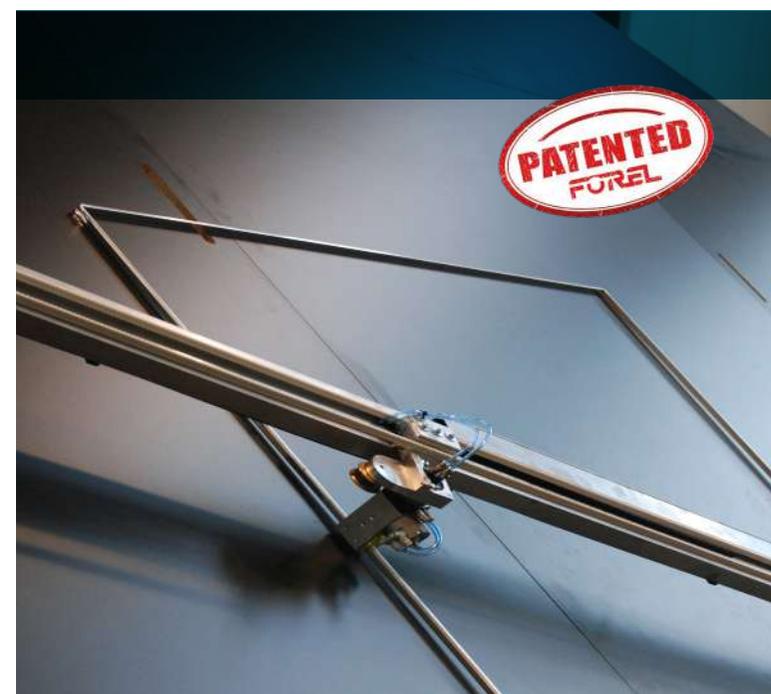


BENDING SAFELY: THE SMART ARM

Art. PB is fitted with an exclusive device for avoiding the breakage or deformation of the frames, even when producing large spacers.

The special **Smart Arm**, an exclusive Forel patent, accompanies and supports the spacer to ensure optimum productivity without any risk for the product.

Smart Arm makes Art. PB the ideal solution for **bending Warm Edge spacers** - a type of frame increasingly requested by the market.

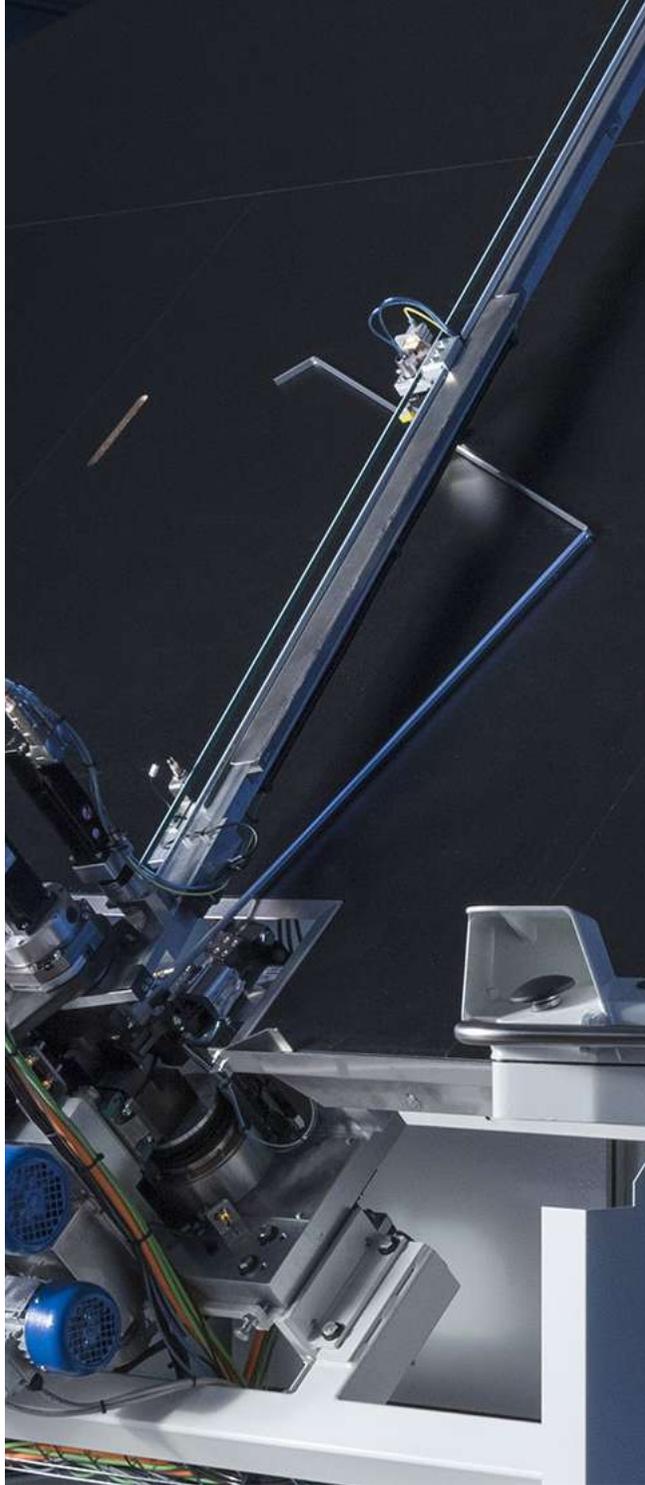


CUTTING TOOLS

The solution cuts using a **special blade developed by Forel**, that ensures precise, clean processing but also offers a long lifespan. In addition, this blade guarantees excellent cutting results on every type of spacer (aluminium, plastic, etc.).

For ensure an high productivity, the machine has been equipped with the special **punch "quick change" system**: thanks to the new magnetic mounting, changing the tool takes just a few seconds.

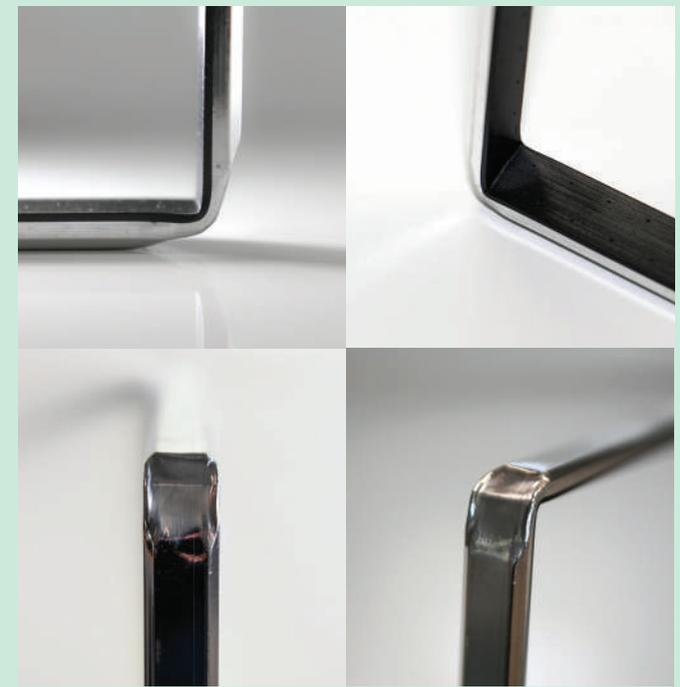
This upgrade lowers to the bare minimum the time required to switch from one profile type to another.



THE NEW "PLASTIC PACK"

The recently introduced new "**plastic pack**" increases productivity and quality in the preparation of plastic frames. This update has introduced several advantages:

- Greater precision in the bend and shape;
- Increase in productivity / decrease of cycle time;
- 90 ° bend with "**Radiusless**" effect (a simply perfect 90° bend, in which the two sides of the spacer meet at a precise right angle with no "rounding off");
- Straight shapes in plastic frame.

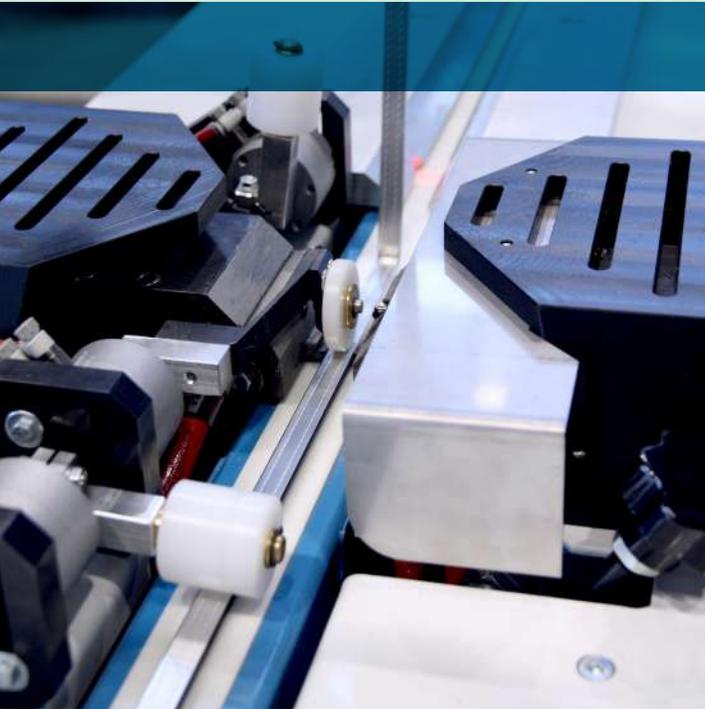


Art. MB - MANUAL BUTYLER

To apply the butyl, Forel offers the **Manual Butyl Application Unit, Art. MB**, which has a touch screen command unit for pre-setting the amount of product to be supplied.

The quantity of butyl is distributed equally by two extrusion nozzles thanks to two separate batchers, ensuring a perfectly even result along the entire edge.

It can also process **shaped** or **Georgian bar** spacers.

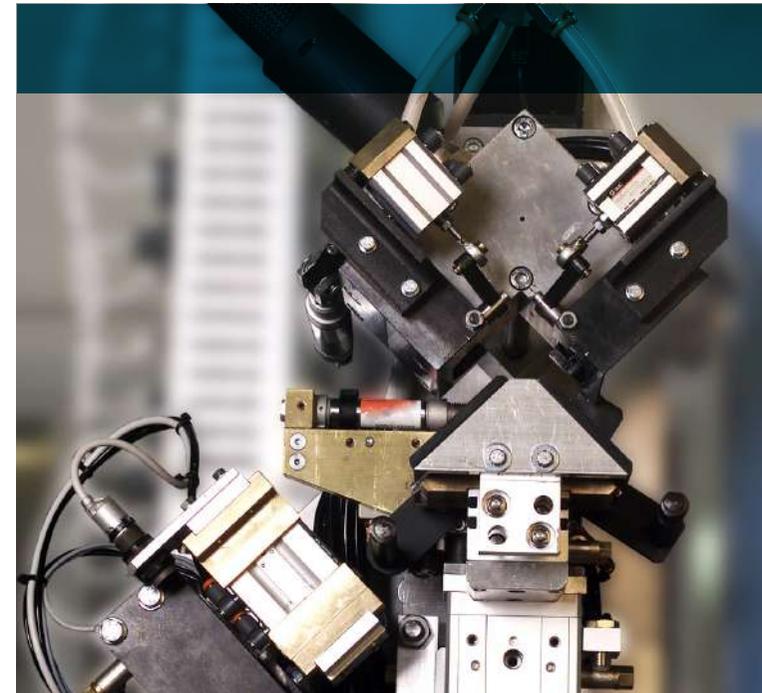


Art. DF - DESICCANT FILLER

The Spacer Processing range of Forel is completed by the Desiccant Filler Art. DF.

Consisting of a turret holding a frame-pressing vice, and two special drilling and filling heads, this solution can process frames of any form, whether rectangular or shaped.

Art. DF can also be fitted with an automatic frame loading/unloading system; in this way, the desiccant loader can be automatically fed and the butyl application unit can be topped up immediately afterwards.





SPACER PROCESSING RANGE

Family **INSULATING GLASS**
 Type **PROFILE BENDER / DESICCANT LOADER / MANUAL BUTYL APPLICATION UNIT**

Technical characteristics

Automatic Profile Bender, Art. PB	
Length (mm)	10,100
Height (mm)	2,770
Depth (mm)	2,950
Storage unit	12 places
Workable materials	aluminium, steel, plastic, synthetic/compound materials
Spacer thickness MIN - MAX (mm)	6 - 32
Desiccant Filler, Art. DF	
Spacer thickness MIN - MAX (mm)	6 - 32
Layer of butyl (kg)	2.5
Desiccant granulometry (mm)	0.5 - 0.8
Manual Butyl Application Unit, Art. MB	
Spacer thickness MIN - MAX (mm)	6 - 32
Layer of butyl (kg)	7.5

"RESIDENTIAL" INSULATING GLASS LINE



Family **INSULATING GLASS**
Category **RESIDENTIAL**

Technical characteristics

	IG04020ES	IG04025ES
MAX unit length (mm)	4,000	4,000
MAX unit height (mm)	2,000	2,500
MAX unit thickness	up to 65 mm	
MAX single pane thickness	from 3 to 25 mm	
MAX assembled unit weight	200 kg/linear metre	
Number of chambers	1 to 2 (triple glazing)	
Sealing products	1 to 2	

*Forel is constantly working to develop new solutions.
Some data in this leaflet may differ from the models available on the market.

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