GRAF Synergy, the perfect **machine for the perfect** window.

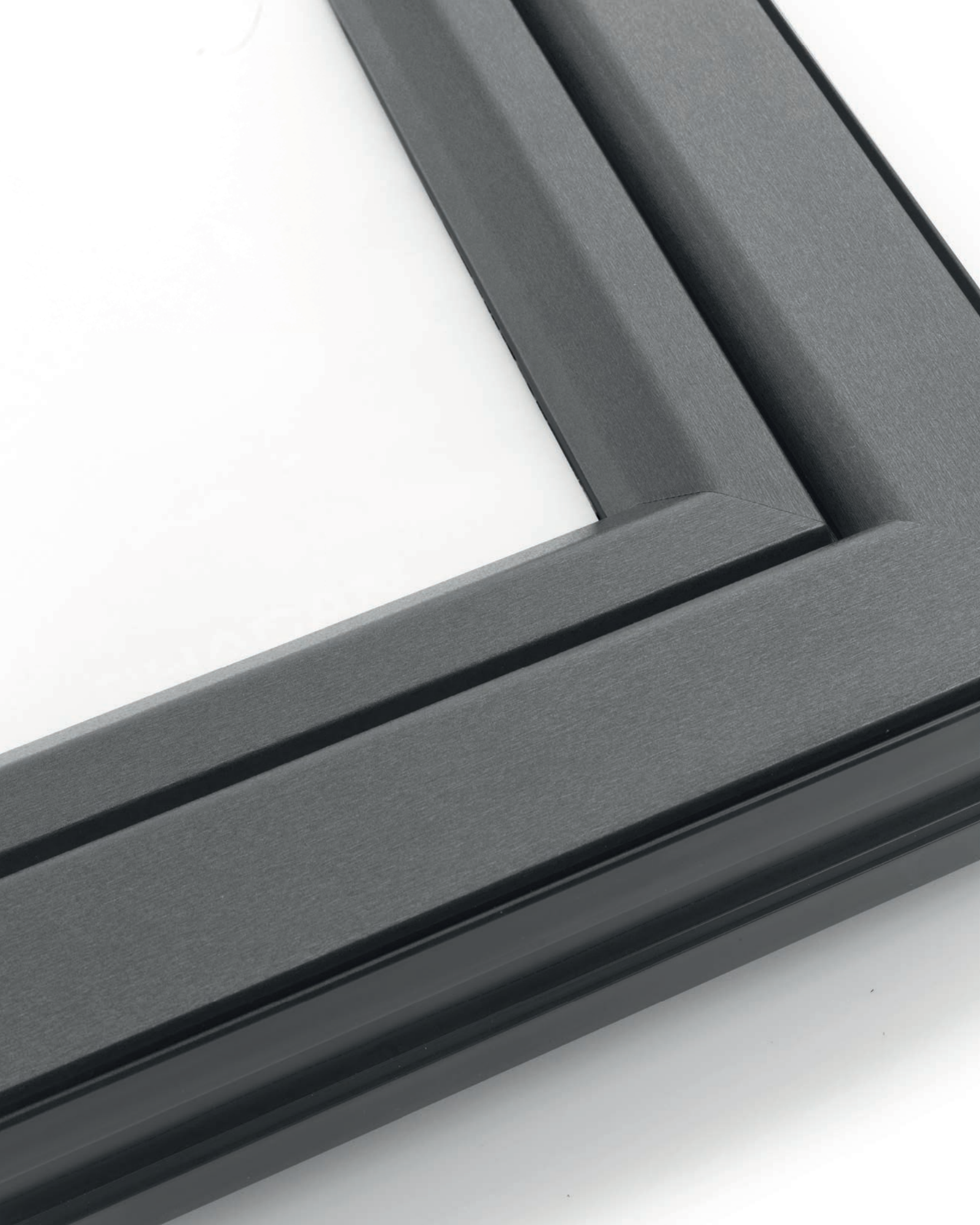
grafsynergy.com

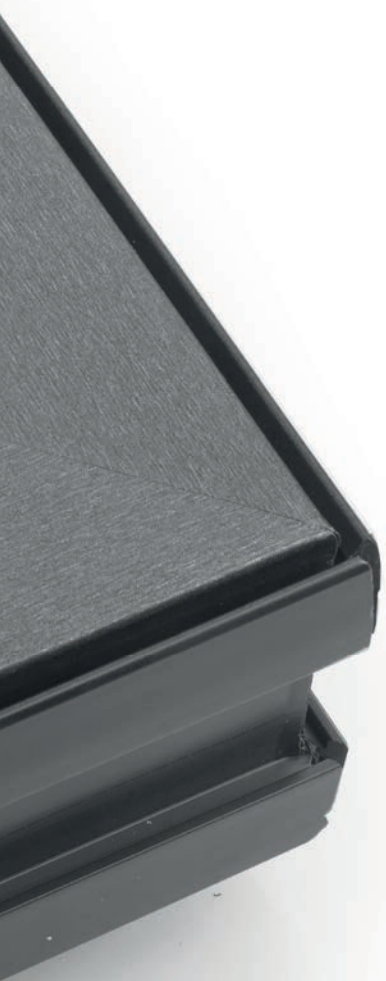
GRAF SYNERGY MACHINES FOR PERFECT WINDOWS


GRAF SYNERGY
MACHINES FOR PERFECT WINDOWS

PVC specialists and creators of **innovation.**

What we have been offering to window and window manufacturers around the world for over 30 years are not simply technologically advanced window and door machines: they are solutions that guarantee them an actual and demonstrable record both in terms of window performance and production efficiency.





This is where **V-Perfect** Technology began.

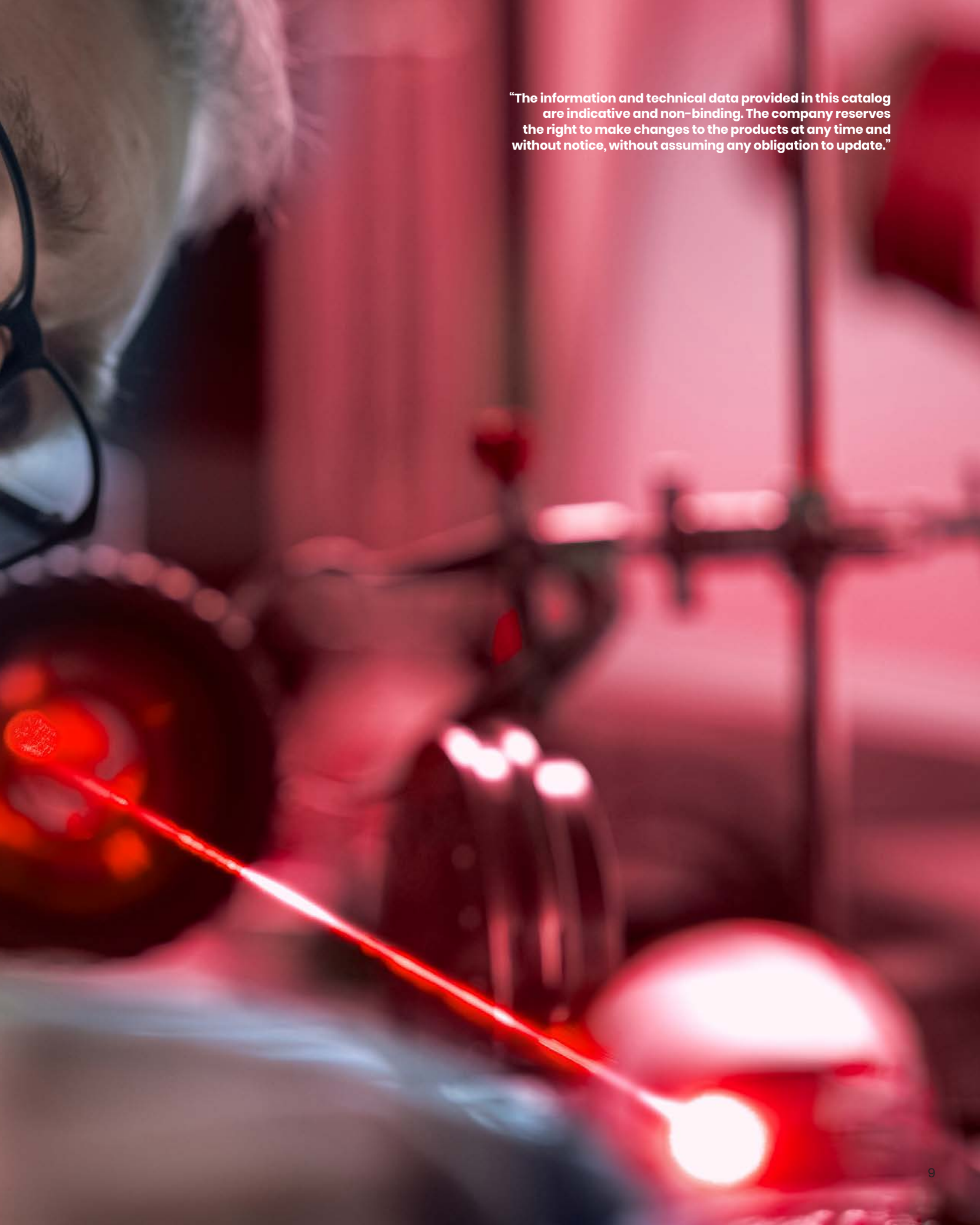
V-Perfect is the first and unique technology in the world that , completely removing from the corner the welding seam , enables manufacturing aesthetically perfect PVC windows.
A new standard that allows to reach all PVC potentialities and open the way to unlimited applications.

Thanks to a patented technology that makes a profiles junction perfectly aligned, removing all previous defectiveness , PVC window quality of corners finishing is as good as wooden or aluminum windows. An amazing result up to now unattainable with any other welding method and which inaugurates the technology of PVC windows to unlimited creative and architectural possibilities.

V-PERFECT®
TECHNOLOGY

Fast Forward Plant:
is the sum of technologies
that multiplies the value
of your company.

FAST
FORWARD
PLANT®



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FAB CUT V

Automatic Cutting and Machining Center

6-axis CNC cutting and machining center designed specifically for those who want to automate the production of the **Special Productions** Department.

An **automatic profile alignment system** is also installed on the system which, in the event that the bar is not perfectly straight, linearizes it allowing optimal workpiece processing.

Introduction

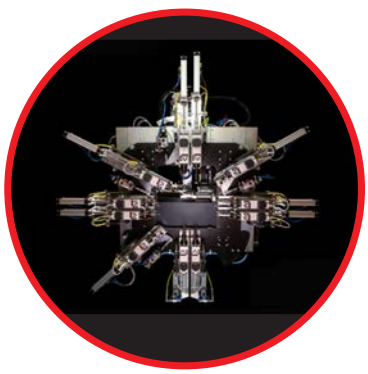
Maximum Versatility

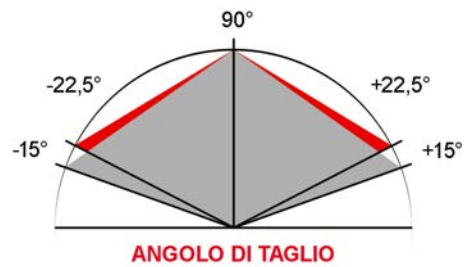
The system is composed of an automatic bar loading magazine which feeds, through a gripper pushed by a linear motor, a machining module capable of accommodating up to **12 spindles High Speed** (6 Standard) and a rising **1-blade cutting module** that guarantees cuts with extreme and intermediate angles.

5 reasons to choose Fab Cut V

Innovation and Automation

1. Specifically designed **to innovate and automate production in the Special Productions** Department.
2. It allows to obtain cuts **with extreme and intermediate angles.**
3. **High reliability and precision over time.**
4. **Automatic profile alignment:** linearizes the bar that is not perfectly straight allowing maximum precision.
5. **Production list management software:** allows the optimization of the number of bars to be used, the operator only has to loading and unloading the pieces.





ANGOLO DI TAGLIO

Fab Cut V is equipped with a modern production list management software that allows you to automatically import the cutting lists, allows the optimization of the number of bars to be used while keeping track of the machine's operation, and leaves the operator only the task of loading and unloading the material.

Specifications

Dimensions

Length	15.520 mm
Width	3.400 mm
Height	2.800 mm
Weight	3.600 Kg

Dimensions

Installed Power	14 Kw
Power Supply	400 V
Air Consumption	180 Nl/min
Operating Pressure	7 bar

Operating Features

Cutting Module

Structure
1 Blade Ø 550 with very high cutting precision over time of Pvc Profile also equipped with gasket.
Rising movement.
Rotation of the cutting angle by brushless motor and reading on the centesimal magnetic strip.

Machining
Cuts to -22,5° / +22,5°.

Machining Module

Structure
6 Spindles High Speed.

Machining
Machining, Handle holes / Cylinder holes, Slots for condensate drain, Hinge holes, Burglary for the Lock, Ventilation holes Closure Marking.

All other possible machinings required on Pvc profiles

Technical Features

Performance

Up to 150 Frames / 8h*
*Depending on processing and type of profile used.

Operators n. 1

Profile Automatically Loadable

Length	500 / 6.500 mm
Width	40 / 130 mm
Height	40 / 180 mm

Loading Module

Loading magazine with max of 10 bars.
Bar loading system with straps.
Bar gripping system using a 2-axis CNC gripper controlled by a prismatic guide linear motor with position reading on a centesimal magnetic strip.

Discharge Module

Unloading magazine with safety photocell.
Max capacity of unloading 15-20 pieces.
Automatic extractor of cut profiles on a motorized belt table.

Optional

Upon request the machine can be equipped with:

Configuration with **6 additional spindles**.
Retrieve Opt: the application allows you to re-insert the pieces to be machined again in the cutting lists following production errors, a new cutting list optimized for these.
Customized Solution for adapting the machine to profiles with particular shapes (post technical analysis).
Motorized unloading table with belts with output on the opposite side of the loading.
Exhauster with 2 bags.
Manual labeling machine.
Tool break sensors.

Available Variants

Preparation for c**utting and machining aluminum profiles.**

Labeling machine with automatic label applicator.
Fly Optimizer: automatic measurement system of the bar remains that allows you to optimize the production list again in order to reuse the production leftovers.
Stats: software for the analysis of production data which reports the timing of daily, weekly, monthly and annual operations.
Possibility of predisposition for automatic connection to one or two ASG-E screwing centers.
Chippings conveyor - Version 1.200 mm or 2.000 mm.
Soundproof booth.
Motorized degree divisor: allows **cutting angles from -15° to +15°.**

EMH 8

Automatic End Milling Machine

Automatic multi-cutter end milling machine designed to s**hape the ends of transom in PVC.**

Thanks to the precision of its mechanical adjustments, it is **possible to obtain the exact repetition of the quantity of material to be removed.**

Introduction

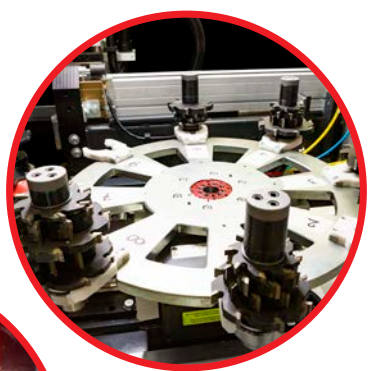
Speed and Saving Time and Cost

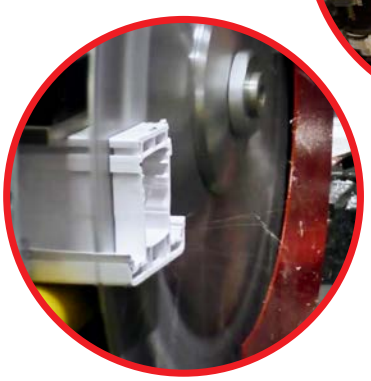
Progettata appositamente per essere inserita all'interno del Centro di Taglio e Lavoro **Fab Cut F1, consente di integrare in un unico sistema** tutte le lavorazioni in modo che l'impianto, così composto, realizzi **lavorazioni, taglio ed intestatura** in uno stesso passaggio garantendo così un'ottimale accuratezza ed un notevole **risparmio di tempo e costi.**

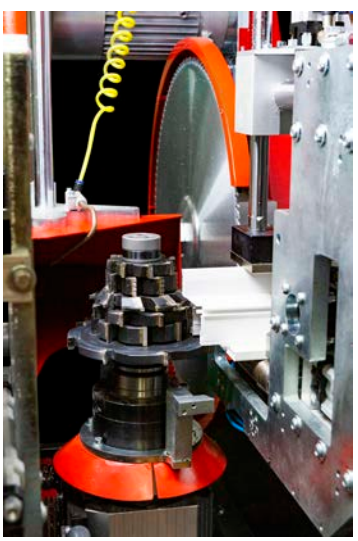
5 reasons to choose EMH 8

Innovation and Automation

1. **Integration of all the machinings on the transom in a single system.**
2. Significant **time and cost saving.**
3. **Quick change of cutters** with automatic coupling system type ISO30.
4. **Greater operational precision.**
5. **Double suction system.**







The plant, with **brushless motors**, is equipped with a warehouse that can contain up to **8 cutter groups** and a rapid tool change system with automated control.

In addition, to find a solution to the problem of chip collection, the EMH 8 trimming machine is made with an effective **double suction system** that follows the milling unit and allows greater cleaning of production residues.

Specifications

Dimensions

Length	1.200 mm
Width	1.000 mm
Height	2.200 mm
Weight	1.000 Kg

Dimensions

Installed Power	8 Kw
Power Supply	400 V
Air Consumption	400 Nl/min
Operating Pressure	7 bar

Operating Features

Composition

Structure
8 cutter groups.
Driven with brushless motors.

Machining
End milling of the ends of transom and mullion in PVC.
End milling threshold.
End milling profiles on sash of balcony door.

Technical Features

Performance

Depending on the machine connected.

Operators n. 1

Maximum Machining Profile Dimensions

Height	110 mm
Width	280 mm

Optional

Upon request the machine can be equipped with:

There are no optional elements.

STEEL CONNECT

Cutting centre for reinforcements

Blade cutting centre for **steel reinforcements** of PVC window profiles.

An intuitive and user-friendly machine, designed to **reduce lead times** and equipped with modern production **list management** software that allows **cutting lists to be automatically imported** and production synchronised when in line with GRAF Synergy cutting and machining centres.

The **CONNIE module** turns into a revolutionary cutting centre combined with a brand new **module for welding the metal blanks of internal reinforcements to PVC profiles**. It takes advantage of a totally innovative approach to **drastically reduce the waste** of metal blanks, otherwise destined for disposal and recovery as metal scrap. It offers window and door manufacturers concrete advantages, not previously possible, both from an environmental and economic sustainability point of view.

Presentation

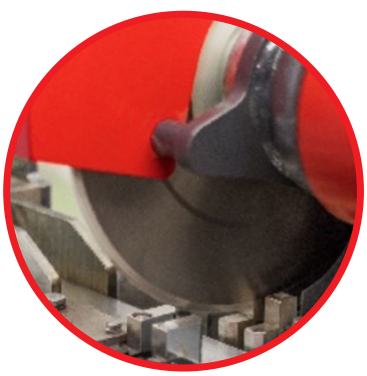
Optimises production lists

The application allows the optimisation of the number of bars to be used by means of the **Fly Optimizer** (optional), an innovative system for automatic measurement of bar remnants, which allows the production list to be re-optimised in order to be able to reuse waste.

5 reasons to choose Steel Connect

Cutting-edge technology

1. **Reduces lead times:** makes reinforcement cutting efficient.
2. It allows operation **in synchrony with the cutting of PVC profiles.**
3. **It automatically optimises the cut.**
4. **Electronic blade wear control.**
5. **Electronic control of cutting speed** for consistent cutting and longer blade life



The Steel Connect is equipped with an automatic bar loading magazine with a **rack pusher** that feeds a cutting module with a descending blade.

Thanks to the **possibility of aligning finished parts on both sides of the unloading table**, it is possible to configure the ejection of aligned parts at the beginning or at the end of the unloading according to production flow requirements (optional).

Specifications

Dimensions

Length	14.900 mm
Width	3.400 mm
Height	2.800 mm
Weight	2.500 Kg

Details

Power installed	10 Kw
Power	400 V
Air consumption	200 Nl/min
Min. Exercise Pressure	7 bar

Operational Characteristics

Cutting Module

Structure
1 Blade Ø 350 mm.
Downward movement at a constant, controlled speed.

Machining
Cut at 90°.

Technical Characteristics

Performance

Up to 1800 cut/ 8h*
*Dependent on the section and type of metal to be cut and the machine configuration.

Operators n. 1

Automatically Loadable Profile Dimensions

Length	700 / 6.000 mm

Workable Profile Dimensions

Max Length	80 mm
Min Width	20 mm
Max Height	60 mm
Min Height	20 mm

Loading Module

Loading magazine with a maximum capacity of 10 bars.
Bar loading system by means of chains.

Profile pusher driven by brushless motor and rack.

Unloading Module

Pneumatic cut piece extractor on unloading table..
Steel unloading table with safety photocell..

Max. unloading capacity 10 pieces.

Optional

AOn request, the machine can be equipped with:

Possibility of **lengthening the distance between cutting and unloading** to reduce the waiting time between one cut piece and the next, increasing productivity.

Increased automatic unloading table - width 5,000 mm.

Labelling machine for cut piece identification

Electronic axis-controlled **cutting speed control.**

Fly Optimizer to optimise bar recovery.

Soundproof cabins.

FAB CUT 3BS – V2

Cutting and Machining Center

CNC controlled 12-axis cutting and machining center dedicated to manufacturers requiring **very high levels of productivity** (up to **250 windows/8h** at one window door*).

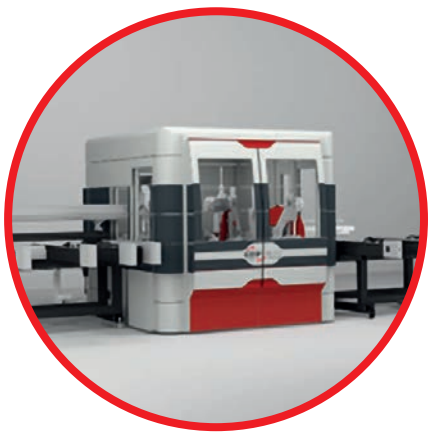
The system is composed of an automatic bar load magazine that feeds, through a CNC gripper, a machining module capable to host **11 spindles** High Speed in its standard configuration, **divided into 2 modules with independent movement** according to the x axis and **a cutting module** with **3 independent and synchronized blades.**

* Depending on the types of profiles, weld bead and operator loading speed.

Introduction

Productivity and Precision

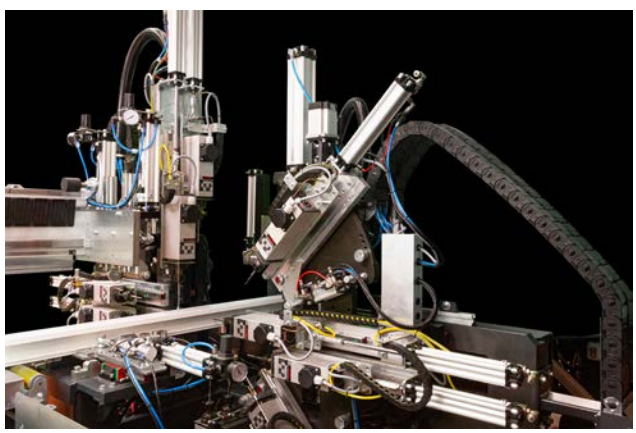
Maximum expression of mechanical and technological innovation, it allows ti perform **machining and cutting of extremely high precision and speed**, while maintaining reliability and efficiency unchanged over time.



5 reasons to choose Fab Cut 3BS – V2

Advanced Solutions

1. **Very High Execution Speed:** 2 independent machinings modules with 11 High Speed spindles and a cutting module with 3 independent & synchronized blades.
2. **Very high adaptability** to profiles with sections of particular sizes.
3. **Optimize Production Lists**: fewer bars used thanks to Graf Synergy software.
4. **Maximum Precision Over Time**: Automatic Profile Alignment System (it linearizes the bar that is not perfectly straight) and CNC Profile gripper with reading of the real position by centesimal magnetic strip.
5. **User Friendly Technology:** intuitive system for simple management of work cycles.



Fab Cut 3BS – V2 is equipped with a modern **production list management software** that allows you to automatically import the cutting lists, allows the optimization of the number of bars to be used while keeping track of the machine's operation.
An **automatic profile alignment system** is installed on the system which, in the event that the bar is not perfectly straight, linearizes it allowing maximum precision in the optimal workpiece processing.

Specifications

Dimensions

Length	15.250 mm
Width	3.400 mm
Height	2.800 mm
Weight	4.500 Kg

Details

Installed Power	22 Kw
Power Supply	400 V
Air Consumption	180 Nl/min
Operating Pressure	7 bar

Operating Features

Cutting Module

Structure
3 Blades Ø 550 with very high cutting precision over time also equipped with gasket.
Horizontal movement.

Machining
Cuts -45° / 90° / +45°.

Machining Module

Structure
11 Spindles High Speed on doily divided into 2 parts by independent movement according to the x axis.

Machining
Handle holes / Cylinder holes, Slots for condensate drain, Hinge holes, Burglary for the Lock, Ventilation holes, Closure Marking.
All other possible machinings required on PVC profiles

Technical Features

Performance

Up to a 250 Frames / 8h*
*Depending on the types of profiles, weld bead and operator loading speed.

Operators n. 1

Profile Automatically Loadable

Lenght	500 / 6.500 mm
Width	40 / 130 mm
Height	40 / 180 mm

Loading Module

Loading warehouse with max of 8 bars.
Automatic bar loading system with straps.
Profile gripping system by means of 2 controlled axis driven by linear motor with prismatic guides with real position reading via centesimal magnetic strip.

Discharge Module

Automatic extractor of cut profiles on a controlled axis.
Straps unloading table with safety photocell.
Max capacity of unloading 12 pieces.

Optional

Upon request the machine can be equipped with:

Configuration with **1 additional spindle.**
Opt. Recover: it allows you to re-insert the pieces to be machined again following production errors, a new cutting list optimized for these.
Stats: software for the analysis of data production (weekly, monthly and annual operations report).
Motorized unloading table with belts with output on the side opposite the load.
Vacuum cleaner with 2 bags.
Manual labeling machine.
Labeling machine with automatic label applicator.
Tool break Laser.
Fly Optimizer: automatic measurement system of rest bar (allows you to optimize the production list again in order to reuse production leftovers).
Customized solution for adapting the machine to profiles with particular shapes (it require technical analysis).
Possibility of **predisposition for automatic connection** to 1 or 2 ASG-E tightening centers.
Chip conveyor - Version 1.000 mm or 2.000 mm.
Customized soundproof booth.
Single or double laser for marking profiles.

ESU Efficient Screwdriving Unit

Reinforcement Screwing Station

A machine dedicated to the fastening of reinforcements by screwing, which fits into the workpiece processing stages on the dynamic table. It is a CNC system with a fastening module that accommodates up to **4 screwing units with automatic screw feeding,** and operates on PVC profiles with the metal reinforcement already inserted.

The machine defines a fundamental processing step in **line with** a GRAF Synergy **Cutting and Machining Centre.**

Presentation

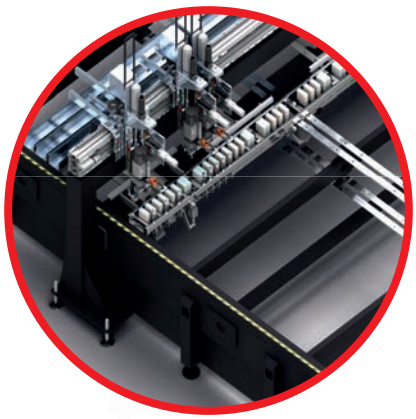
Speed and Speed and Cycle Time Reduction

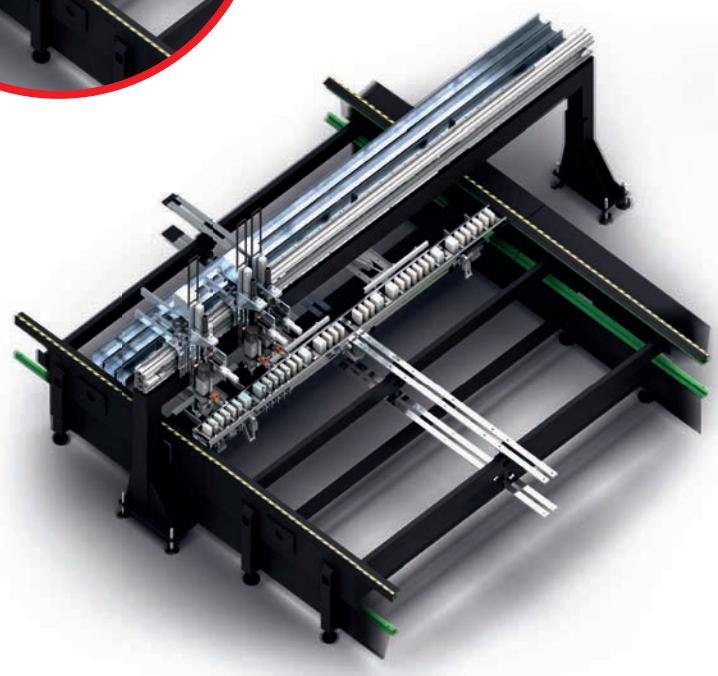
The zero-time screwing process is performed directly during the profile workflow on the dynamic table. The screwing of the reinforcements is carried out automatically and extremely precisely and accurately.

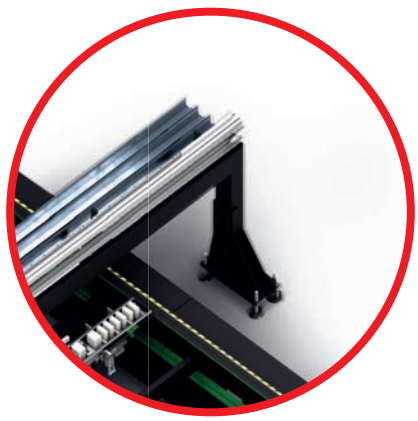
5 reasons to choose ESU

Innovate and Automate

1. **Extreme speed of execution:** enables high levels of productivity
2. **Extremely precise machining:** works on PVC profiles with the metal reinforcement already inserted.
3. **Control of all screwing parameters:** screw position, screw depth, torque and speed.
4. **Brushless electric screwdrivers:** speed, precision, silence and low energy consumption.
5. **High level of automation:** reduces workload as operator intervention is limited to filling the screw feeder.







Designed to ensure the best operation on the market and significantly reduce energy consumption, it is equipped with several **state-of-the-art solutions** such as silent screwdrivers that, being able to work alternately or simultaneously, **optimise activity according to the number of screws** to be inserted, and speed up the cycle time of each workpiece.

The ESU is equipped with modern **software that manages the system in the best possible way**, allowing precise control of every screwing parameter, such as position, screw depth, torque and speed, leaving the operator with only the task of replenishing the screw feeder.

Specifications

Dimensions

Length	4.500 mm
Width	1.800 mm
Heigth	2.700 mm
Weight	2.500 Kg

Details

Power installed	6 Kw
Power supply	400 V
Air consumption	200 Nl/min
Min. Exercise pressure	7 bar

Operational Characteristics

Work module

Structure
Carpentry bridge and the possibility of inserting up to 4 vertical screwdrivers driven by brushless electric motors.
Automatic software-controlled longitudinal movement according to X axis.
Software-controlled automatic transverse positioning of screwdrivers on Y-axis.

Preps
Screwing reinforcements.

Technical Characteristics

Operators only for supplying screws

Module of load and unloading

In combination with dynamic table.

Cuttable Profile Dimensions

Length	350 / 4.000 mm
Width	40 / 130 mm
Height	40 / 120 mm

Optional

Additional loaders for various screw sizes
4 screwdriving units

EDU Efficient Drilling Unit

Drilling Station

Dedicated machine for perimeter fastening drilling that fits into the workpiece processing stages on the dynamic table. It is a CNC system with a module that accommodates up to **3 drilling units** and operates on PVC profiles with the reinforcement already inserted.
It can possibly be used for transverse clamping drilling.

The machine defines a machining step **in line with** a GRAF Synergy **Cutting and Machining Centre.**

Presentation

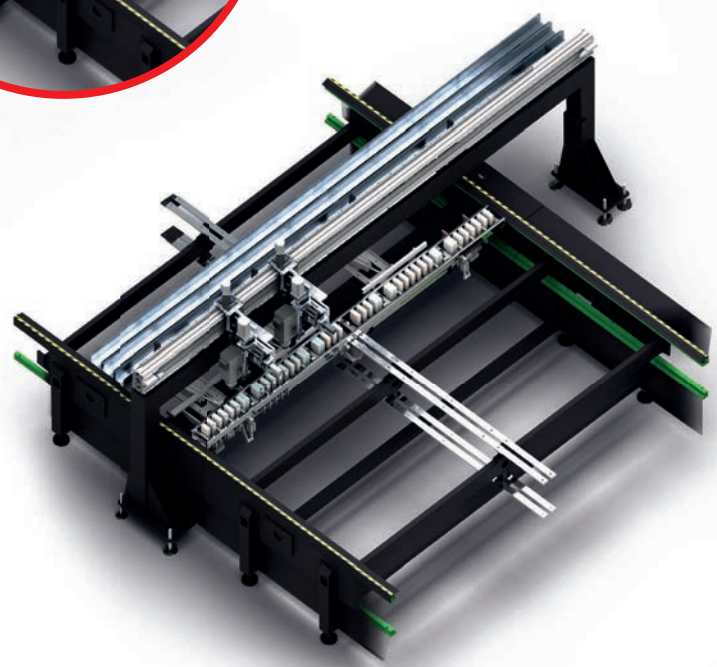
Speed and Labour Savings

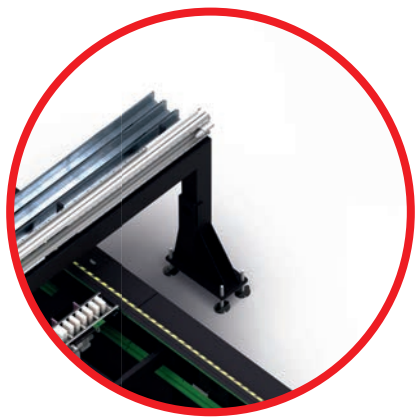
The zero-time drilling process is performed directly during the profile workflow on the dynamic table. The operation is carried out automatically and is extremely precise and accurate.

5 reasons to choose EDU

Innovate and Automate

1. **Extreme speed of execution:** enables high levels of productivity.
2. **Extremely precise machining:** works on PVC profiles with the reinforcement already inserted.
3. **Control of all drilling parameters:** position, depth and feed speed.
4. **Flexibility in machining:** can be used for drilling cross-fixing.
5. **High level of automation:** reduces workload as no operator intervention is required.





Designed to ensure the best operation on the market, it is equipped with **several state-of-the-art solutions** to drill up to 3 holes simultaneously or alternately. **It optimises the activity** and speeds up the cycle time of each part.

The EDU is equipped with **modern software that manages the system**, allowing precise control of every drilling parameter such as position, depth, and feed speed.

Specifications

Dimensions

Length	4.500 mm
Width	1.800 mm
Heigth	2.700 mm
Weight	2.500 Kg

Details

Power installed	9 Kw
Power supply	400 V
Air consumption	200 Nl/min
Min. Exercise pressure	7 bar

Operational Characteristics

Work module

Structure
Carpentry bridge with up to 3 vertical drilling units.
Automatic software-controlled longitudinal movement in X axis.
Software-controlled automatic transverse positioning of drilling units on Y-axis.

Structure
Perimeter fixing hole.
(Possibility of crossbar fixing holes).

Technical Characteristics

Structure n. 0

Module of load and unloading

In combination with dynamic table.

Cuttable Profile Dimensions

Length	350 / 4.000 mm
Width	40 / 130 mm
Height	40 / 120 mm

SL4FF EVO

CNC 4-Head Welding Machine

The first and only 4-head CNC welding machine in the world that **completely eliminates the welding bead from the corner** and allows you to weld profiles with **glass or a closing panel already inserted** inside the switchboard.

Unique machine of its kind, it performs perfect welding guaranteeing absolutely flat and homogeneous surfaces **also with profiles that**, instead of the metal reinforcement, have inside them **non-weldable products such as fiberglass, aluminium or other components.**

Introduction

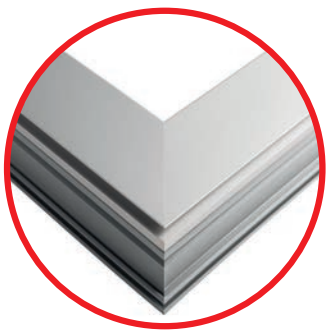
V-Perfect: The Perfect Weld

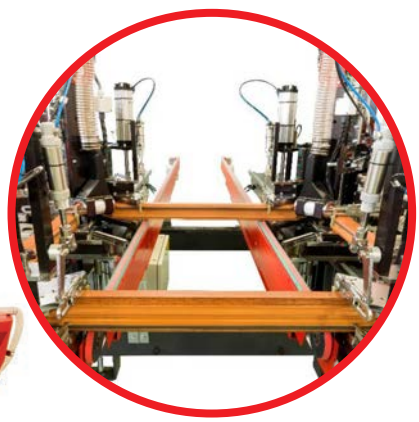
The basis of the project is the **V-Perfect technology**, a patent that allows you to work **painted or coated** PVC profiles with films but also to combine them with **acrylic coatings** or real materials such as l**aminates in wood or aluminum** and **without having to touch up with the marker anymore.**

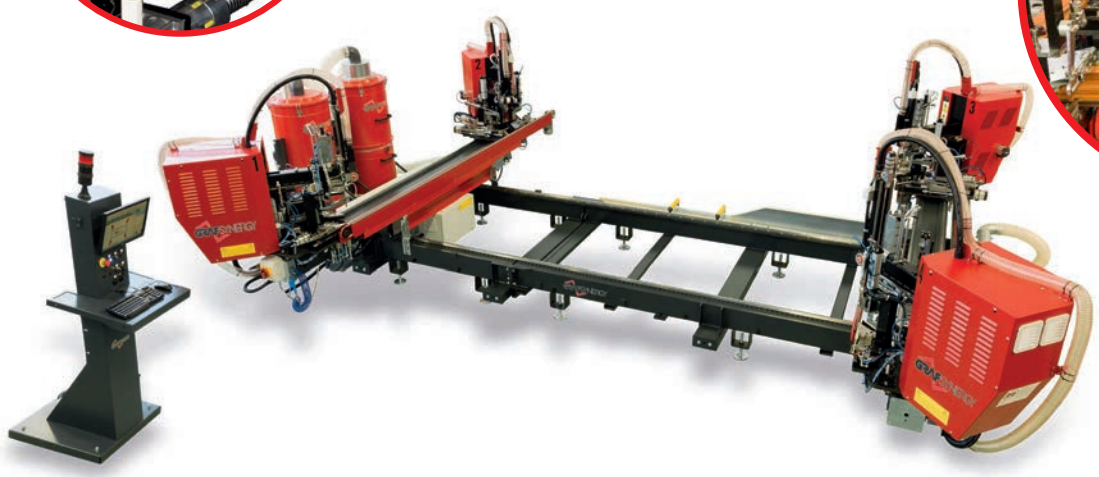
5 reasons to choose SL4FF EVO

Every Material / Every Coating

1. **Allows to weld** profiles coated with any type of film or foil.
2. **Time and cost reduction:** after welding, there is no need to clean or touch up.
3. **Labor Reduction:** not having to finish the corners, only 1 operator is required to load the profiles.
4. **Space Saving:** extremely compact machine (starting from just 25 m² - for special machining).
5. **Helps to solve the problem of profile tolerances:** it has a special automatic calibration system that allows you to compensate the profiles tolerances.







All the necessary operations are therefore carried out automatically, **milling** with the High Speed system, **positioning** at the operating levels, **cyclical casting, compression** and **cooling** and, at the end of the process, release the finished profiles.

The SL4FF EVO is also equipped with a **positioning system of the upper counter-shape** with magnetic locking as well as the possibility to automatically adjust the burn (5÷6 mm) and to **compensate for the errors of the cutting angles**, horizontal and vertical, within 2 mm tolerance and automatically correct machining cycles in profile height up to 0.5 mm.

Specifications

Dimensions

Length	7.000-9.500 mm
Width	6.000-7.000 mm
Height	2.400 mm
Weight*	from 3.000 to 5.000 Kg

*Depending on the size required.

Details

Installed Power	17 kW
Power Supply	400 V
Air Consumption	600 Nl/min
Operating Pressure	7 bar

Operating Features

Composition

Structure
4 heads Quad.

Operators n. 1

Machining
Horizontal and contemporary welding of the 4 corners.
Gasket worked directly during the welding cycle.

Technical Features

Performance

Up to 1 frame / 90-150 sec.*
*Depending on the types of profiles, weld bead and loading speed.

Dimension Welding Corner

Maximum*	3.200 mm
Minimum	300x330 mm

* On request up to 6,000 mm

Dimension Welding Profile

Height*	35 ÷ 130 mm
Width*	40 ÷ 130 mm

* Out-of-limit dimensions subject to technical verification

Optional

Upon request the machine can be equipped with:

Mobile unloading belts with lateral movement.
C-Welding.
3-sided door framing welding U (including C-welding).
Production data monitoring: control of all the data of the welded elements deriving from the optimization and manual production over time (change time of the countershims, monitoring of the working time, monitoring of the time for unloading from the cooling table).

Electronic control system of countershims.
Exhauster.
Machine version according to UL/CSA.
Software for converting imported data files.
Welding **option maximum height 180 mm.**
Cooling table.
Different configurations for welding of different size from standard machine (3,200 x 2,800 mm).
RS – Rapid Speed option.

Available Versions

Diagonal: version for welding 4 angles with crosspiece already assembled.

SL6FF TR

Welding Machine at 6 Head CNC

The first and only 6 CNC head welding machine in the world that **completely eliminates the welding curb from the corner** allowing you to obtain PVC windows with uniform quality and superior aesthetics.
Natural evolution of the 4-head SL4-FF Evo, thanks to the 2 extra heads allows to weld simultaneously the 4 corners of a PVC framework **complete with 1 transom** (front welding) without the need for cleaning (Patented Seamless Welding) or subsequent retouching.

Unique machine of its kind, it performs perfect joints guaranteeing absolutely flat and homogeneous surfaces **also with profiles** that, instead of reinforcing metal, **have inside them non-weldable products such as fiberglass, aluminium or resin**. It is also possible to weld the thresholds.

Introduction

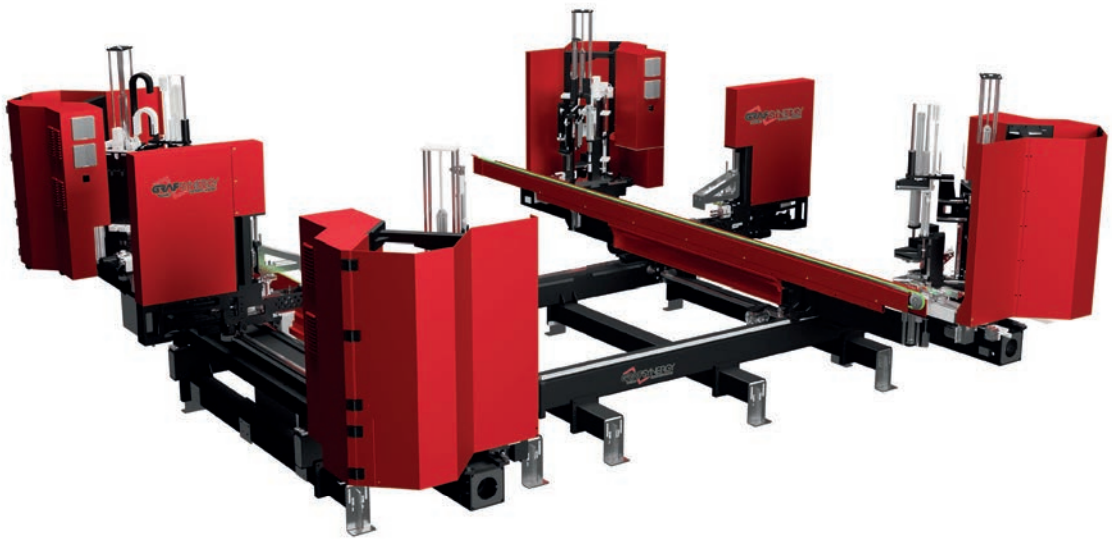
V-Perfect: The Perfect Weld

The basis of the project is the **V-Perfect technology**, a patent that allows you to work painted or coated PVC profiles with films but also to combine them with **acrylic coatings** or real materials such as **laminates in wood or aluminum and without having to touch up with the marker anymore.**

5 reasons to choose SL6FF TR

Every Material / Every Coating

1. **Reduction of time and space:** in a single cycle it welds simultaneously the 4 angles at 45° and 1 transom in 90° mode.
2. **Cost reduction:** after welding, there is no need to clean or touch up and therefore neither the cleaner nor the turntable is needed.
3. **Labor reduction:** not having to finish the corners, only 1 operator is required to load the profiles.
4. Allows to weld profiles coated with any type of film or foil.
5. **Helps to solve the problem of profile tolerances:** due to the special automatic calibration system.



Plant designed and built to automate a manual process, the SL6FF TR ensures **significant labor savings:** those who have hitherto welded the switchboard and then mechanically fix the transom, thanks to it, **can mechanize the process** by creating a single cycle both the welding of the 4 angles at 45° and that of 1 transom in 90° mode.

Specifications

Dimensions

Length	7.000-9.500 mm
Width	6.000-7.000 mm
Height	2.200 mm
Weight*	5.500-8000 Kg

*Depending on the size of the machine, which is determined by the maxi-mum weldable frame

Details

Power	20 Kw
Power supply	400 V
Air Consumption per cy-cle	800 Nl/min
Operating Pressure	7 bar

Operating Features

Composition

Structure
6 Heads Quad.

Operators n. 1

Machining
Contemporary welding of the 4 corners with 1 transom.
C-welding.
Gasket worked directly during the welding cycle.
Threshold welding.

Technical Features

Performance

Up to 1 square / 140 seconds*
*Depends on type of profiles, gaskets, shape and welding seam.

Weldable Profiles Dimensions

Maximum	4.000 x 6.000 mm
Minimum*	350 x 435 mm

* Depending on the profiles used.

Weldable Sash/Frame Dimensions

Height	35 ÷ 180 mm
Width	40 ÷ 130 mm

Weldable Transoms Dimensions

Height	60 ÷ 100 mm
Width	50 ÷ 120 mm

Optional

Upon request the machine can be equipped with:

Increased cooling table for sizes 3628, 4028, 4528, 5028.
RS – Rapid Speed Option.
Possibility to process “dormant large” profiles for the French market.
TAG Option on countershims.

Additional welding heads.
It is possible to add 2 heads to weld 2 Transoms

ASW All Sash Work

Hinge assembly table and milling machine for door rebate exchange angles

Automatic bench with **drilling** unit, hinge **assembly**, also "**anuba**" model for the French market, and **2-head milling machine** for sash r**ebate exchange** angles, or **combined frames** depending on options.

Designed to **automatically** drill the preparation holes for hinge insertion and subsequent assembly by screwing. In addition, the machine is equipped with 2 units for **milling the surplus material formed in the 2 outer angles** following the welding of the 3 profile-sashes together with the reduced-profile-sash.

Presentation

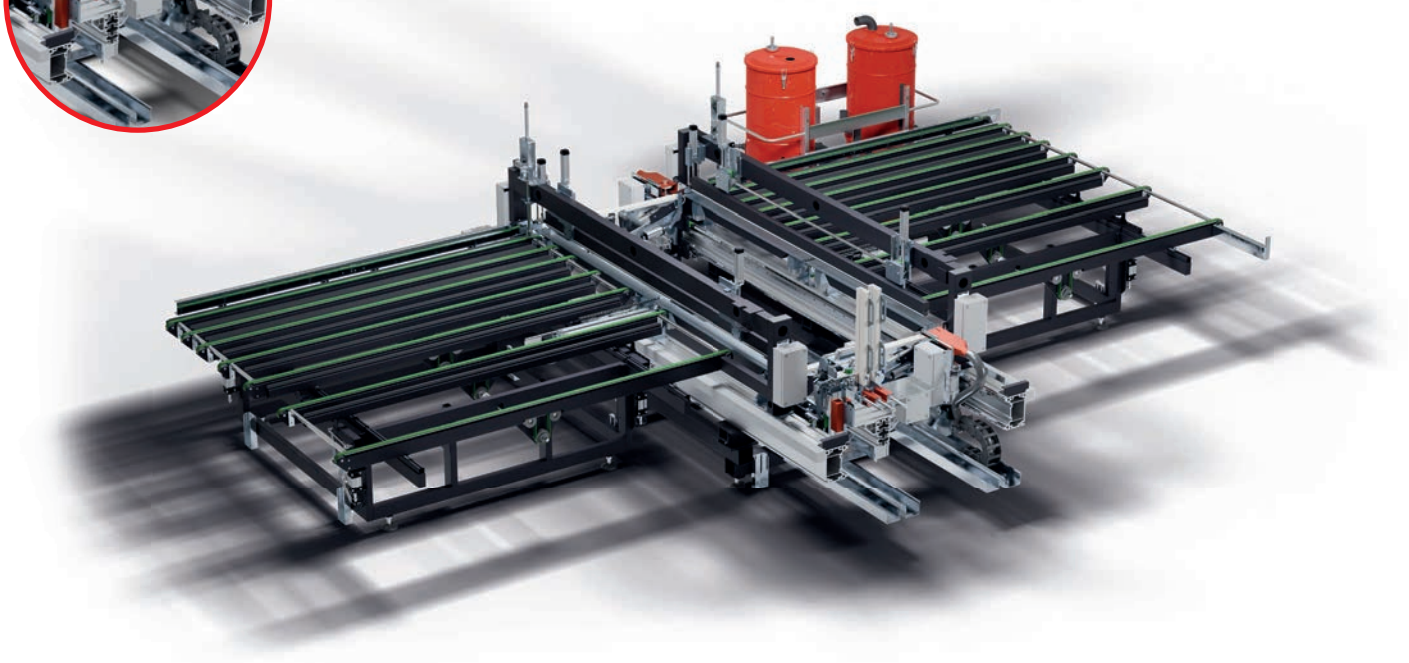
Integrates 2 machining operations with maximum precision

Equipped with a solid steel structure and a large work table with transport belts covered with scratch-resistant material, ASW is the ideal solution when **maximum machining precision is required, operating on the entire sash**, after the profiles have been welded. It also offers the automated handling of **2 processes on the same table**: drilling and assembly.

Why choose ASW

Integrated automation

The table provides, by means of pneumatic jaws with **secure and precise clamping**, the gripping, centring and machining of the workpiece; the **movement** of the sash between one machining operation and the next is fully **automated**; drilling for hinges with sash or vasistas type opening, **drilling and insertion of anuba** type hinges, and milling are carried out on the basis of the **automatic measurement of the reference plane**, allowing **precise assembly and machining operations, repeated on all profiles.**



The ASW is particularly suitable for positioning between the SL4-FF EVO welding machine and the FAZ hardware assembly bench, so that with **only 3 machines, finished sashes** can be produced ready for frame assembly.

Specifications

Dimensions

Length	7.600 mm
Width	5.400 mm
Height	2.100 mm
Weight	3.500 Kg

Details

Power installed	8 Kw
Power supply	400 V
Air consumption	500 Nl/min
Min. Exercise Pressure	8 bar

Operational Characteristics

Details

Structure
1 assembly unit and double milling unit.

Machining
Drilling, assembly, milling

Operators n. 1 (for hinge/anuba load)

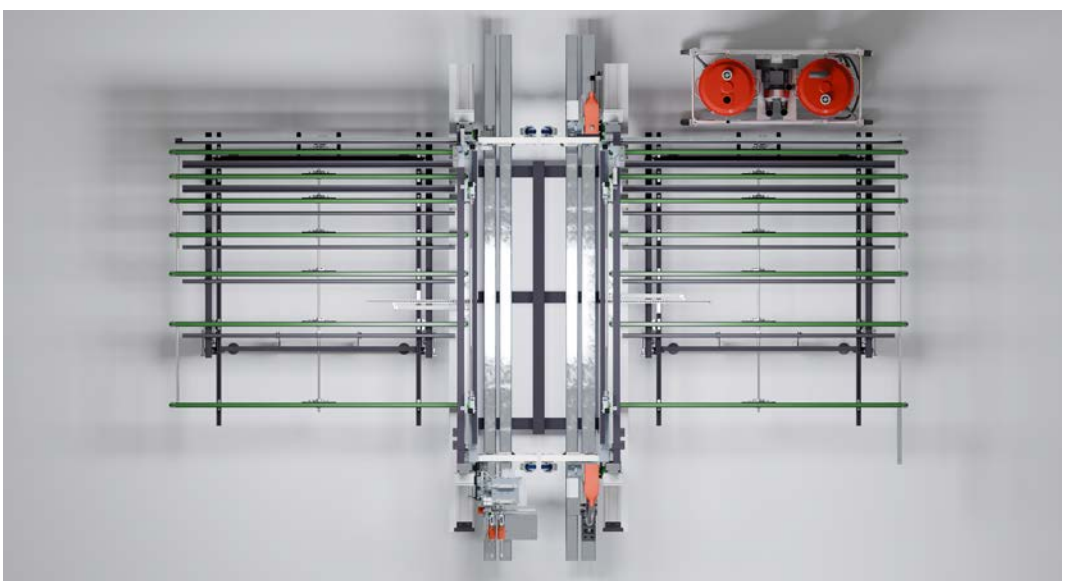
Technical Characteristics

Performances

Automated operation.

Workable Square Dimensions

Maximum	2.800 x 1.600 mm
Minimum	400 x 400 mm



FAZ IV

Hardware Assembly Bench

Bench designed and built **for automated assembly and screwing of hardware on PVC window sashes.**

Presentation

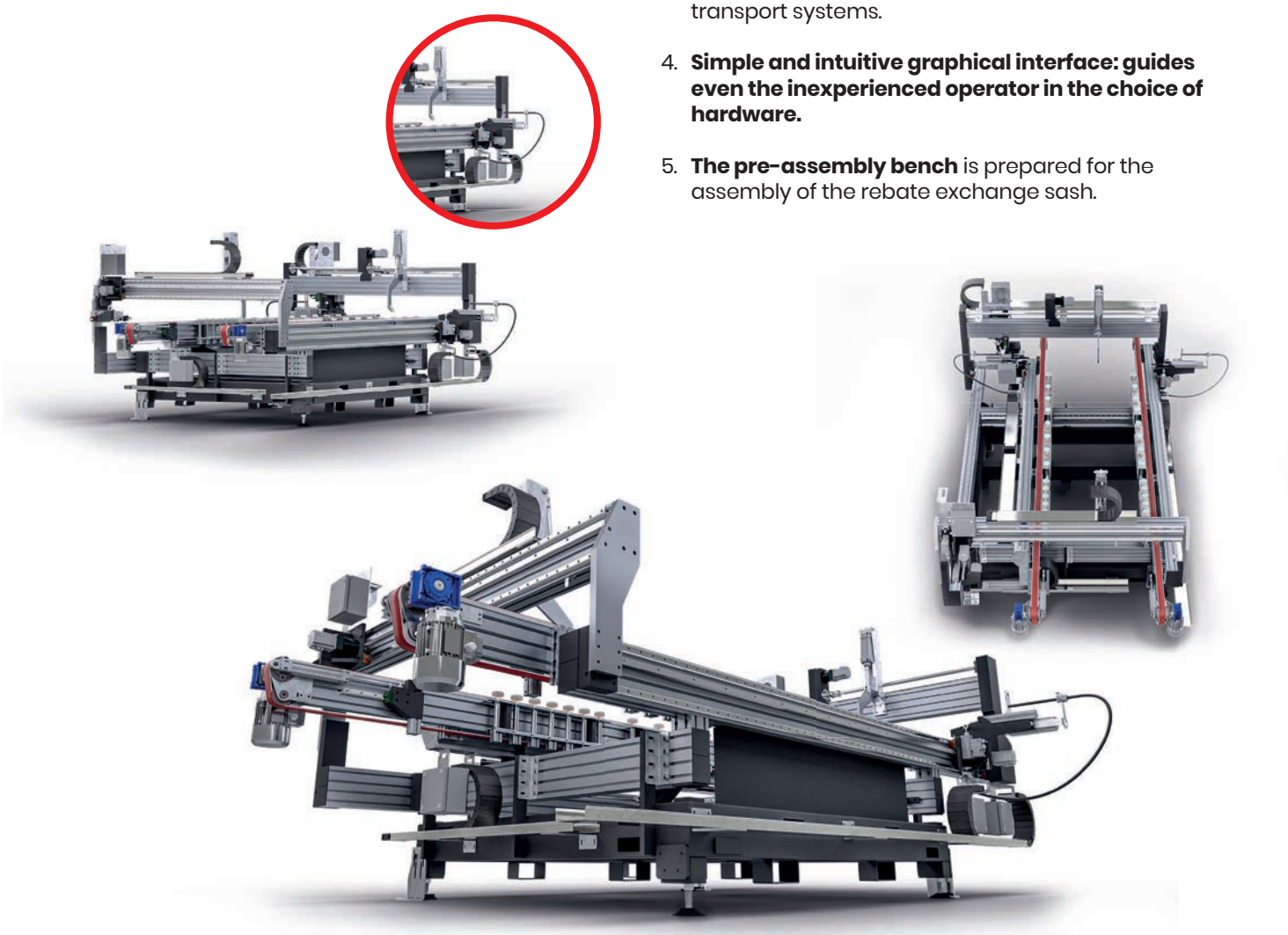
Speed and Cost Savings

Prepared to **be inserted within an automated production** line, it consists of **2 or 3 stations:** the **preparation tables** that show the elements to be assembled and indicate the compartment in which they are located; the **automatic screwing table** where, thanks to a **gantry with 4 screwers**, the hardware is fixed **on all four sides of the sash.**

5 reasons to choose Faz IV

Innovate and Automate

1. Very high **execution speed:** production of a finished sash about every 50 seconds.
2. **Non stop production:** while the hardware components are screwed in, the next frame can already be pre-assembled.
3. **Possibility of in-line insertion** thanks to automated transport systems.
4. **Simple and intuitive graphical interface: guides even the inexperienced operator in the choice of hardware.**
5. **The pre-assembly bench** is prepared for the assembly of the rebate exchange sash.



Once the hardware has been cut and positioned, **the pre-assembled frame is automatically transported to the screwing station** and the operator **can simultaneously begin pre-assembly of the next sash.**

The system can **automatically manage 2 or more different types of screws**, selecting the corresponding one according to the type of hardware, and is equipped with an automatic screw depth regulator.

Specifications

Dimensions standard pre-assembly bench + screwing portal

Length	7.950 mm
Width	3.000 mm
Height	2.510 mm
Weight	6.000 Kg

Additional bench dimensions

Length	3.000 mm
Width	2.000 mm
Height	2.510 mm
Weight	1.580 Kg

Details

Power installed	9 Kw
Power	400 V
Air consumption	500 Nl/min
Min. exercise pressure	7 bar

Operational Characteristics

Preparation Bench

Structure
One or two benches for hardware insertion.

Machining
Positioning and cutting hardware.

Screwing Table

Structure
4 High Speed screwdrivers with automatic screwing depth regulator and automatic screw selection..

Machining
Screwing.

Technical Characteristics

Performance

Up to 50 sec per sash*.
*Depends on profile type, dimensions and hardware used.

Operators n. 1 or 2

Automatic Workable Door Dimensions

Maximum	2.700 x 1.500 mm
Minimum	350 x 350 mm

Workable Profile Length

Maximum	130 mm
Minimum	50 mm

Optional

On request, the system can be equipped with:

Hardware programming in accordance with window types.

Clamping unit for stulp assembly on hardware preparation table

Variant **for the use of screws with different sizes and special dimensions.**

Possibility of a horizontal exit station or with automatic verticalisation.

001TN

Verticalisation Bench

Totally automatic verticalisation bench which **can be positioned both immediately after welding and to arrange the components vertically** in the lines in any structure, motorised or not.

Introduction

Eliminates operator fatigue

Constructed entirely of powder-coated welded tubular section steel, it features a **contact surface composed of honeycomb polyurethane belts with a hot-welded guide profile below it, as well as dedicated diagonal brushes** to prevent any blockage during movement of the frame.

The plus of Verticalisation Bench

The plus of Verticalisation Bench

1. **High level of flexibility.**
2. **Easy movement** of window fixtures.
3. **Reduced cycle time** for supplied machines.
4. **Layout customisation.**
5. **Ideal for** lines with restricted space.

Ideal for connecting non-parallel lines, the verticalisation bench is driven by brushless motors or a pneumatic system which **allow tilting of 0-80°**; the base is equipped with a **horizontal conveyor belt with inverter** which transfers the components quickly and precisely to the deposit rack, even at different speeds.

Specifications

Dimensions

Length	3.500 mm
Width	3.400 mm
Height	1.000 mm
Weight	1.600 Kg

Details

Installed Power	1,5 Kw
Power Supply	400 V
Air Consumption	250 Nl/min
Operating Pressure	7 bar

Operating Features

Composition

Structure
Contact surface composed of polyurethane belts and diagonal brushes.
Horizontal conveyor belt with inverter.
Vertical belts.
Vertical rollers at the sides of the rack.
Floating bed of idle wheels/brushes.

Machining
Frames transfer.

Operators n. 1

Technical Features

Performance

Depending on the system to which it is connected.

Workable Frame Dimensions

Length	2.800 mm
Width	1.400 mm
Height	130 mm

Optional

Upon request the machine can be equipped with:

Option for **Verticalisation at 98°.**

Available Variants

Version for **Useful Frame** 2.800 x 3.200 mm (Vers. 001TN32).
Version for **Useful Frame** 4.000 x 3.200 mm (Vers. 001TN34).
Version for **Useful Frame** 2.800 x 4.000 mm (Vers. 001TN40).
Version for **Useful Frame** 2.800 x 5.000 mm (Vers. 001TN50).
Version for **Useful Frame** 2.800 x 6.000 mm (Vers. 001TN60).

004NV

Motorised Vertical Shuttle

Shuttle driven independently via a **brushless** motor which drives a chain and sprocket transmission system and permits **high transfer speeds** (up to 2 m/sec.).

Equipped with a **fixed vertical structure inclined by 8°** from the vertical to provide a stable support for the components, it is designed to move frames and leaves (single or coupled) via **four high-capacity idle wheels which run on dedicated tracks** fastened to the floor.

Introduction

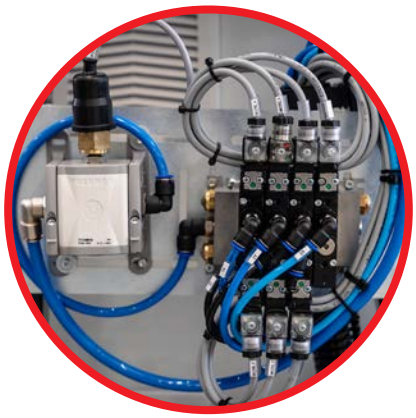
High speed of Translation

The structure, made entirely of powder-coated welded tubular section steel, is equipped with a **conveyor belt** powered by **inverter-driven** asynchronous motors and a contact surface composed of dedicated idle wheels which are **able to transfer the parts – even at different speeds** – towards a vertical storage rack or towards a driven automated storage and retrieval system.

The plus of Motorised Vertical Shuttle

Advanced solutions

1. **High working** mission speeds.
2. **Low operating and maintenance costs.**
3. **Simple construction.**
4. **Ideal for supplying assembly and glazing lines.**



Everything is designed to **optimise movement of the frames**: to facilitate entry and exit, the shuttle is equipped with vertical rollers at the sides of the rack, while – in order to guarantee fast, safe passages – the system is equipped with **front guards** in order to stop the window from falling following sudden or emergency stops.

Specifications

Dimensions

Length	1.900 mm
Width	3.600 mm
Height	3.000 mm
Weight	900 Kg

Details

Installed Power	9,0 Kw
Power Supply	400 V
Air Consumption	50 Nl/min
Operating Pressure	7 bar

Operating Features

Composition

Structure
Motorised conveyor belt.
Contact surface composed of dedicated idle wheels.
4 high-capacity wheels which run on tracks.
Vertical rollers at the sides of the rack.
Front guards.

Machining
Moving frames and leaves (single or coupled).

Operators n. 1

Technical Features

Performance

Average mission time* (loading/transporting/unloading): 30 sec
*Depends on line length.

Automatic Loadable Frame Dimensions

Length	1.400 mm
Width	2.800 mm
Height	130 mm

Optional

Upon request the machine can be equipped with:

System with pinion for transmission of motion to belts.

Grappling hook for movement of the squares.

Available Variants

Version for **Useful Frame** 2.800 x 3.600 mm (Vers. 004NV36).
Version for **Useful Frame** 3.200 x 4.000 mm (Vers. 004NV40).
Version for **Useful Frame** 2.800 x 5.000 mm (Vers. 004NV50).

002MA

Gravity-Driven Automated Storage System

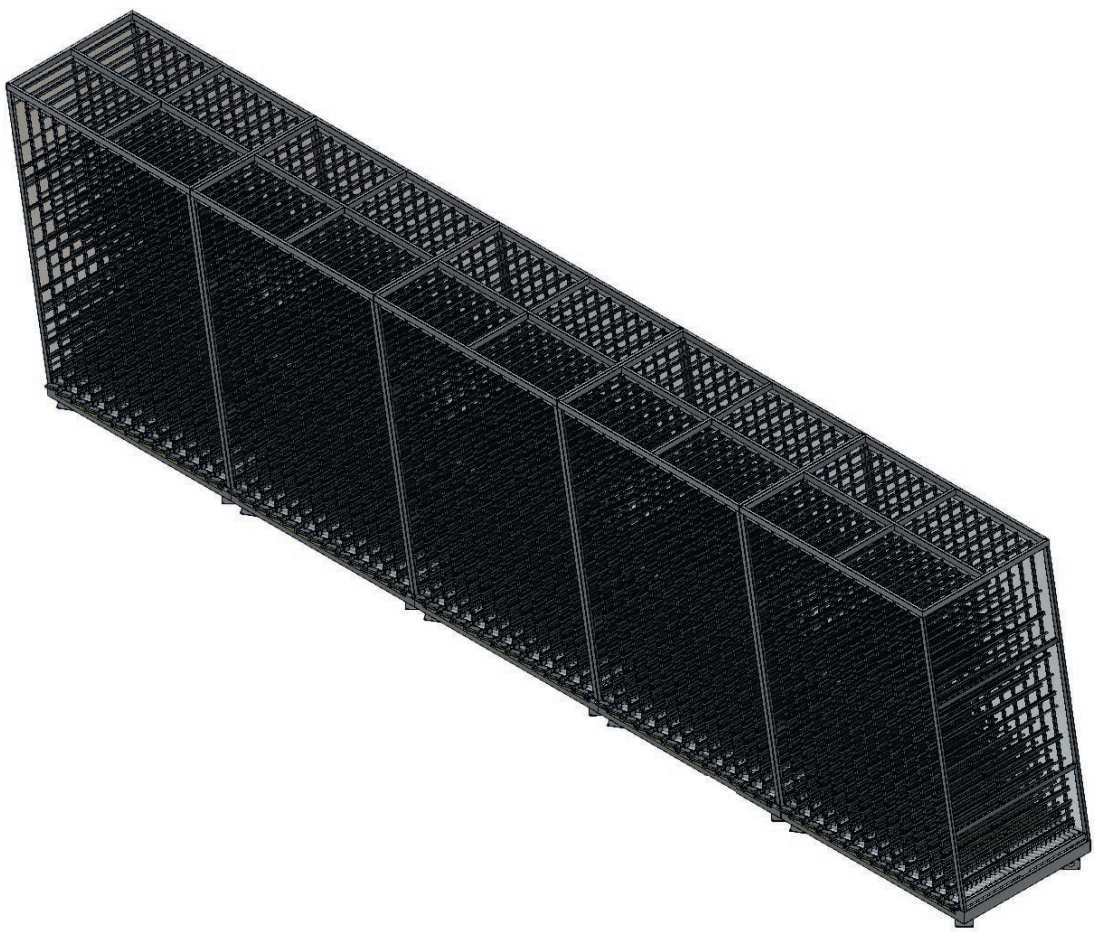
Modular storage system designed for storage of **frames, sashes or finished windows** with movement **via gravity.** Ideal for organising the workflow or for optimising production space in a simple and efficient manner; each element is composed of **7 inclined compartments 130 mm in width** (160 mm optional).

Each compartment is composed of an **idle roller belt with a slope of around 2°** and a corresponding **8° inclined rack** fitted with dedicated **slats with idle wheels** which facilitate the entry and exit of the frame.

Introduction

Facilitates the Operators' Work

1. **Easy component identification** via Light-to-pick system.
2. **Elimination of carriages** for carrying welded frames.
3. **Automatic storage** of parts.
4. **Reduction in space** used.



Specifications

Dimensions

Length	4.300 mm
Width	2.400 mm
Height	3.400 mm
Weight	2.000 Kg

Details

Installed Power	- Kw
Power Supply	24 Vdc
Air Consumption	- Nl/min
Operating Pressure	- bar

Operating Features

Composition

Structure
7 inclined compartments 130 mm in width (160 mm optional).
Idle roller belt with a slope of around 2°.
8° inclined rack with idle wheels.

Machining
Storage of frames, sashes or finished windows.

Operators n. 1

Technical Features

Performance

Depending on the system to which it is connected.

Workable Frame Dimensions

Length	2.800 mm
Width	2.400 mm
Height	130 mm

Optional

Available Variants

Version for **Useful Frame** 3.000 x 2.800 mm – 200 mm compartments (Vers. 002MA36).

TAV BIP

Double-decker Horizontal Table

Double-deck work table designed for the automatic handling of welded elements and accessories to be assembled simultaneously, in order to speed up assembly logistics. Thanks to this system, boards welded by two or more different welding lines can be directed and sorted to subsequent processing lines, arranged in parallel, in order to maximise productivity without fatiguing the operators.

Presentation

Automate to Speed

The structure, made entirely of aluminium profiles bolted together, is equipped with several stations consisting of horizontal fabric belts, designed for handling the welded squares and driven by electric motors. It is also equipped with lateral workbenches with variable height, which allow the processing of the squares transported by the table.

The Pluses of the Horizontal Sliding Table

Cutting-edge solutions

1. **Solid and durable structure.**
2. It allows production to be channelled to several stations placed in parallel to increase productivity.
3. **High user-friendliness, assisted by simple and intuitive software.**

The movement of the system is provided by electric motors that drive the conveyor belts. The tables are arranged in series, at a fixed distance from each other, to facilitate the passage of the squares from one table to another. The plant configuration includes: an initial table, where the square to be processed and the relevant accessories to be assembled are positioned; a "lift" station, which sorts the squares on two levels; and one or more two-storey stations, each equipped with a workbench. In these stations, the operators pick up the squares from the upper level to perform the machining operations and, once completed, reload them on the lower level, from where they are transferred to the next station. Each station is equipped with a monitor for viewing and handling the parts, as well as a barcode scanner for classifying them.

Specifications

Dimensions

Length	4000 mm
Width	2050 mm
Height	up to 1500 mm
Weight	1000 kg

Details

Power Installed	1Kw
Power supplied	230/400 V
Min. Exercise Pressure	-7 bar

Operational Characteristics

Composition

Structure
Contact surface made of felt mats

Workbenches equipped with hydraulic lifting, with a large, extensible metal trellis top covered with polyzzene strips to allow workpieces to be handled without risk of damage.
Prepared for integration with the customer's information system and for housing accessory containers.
PC and monitor for production flow management.
Barcode reader.

Processing
Automatic handling of welded elements.

Operators variables from 2 to 5

Technical Characteristics

Performances

Dependent on the sources to which it is connected.

Max. movable panel dimensions

Length	3.200 mm
Width	2.800 mm

Optional

On request, the system can be equipped with:

Double-deck add-on stations for increased productivity

001NV

Horizontal Translating Table

Translating table designed for the **automatic handling of welded elements**; thanks to it from 2 or more different welding lines (e.g. sashes or frames) it is possible to direct and sort frames to subsequent dedicated processing lines.

Presentation

Automate to speed up

The structure, made entirely of welded and oven painted tubular steel, has a **contact surface made of polyurethane honeycomb belts with a heat-sealed guide profile underneath.**

The pluses of the Horizontal Translating Table

Cutting-edge solutions

1. **Solid and durable structure.**
2. It allows the production of several machines to **be channelled to a single work point.**
3. **High ease of use.**

The movement of the system is ensured by **4 high-capacity steel wheels** which, driven by a system directly connected to the drive shaft of the front wheels, **slide on special rails** fixed to the floor; the **motorised belt table moves the frames** to the relevant destination table according to production requirements.

Specifications

Dimensions

Length	3.600 mm
Width	2.850 mm
Height	955 mm
Weight	800 Kg

Details

Power installed	7 Kw
Power supply	400 V
Air consumption	- Nl/min
Min. Exercise pressure	- bar

Operational Characteristics

Composition

Structure
Contact surface made of polyurethane belts.
4 steel wheels.
Top with motorised belts.

Machining
Automatic handling of welded elements.

Operators n. 1

Technical Characteristics

Performances

Dependent on the sources to which it is connected.

Movable Frame Dimensions

Length	3.200 mm
Width	2.800 mm

Optional

On request, the system can be equipped with:

Belt and brushless motor handling for systems with more than 2 users and high productivity.

RFA 300 CNC

Automatic trimming machine

Horizontal trimming machine designed to trim **PVC window frames** with automatic system for processing on 4 sides without operator intervention to be used in automated lines.

The panel that is in process rests on a **large work surface** covered with brushes and anti-scratch which ensures ease of maneuvering and easy handling of the pieces. It is moved with motorized belts.

Presentation

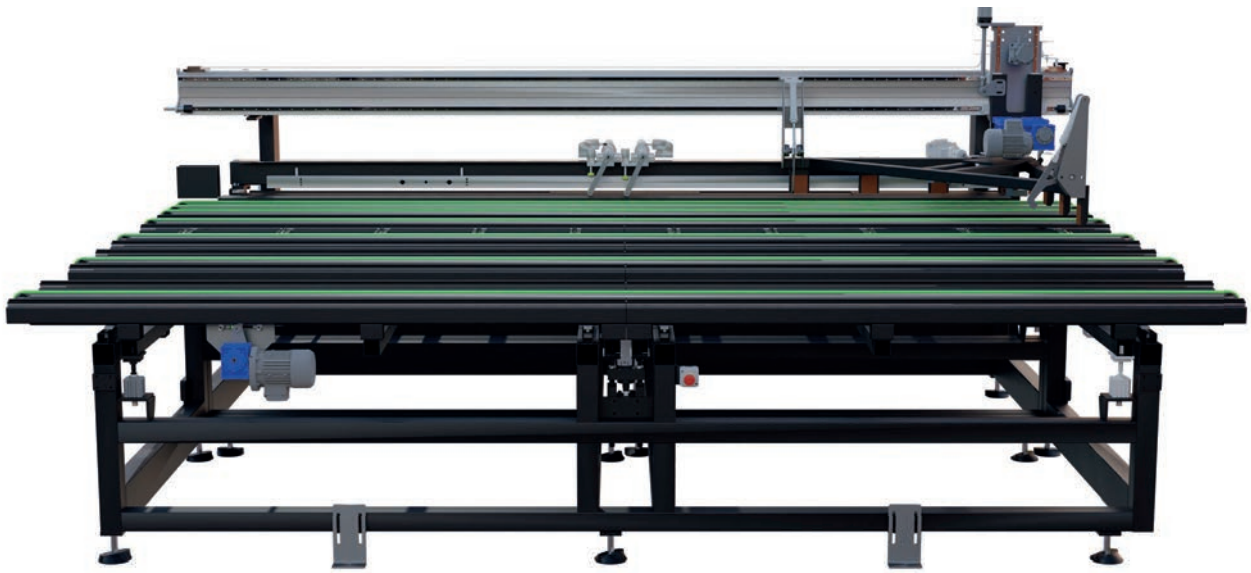
Secure Tightening

The system includes an **automatic clamping system** consisting of **4 horizontal pneumatic rotating vices** to fix the welded frame, place it in exact reference and keep it fixed throughout the cutting operation.

Why choose the RFA 300 CNC

Electronics and Speed at your service

The machine is equipped with a **Ø 300 mm blade with electronic cutting axis advancement**; the blade reaches the operating position with **pneumatic ascent** while the positioning of the stop which defines the trimming thickness takes place through electronic movement with a controlled axis.



The **recognition of the workpiece occurs through data passage if online, or through a barcode reader** if used manually, the machine is in turn managed by a PC with dedicated software for simple and intuitive use.

The **evacuation of processing waste takes place by falling** in the rear part of the installation.

Specifications

Dimensions

Length	4.550 mm
Width	3.900 mm
Height	2.300 mm
Weight	1.800 Kg

Details

Power Installed	5 Kw
Power supply	400 V
Air Consumption	150 Nl/min
Min. Exercise Pressure	7 bar

Oerational Characteristics

Composition

Structure
1 Ø 300 mm blade with electronic feed and pneumatic ascent.

Processing
PVC trimming frames.

Technical Characteristics

Performances

Automatic Operation.

Possible Cut Dimensions

Max Length	3.000 mm
Max Height	25 mm

Maximum profile height Workable

Max Height	82 mm

Optional

On request, the system can be equipped with:

Exhauster.

Clamps for handling Dormant Large profiles.

Stainless steel profiles for handling delicate films.

002NV

Verticalisation Shuttle

Independently driven shuttle designed for loading and unloading of parts to and from any motorised or driven structure.

Its **brushless motors** allow it to transfer welded frames **incredibly fast** (up to 2 m/sec.), **changing their position between horizontal and vertical** (0-92°) **with extreme precision** (0.5 mm translatory and 0.1° verticalisation).

Introduction

Automation to Speed Up

Constructed entirely from powder-coated welded tubular section steel, it is equipped with a contact surface (**with**) composed of **motorised belts and dedicated diagonal brushes** which prevent any blockage during movement of the frame to the corresponding destination table.

The plus of Verticalisation Shuttle

Advanced Solutions

1. Extremely **fast and flexible system.**
2. **Able to pick up frames from horizontal tables or vertical roller conveyors.**
3. **Able to** perform unloading and classification of welded frames.
4. **Ideal for supplying hardware installation/assembly lines.**

To facilitate inlet and outlet (of the frames) in horizontal passages, the shuttle is equipped with 5 vertical rollers at the sides of the rack, while the base features an **inverter-driven motorised conveyor belt** in order to guarante**e fast and safe vertical passages**. This allows the components to be transferred, even at different movement speeds, towards a vertical storage rack or a storage system.

The shuttle is also equipped with **front guards** in order to stop the frame from falling following sudden or emergency stops.

Specifications

Dimensions

Length	3.400 mm
Width	3.500 mm
Height	3.300 mm
Weight	1.300 Kg

Details

Installed Power	12 Kw
Power Supply	400 V
Air Consumption	30 Nl/min
Operating Pressure	7 bar

Operating Features

Operating Features

Structure
Contact surface with motorised belts.
Vertical rollers at the sides of the rack.
Motorised conveyor belt.
Front guards.

Machining
Loading and unloading elements.

Operators n. 1

Technical Features

Performance

Average mission time* (loading/transporting/unloading): 50 sec.
*Depends on line length.

Automatic Loadable Frame Dimensions

Length	2.800 mm
Width	1.400 mm
Height	130 mm

Optional

Upon request the machine can be equipped with:

Verticalisation at 98°.
System with **pinion for motion transmission** to storage belts.

Grapple for square movement.
Extraction system for gravity warehouses.

HDMV

Vertical bench for drilling and automatic assembly of hinges

CNC-controlled multi-axis table **designed to automatically drill and mount hinges** on frames, with the possibility of mounting **hinges also on intermediate uprights.**

The HDMV is the **ideal solution to automate the preparation and assembly of hinges:** the bench is prepared for integration into an automated window production line.

Presentation

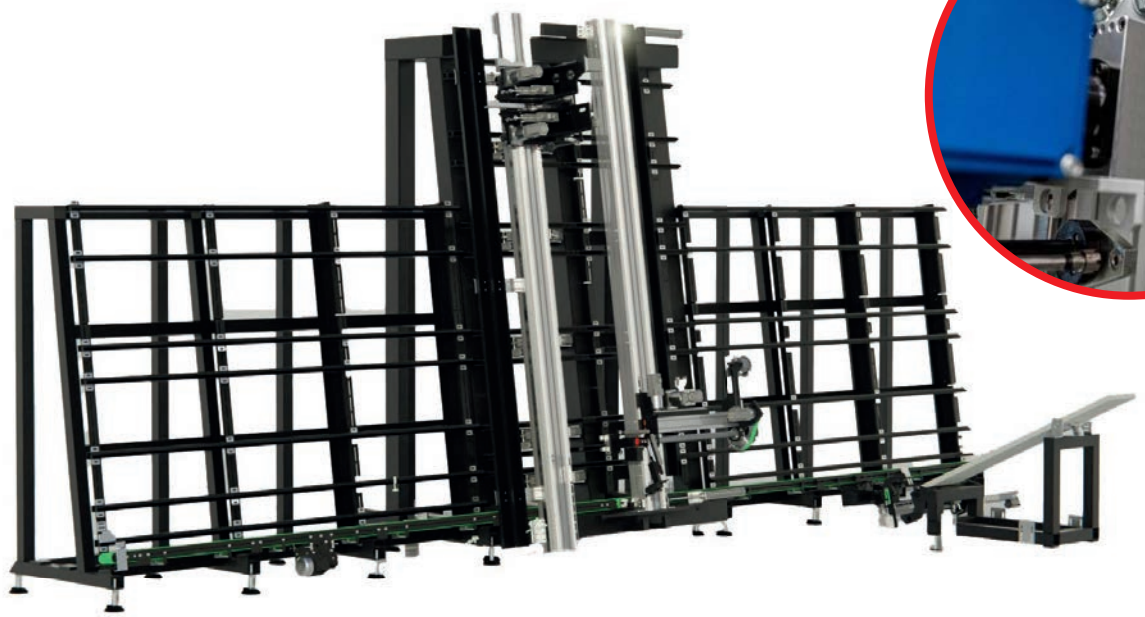
Fully Automatic Operations

The bench is equipped with **multiple pneumatic vices** - horizontal and vertical - for safe and precise clamping to determine the correct mounting positions. The HDMV is also equipped with a multiple drilling head for simultaneous and fast drilling, gripping hand and storage for hinges, screwdrivers with automated screw feed.

5 reasons to choose HDMV

Optimisation and Savings

1. **Lower labour costs:** performs both painting and drilling independently.
2. **Greater Accuracy:** measurements made automatically according to the inside width of the glazing groove on the already welded frame.
3. **Space optimisation:** different operations reduce space requirements: one machine for 3 operations.
4. **More performance:** faster execution speed.
5. **User Friendly**: simple and immediate management and easy configuration.



The **holes are made according to the internal reference** determined by automatic measurement of the internal frame width referred to the glazing groove.

The HDMV ensures a perfect PVC drilling cycle, managed by **automatic drilling and screwing depth control** and is equipped with an automatic reset sequence at the end of machining.

Specifications

Dimensions

Length	8.200 mm
Width	4.700 mm
Height	3.000 mm
Weight	3.500 Kg

Details

Power installed	10 Kw
Power	400 V
Air consumption	100 Nl/min
Min. Pressure Exercise	8 bar

Operational Characteristics

Composition

Structure
Steel tubes and multiple heads.

Machining
Drilling, mounting and screwing hinges on frames and intermediate uprights.

Technical Characteristics

Operators n. 1*

*Only for loading hinges and screws

Workable square dimensions

Depending on the bwelding machine return	3.200 x 2.800 mm

Optional

On request, the system can be equipped with:

Right-hand or left-hand loading.

Version with enlarged conveyor belt for Dormat Large.

Double heads for use with different hardware brands.

Heads with 90° rotation for drilling on horizontal transoms for tilt-and-turn windows.

001SP

Roller Conveyor with Vertical Rack

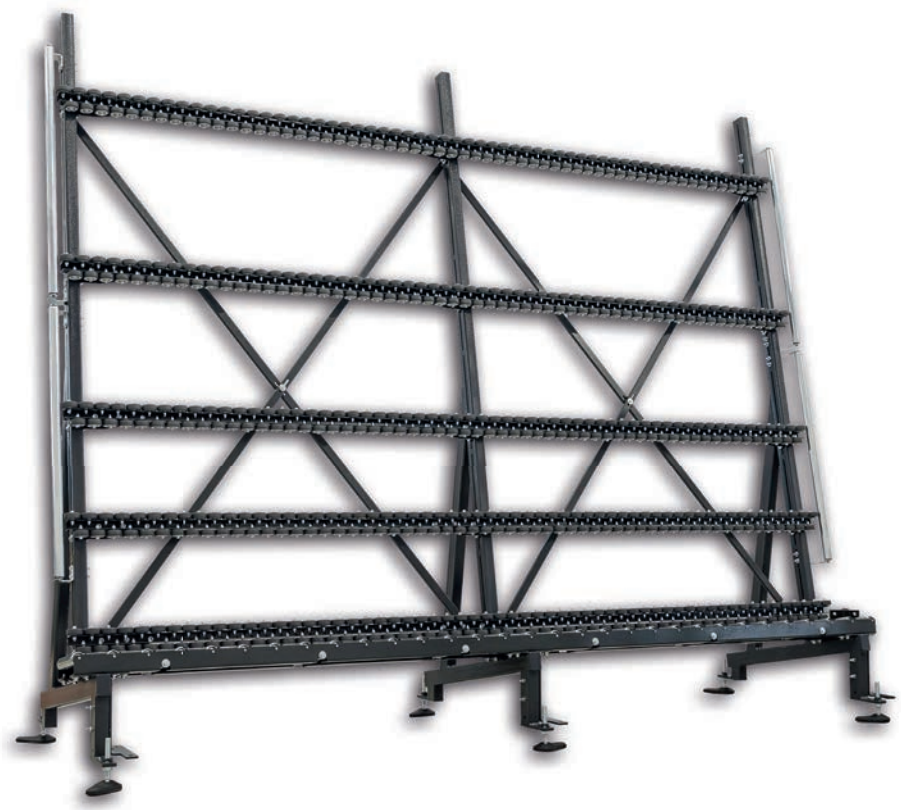
A roller conveyor **essential in all automated logistics systems** which can be incorporated in any line for moving sashes, frames or finished windows.

A perfect and economical solution, it is constructed entirely of welded and powder-coated tubular section steel, and is equipped with a **base with 200 mm steel rollers** and **vertical rack with five slats with idle wheels**, and **corner protection profile** at the sides of the rack.

Introduction

Essential and Economic

1. **Simple, economical structure.**
2. Extremely **modular.**
3. **Easy installation.**
4. The guide rail **directs the elements on rollers**, not on brushes or other materials.
5. Roller pitch of **only 50 mm** with safety protection.



Specifications

Dimensions

Length*	from 1.000 to 3.000 mm
Width	750 mm
Height*	from 2.000 to 3.000 mm
Weight*	from 70 to 140 mm

*Depends on version.

Details

Installed Power	- Kw
Power Supply	- V
Air Consumption	- Nl/min
Operating Pressure	- bar

Operating Features

Operating Features

Structure
Base with steel rollers.
Vertical rack with idle wheels.
Corner protection profile.

Operators n. 1

Machining
Moving sashes, frames or finished windows.

Technical Features

Performance

Depends on the system to which it is connected.

Workable Frame Dimensions

Length	2.800 mm
Width	1.500 mm

Optional

Upon request the machine can be equipped with:

Space between rollers can be reduced to 100 mm
Manual/automatic **rotation movement kit.**
Additional 200 mm roller.

Mobile rack wheeled transfer kit.
Floor guides for mobile rack.
Additional 500 mm roller.
Frame anti-drop system

Available Variants

Version for **Useful Frame** 3.000 x 2.800 mm (Vers. 001SP30).
Version for **Useful Frame** 3.600 x 2.800 mm (Vers. 001SP36).
Version for **Useful Frame** 4.000 x 2.800 mm (Vers. 001SP40).
Version for **Useful Frame** 5.000 x 2.800 mm (Vers. 001SP50).

Motorised version with independent movement rail and rubberised rollers (sliding track length 3.0 m).
Version with 500 mm **idle wheels.**

001BN

Tilting Assembly Bench

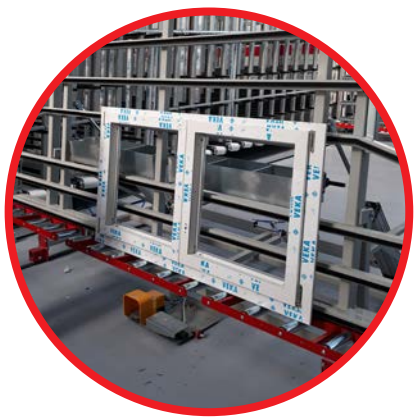
Window workbench to allow work both in the **vertical and horizontal position**, designed to facilitate operations such as **frame/sash coupling and installation of hardware** within automatic production lines.

Made with an extremely robust and reliable electrowelded steel structure, the bench is equipped with a **pneumatic horizontal/vertical tilting system** which moves a **support surface equipped with brushes** and a **retractable lower supporting roller conveyor. The bench can be extended** both on the left and right side, as well as above.

Introduction

Facilitates machining

1. **Extremely simple** structure.
2. Makes the **workstation more ergonomic.**
3. **Ideal for connecting automatic horizontal lines to manual vertical lines,** and vice versa.



Specifications

Dimensions

Length	3.500 mm
Width	2.100 mm
Height	2.380 / 2.500 mm
Weight	240 Kg

*Variable on request.

Details

Installed Power	- Kw
Power Supply	- V
Air Consumption	50 Nl/min
Operating Pressure	7 bar

Operating Features

Composition

Structure
Pneumatic horizontal/vertical tilting system.
Support surface equipped with brushes.
Retractable lower supporting roller conveyor.

Machining
Machining of windows and doors in vertical and/or horizontal position.

Operators n. 1

Technical Features

Performance

Manual Operation.

Workable Frame Dimensions

Length	3.500 mm
Width	2.100 mm

Optional

Upon request the machine can be equipped with:

Pneumatically foldable lower roller conveyor
Accessory trays

Available Versions

Version with floor guide for transfer:
Including structure with four guide wheels and pneumatic brake operated by a manual valve or pedal.

001SP MOT

Conveyor belt with Vertical Rack

A conveyor belt **essential in all automated logistics systems** which can be incorporated in any line for moving sashes, frames or finished windows.

A perfect and economical solution, it is constructed entirely of welded and powder-coated tubular section steel, and is equipped with a **base with 200 mm steel rollers** and **vertical rack with five slats with idle wheels**, and **corner protection profile** at the sides of the rack.

Introduction

Essential and Economic

1. **Simple, economical structure.**
2. Extremely **modular.**
3. **Easy installation.**
4. **Prevents oscillations** during transfer.
5. Prevents falling of **small-sized** elements.

Specifications

Dimensions

Length*	from 1.000 to 3.000 mm
Width	750 mm
Height*	from 2.000 to 3.000 mm
Weight*	from 70 to 140 mm

*Depends on version.

Details

Installed Power	- Kw
Power Supply	- V
Air Consumption	- Nl/min
Operating Pressure	- bar

Operating Features

Composition

Structure
Base with steel rollers.
Vertical rack with idle wheels.
Corner protection profile.

Machining
Moving sashes, frames or finished windows.

Operators n. 0

Technical Features

Performance

Depends on the system to which it is connected.

Workable Frame Dimensions

Length	2.800 mm
Width	1.500 mm

Optional

Upon request the machine can be equipped with:

Space between rollers can be reduced **to 100 mm**
Manual/automatic **rotation movement kit.**
Additional 200 mm roller.

Mobile rack wheeled transfer kit.
Floor guides for mobile rack.
Additional 500 mm roller.
Frame anti-drop system

Available Variants

Version for **Useful Frame** 3.000 x 2.800 mm (Vers. 001SP30).
Version for **Useful Frame** 3.600 x 2.800 mm (Vers. 001SP36).
Version for **Useful Frame** 4.000 x 2.800 mm (Vers. 001SP40).
Version for **Useful Frame** 5.000 x 2.800 mm (Vers. 001SP50).

Motorised version with independent movement rail and rubberised rollers (sliding track length 3.0 m).
Version with 500 mm **idle wheels.**

005NV

Vertical Shuttle with Rotation

Independently driven shuttle designed for loading and unloading of parts from and to any motorised logistics system, roller conveyors or storage systems. Thanks to its rotation system, it is **able to transfer leaves, frames or complete windows, changing their position quickly** (up to 2 m/sec.) **and precisely** (0.5 mm translatory and 0.1° rotation).

The system features a **fixed vertical structure inclined by 8°** to provide a stable support for the components, and it **allows +/- 180° rotation of the parts.**

Introduction

Fast and Precise Translation

Constructed entirely of powder-coated welded tubular section steel, the shuttle features a conveyor belt powered by **inverter-driven motors** and a **contact surface composed of dedicated idle wheels** which allow the components to be transferred at different speeds, where required.

The plus of Vertical Shuttle with Rotation

Ideal for every production line

1. **High operating speed** (vertical movement only).
2. **Ideal for connecting lines which are not parallel and for supplying glazing lines.**
3. Can supply **symmetrical lines.**

Everything is designed to optimise movement of the frames. To facilitate entry and exit, the shuttle is equipped with **passage rollers at the sides of the rack**, while - in order to guarantee fast, safe passages - the system is equipped with **front guards** in order to stop the window from falling following sudden or emergency stops.

Movement is provided by a **brushless motor** which powers a chain and sprocket transmission system, and via **four high-capacity idle wheels** which run on dedicated **tracks fastened to the floor.**

Specifications

Dimensions

Length	1.900 mm
Width	3.600 mm
Height	3.000 mm
Weight	950 Kg

Details

Installed Power	10 Kw
Power Supply	400 V
Air Consumption	30 Nl/min
Operating Pressure	7 bar

Operating Features

Composition

Structure
Contact surface composed of dedicated idle wheels.
Motorized conveyor belt.
Fixed vertical structure inclined by 8°
Passage rollers at the sides of the rack.
Front guards.

Machining
Transfer of leaves, frames or complete windows by changing their position.

Operators n. 1

Technical Features

Performance

Average mission time* (load/transport/unload): 45 sec.
*Depends on line length.

Moving Frame Dimensions

Length	3.200 mm
Width	2.800 mm
Height	130 mm

Optional

On request the implant can be equipped with:

System with **pinion for motion transmission** to storage belts.

Grapple for square movement.

Available Variants

Version for **Useful Frame** 4.000 x 3.200 mm (Vers. 005NV40).

001MA

Driven Automated Storage System

Modular storage system which operates in a synchronised manner with the movement shuttles, designed for **vertical storage of sashes, frames or finished windows.**

Ideal for organising the workflow or for optimising production space, as it **creates a buffer** which is able to compensate for lags in the production line.

Each element is constructed entirely of powder-coated welded tubular section steel and is composed of **160 mm wide compartments**, each equipped with **lateral rollers** which facilitate the entry and exit of the frame, as well as with an **anti-tipping frame on the first compartment.**

Introduction

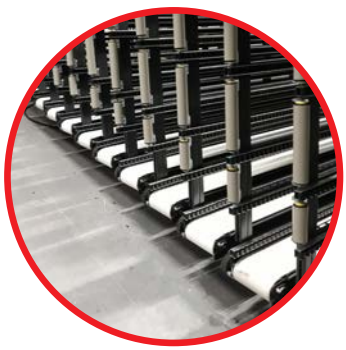
Modular, for perfect configuration

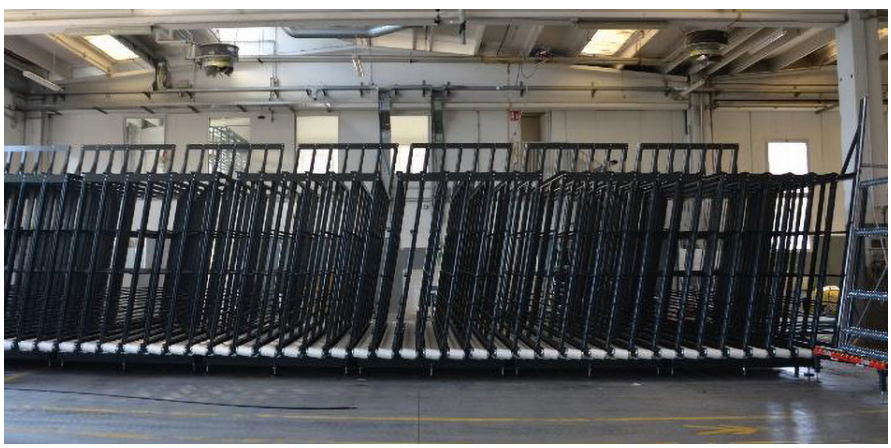
The movement of the frames is performed by tracks with **belts driven by the shuttle** through mechanical coupling (gear wheel and pinion) assisted by **arms covered with brushes,** installed on **vertical racks inclined by 8-10°**.

The Plus of Driven Automated Storage System

Stop manual handling

1. **Creates a buffer** which is able to compensate for different timings in the production line.
2. The components **can be called to the workstations** in four different ways.
3. Allows **automatic classification** of the welded (creation of frame/sash kit) or glazed elements.
4. **Eliminates manual movement** of the elements.





The operation of the driven automated storage and retrieval system is configurable to meet customer requirements. The various components can be called to the workstations in four different ways:

- By individual frame/window.
- By **individual order position**.
- By **entire order**.
- The system **automatically** takes the pieces to the stations when the kit is complete.

Specifications

Dimensions

Length	4.300 mm
Width	2.400 mm
Height	3.400 mm
Weight	2.400 mm

Details

Installed Power	3,0 Kw
Power Supply	400 V
Air Consumption	- Nl/min
Operating Pressure	- bar

Operating Features

Composition

Structure
160 mm wide compartments.
Lateral rollers.
Anti-tipping frame on the first compartment.
Arms covered with brushes.
Vertical racks inclined by 8-10°.

Operators n. 1

Machining
Vertical storage of sashes, frames or finished windows.

Technical Features

Performance

Depending on the system to which it is connected.

Workable Frame Dimensions

Length	2.800 mm
Width	1.400 mm

Optional

Upon request the machine can be equipped with:

200 mm compartment with **belt**.
Individual **160 mm** compartment with **belt** driven by electric gear motor with inverter.

Driven movement on both sides of the module.
Individual **200 mm** compartment with **belt** driven by electric gear motor with inverter.

IRS Robotic Unloading Island

Robotic station for the automatic unloading of cutting and machining stations

Machines designed for the automatic unloading and classification of cut and machined parts, coming from the following stations: FABCUT, ASG, RMA.
This is a robotic island equipped with an anthropomorphic robot for the vertical storage of parts in manual or automated carts guided by Autonomous Mobile Robots (AMRs). The robot automatically picks up the parts from the unloading areas of the operating machines, classifies them and sorts them by job order and position within the job order, thereby optimising the subsequent pick-up process at the welding station.
The machine eliminates the need for manual unloading by the operator, making the classification and storage process faster and more efficient.

Presentation

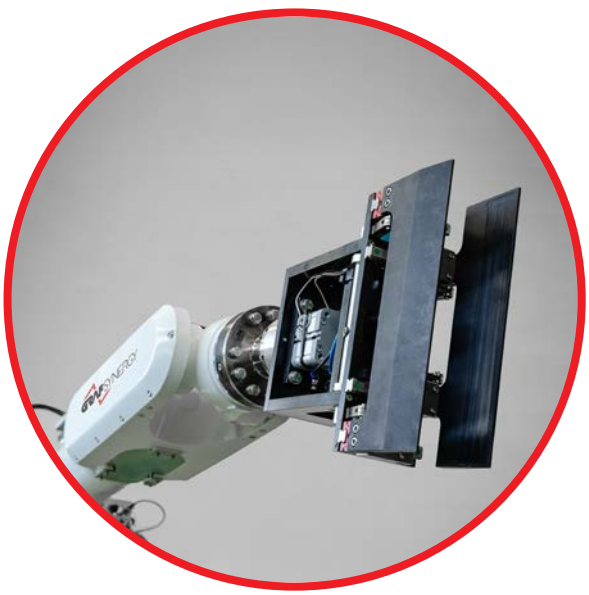
Speed and Labour Savings

The introduction of robotic unloading frees human resources from low-skilled operations, redirecting them towards more strategic activities, avoiding errors in the classification of cut parts and reducing the risk of material damage due to manual handling.

5 reasons to choose IRS

Innovate and Automate

1. **Extreme execution speed:** makes high levels of productivity possible
2. **Extremely precise processing:** handling of cut and machined PVC profiles of different lengths.
3. **Automatic storage control:** optimised filling of storage carts.
4. **Processing flexibility:** can be used for different types of profiles.
5. **High level of automation:** reduces the workload as no operator intervention is required.



Designed to ensure the best performance on the market, it is equipped with **various cutting-edge solutions** to unload parts quickly, efficiently and repetitively.
It **optimises activity** and speeds up the unloading time of machines, preventing slowdowns in the upstream cutting and machining island.

The IRS is equipped with modern software that expertly manages the robotic island, allowing for precise control of the part unloading and classification operations.

Specifications

Dimensions

Operating Radius	2200-2598 mm
Width	1200 mm
Height	2500 mm
Weight	1100 Kg

Details

Installed Power	20 Kw
Power Supply	400 V
Air Consumption	200 Nl/min
Min. Operating Pressure	7 bar

Operating Specifications

Work module

Structure
Robot base structure to be secured to the floor with mechanical anchors;
Metal carts with 10 slots for 4 parts each, for the vertical storage of profiles, for a total of 40 parts (Optional);
6 steel guides for the repetitive positioning of the profile-holding carts on the island (IRS).

Operations
Unloading and vertical storage of cut and machined profiles.

Technical Specifications

Operators n. 0

Machinable Profile Dimensions

Length	350 / 3.200 mm
Width	40 / 110 mm
Height	40 / 90 mm

Profile-holding cart changeover module

Used in combination with the AMR system to move the profile-holding carts provided with the island.

AMR Autonomous Mobile Robots

AMR for automatic movement of IRS profile trucks

AMR (Autonomous Mobile Robots) intelligent mobile robots capable of autonomous movement in structured or semi-structured environments, without the need for human guidance or fixed infrastructure (such as tracks or conveyor belts). They use sensors, navigation algorithms, and mapping systems to orient themselves and interact dynamically with the environment.
AMRs allow the movement of cut profile trucks from the IRS island to the welding machines, without human assistance, fully independently and efficiently.

Presentation

Speed and Labour Savings

The autonomous movement of the cut profile trucks, achieved by AMR, eliminates labour from a basic, no-added value activity. Furthermore, it allows the continuous feeding of the welding machines and the fully autonomous management of the IRS island capacity, avoiding production losses or slowdowns due to unloading failures.

5 reasons to choose AMR

Innovate and Automate

1. **High automation:** enables fully autonomous material handling.
2. **Operational flexibility:** navigation in environments shared with human operators (safety compliant).
3. **Automatic storage control:** autonomous material handling and management to optimise work island capacity.
4. **Integration with the work environment:** flexible programming and intelligent management of the work area.
5. **Dynamic obstacle management.**

AMRs are designed to autonomously move the profile trucks, ensuring a constant and rational flow of material from the cutting and work centres to the welding machines. AMRs integrate seamlessly with the work environment, allowing completely safe movement. The system recognises obstacles and personnel passing through the work area.

AMRs are equipped with modern s**oftware that optimally manages work missions, maximising productivity and workspace management.**

Specifications

Dimensions

Operating Radius	Depends on Wi-Fi network
Width	1350 mm
Height	250 mm
Weight	300 Kg

Details

Installed Power	2Kw
Power Supply	230 V
Transportable Kgs	1000 Kg

Operating Specifications

Work module

Structure
System based on one or more AMRs depending on the size of the workshop;
Autonomous AMR charging station;
Wi-Fi control rack with PC and software for managing navigation algorithms.

Operations
Autonomous movement of trucks with cut and machined profiles.

Technical Specifications

Operators n. 0

Transportable truck dimensions

Length	1900 mm
Width	1600 mm
Height	2500 mm

SL4-FS

CNC 4-head welding machine

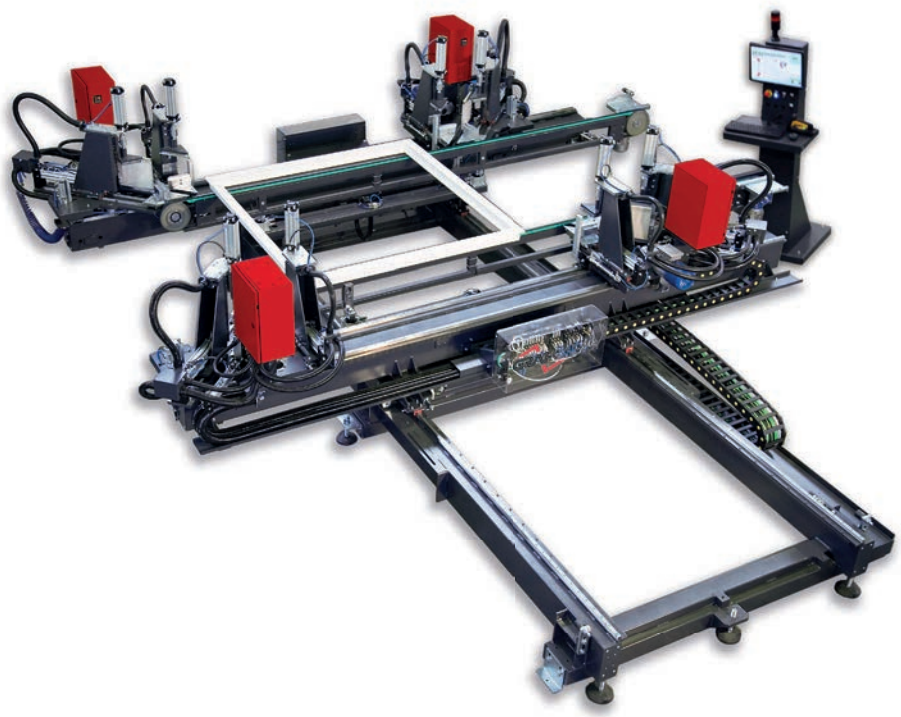
Extremely fast CNC 4-head 7-axis welding machine that ensures the windows manufacturer with **constant operating quality over time and an increase in production of up to 50%.**

Designed for **horizontal and simultaneous welding of the 4 corners of a PVC frame**, it is a solid system, equipped with a reinforced structure that makes it a stable and reliable device over time.

Introduction

Quality Constant over time

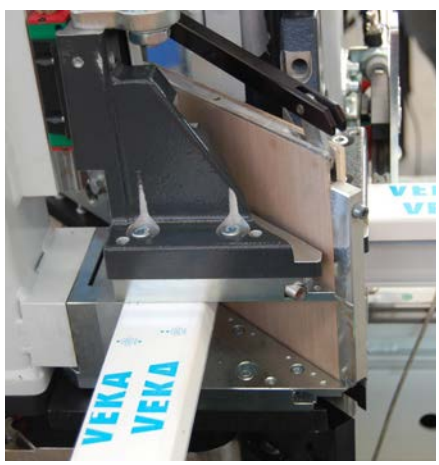
It automatically performs all the necessary operations, **positioning at the welding positions, cyclical fusion, compression and cooling** and, at the end of the process, it releases the frame on conveyor belts towards the cleaning area.



5 reasons to choose SL4-FS

Advanced solutions

1. **High speed welding cycle:** production increase up to 50% thanks to the controlled axes.
2. **Automatic change system of welding beam** (0.2÷2 mm).
3. **Quick-change system of the countershims.**
4. **Parallel welding with correction of deviations** on all 4 corners.
5. **Electronic temperature control** combined with the profile code.



The accuracy of the positioning of the welding heads is ensured by a modern **digital measuring device with magnetic reading system** obtained thanks to a very precise axis movement carried out by means of movements on linear guides and racks.

The **software**, created by the technicians of the Graf Synergy R&D laboratory, is extremely **intuitive and offers simple menus**, which present all the information necessary for a correct configuration of the welding parameters (distances, temperatures, optional weld beads, etc ...) and the bar code reading.

Specifications

Dimensions

Length	5.250 mm
Width	2.200 mm
Height	1.650 mm
Weight	3.000 Kg

Details

Installed Power	16 Kw
Power Supply	400 V
Air Consumption	100 Nl/min
Operating Pressure	7 bar

Operating Features

Composition

Structure
4 CNC heads Quad.

Operators n. 1

Machining
Horizontal and simultaneous welding of the 4 corners.
C-welding.

Technical Features

Performance

Up to 480* Frames / 8h
*Depending on the types of profiles, weld bead and loading speed.

Weldable Frame Dimensions

Maximum	3.200 x 2.800 mm
Minimum	370 x 400 mm

Weldable Profile Dimensions

Height	40 ÷ 180 mm
Width	40 ÷ 130 mm

Optional

Upon request the machine can be equipped with:

Welding on 3 sides.
Welding on 3 sides with supports for threshold assembly.
Connection in line with Graf Synergy corner cleaning machines.

Axis brushless motors.
Energy Saver option.
Cooling table.

GBA 200

Cutting centre for PVC glazing beads

Controlled-axis cutting centre **for cutting** PVC **glazing beads**.

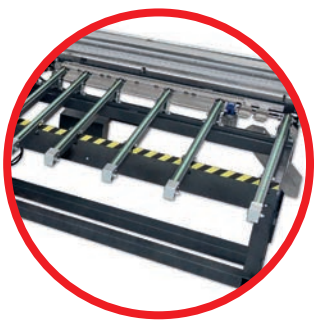
Manufactured in an **extremely robust and reliable** steel and aluminium structure, it is an automated system that allows the glazing beads to be cutted very quickly and automatically to the required length with controlled axis movements.

Presentation

Productivity and Precision

Equipped with a movable **cutting carriage with a fixed 45° inclination**, the GBA 200 is equipped with a cutting set consisting **of 2 main blades of Ø 200 mm and 2 secondary blades of Ø 98 mm** suitable for trimming the ends of the glazing bead fixing foot.

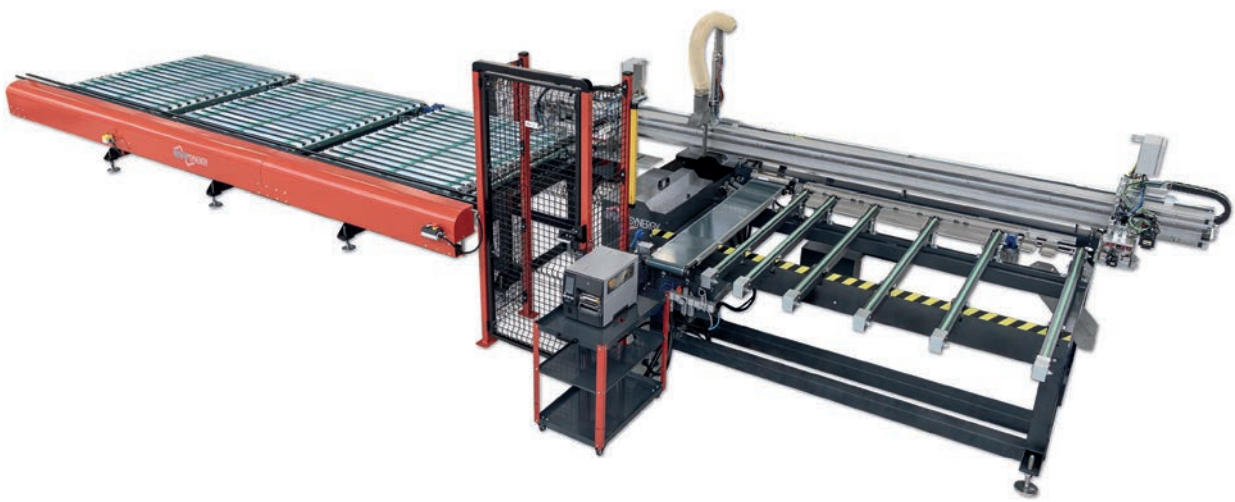
Vertical adjustment of the workpiece stop is also possible. Thanks to the automation of the work sequence, operator intervention is only required for loading the pair of glazing bars and picking up the finished parts in sequence collected in the unloading table.



5 reasons to choose GBA 200

Cutting-edge solutions

1. **Fully automated cutting management.**
2. **High cutting quality and speed:** thanks to high blade rotation speed.
3. **High flexibility:** for the insertion of new glazing beads, you are not bound to the shape of the countershim; they are only to be added in programming.
4. **High Accuracy:** modern glazing bead gripping system that simulates final assembly and enables perfect matching of cuts in fitted corners.
5. **Suction system:** removes chips and swarf and keeps the working area free of obstructions.



The unit, **built to cut 2 pieces of the same length** at the same time, features **universal countershims with numerically controlled** axes suitable for most types of glazing beads, and 4 pneumatic vertical clamps.
The gripping system is designed to **tension the glazing bead longitudinally to avoid vibrations and bending during cutting**: this simulates the final installation with the presence of the glass, so the profiles are cut with exactly the same grip as when they will be installed on the window.
Thanks to the modern software developed by GRAF Synergy, it is possible to **automatically set the optimum gripping and machining parameters pre-set for each profile**; the profile to be cut is simply selected on the display.

The GBA 200 also allows incredible flexibility in the addition of new profiles, which are only to be added in programming without the need to intervene on the **gripper countershims**.

To remove all waste parts and keep the working area free of obstructions, the machine is finally equipped with a **powerful suction system**.

Specifications

Dimensions

Length	10.000 mm
Width	2.500 mm
Heigth	1.300 mm
Weight	800 Kg

Details

Power	8 kW (+ extractor fan 1,1 kW)
Power supply	400 V three phase
Air consumption per Cycle	100 Nl/min.
Exercise pressure	7 bar

Operational Characteristics

Composition

System
2 Main blades Ø 200 mm suitable for PVC.
2 Secondary blades Ø 98 mm.

Preps
Cutting PVC glazing beads

Technical Characteristics

Performance

Automatic operation

Operators only for loading and unloading

Cuttable Profile Dimensions

Max Height	35 mm	min 15 mm
Max Length	45 mm	min 18 mm

Optional

Available options:

90° blades for cutting glazing beads.

Automatic loading of glazing beads to maximise productivity.

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