emmegi

en

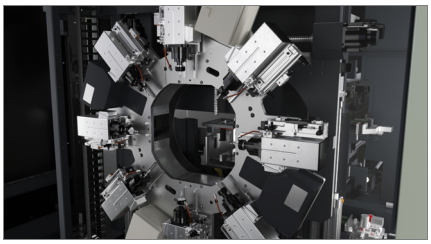
Aluminium

Steel

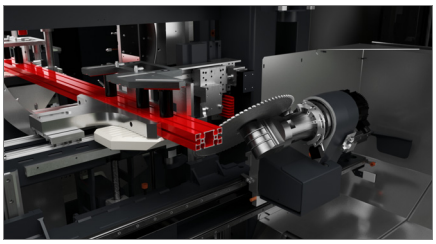
Pvc

+Quadra

Machining centre



Milling units 01

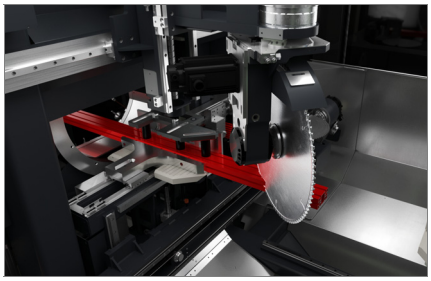


Horizontal cutting module 02

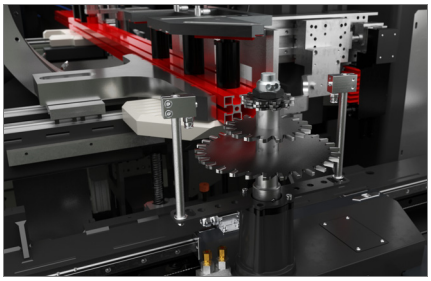


Machining centre with up to 20 CNC axes, designed to perform cutting, milling and drilling operations, including head and tail, on aluminum and light alloy profiles. +QUADRA is a configurable line with modular solutions and custom packages that allow to satisfy the most common applications in window and doors, architecture and industry sectors. The structure of the line includes an automatic feeding magazine from which the profile is picked up and transferred to the operating section. It contains the units for cutting and machining; then an extraction system deposits the finished pieces on an accumulation magazine.
The three main modules include a number of variants that modify the vocation of the line in terms of flexibility, automation and productivity.
The loading magazine, designed for profiles up to 7,500 or 9,500 mm, collaborates with a push-feeding system assisted by the movement of an automatic positioning gripper for clamping and transfer of the profile in the operating unit. The positioning of the next bar in the loading area is synchronized with the return of the transport gripper which occurs in masked time. The highly-flexible FLW version optimizes the loading of the profiles by occupying the entire surface of the bench and increasing the load capacity. It is combined with the PROFIX dynamic counterblock system which guarantees correct reference and orientation of the profiles for subsequent machining.
The 4-axis NC milling module includes from 4 to 8 electrospindles on a rotary base that allow to machine all the faces of the profile, regardless of its orientation. Two units are available for cutting, one with a Ø 600 mm blade with down-stroking movement on three CN axes and one with a Ø 350 blade with horizontal movement on three CN axes, also designed for simultaneous installation. The configuration opportunities are completed by an end milling module operating on two NC axes by means of a milling unit or, alternatively, a 4-axis module for milling the head and tail of the workpiece. A cabin encloses all the work units, ensuring a high standard of soundproofing and total operator protection.
The AES adaptive extraction system picks up and transfers the machined segment from the cutting unit to the unloading magazine. The unloading unit consists of a magazine with transversal belts and is available in various widths for profiles with maximum length up to 4000, 7500 or 9500 mm. The accumulation magazine can be configured in the high-capacity HCS version that allows to contain the entire volume of profiles present on the loading magazine without operator intervention.
The equipment of the machining centre is completed by the ALM automatic labelling module with 3-axis positioner, to identify the machined pieces, and a tool integrity control system. Both optional devices, combined with capacious storage magazines and the reliability of Emmegi systems, allow the machine to be exploited over extended machining cycles in fully automatic mode.

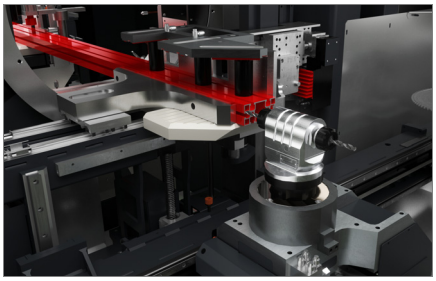
Vertical cutting module 03



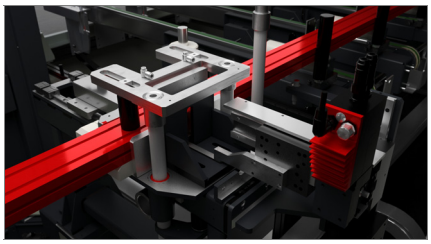
End-milling module 04



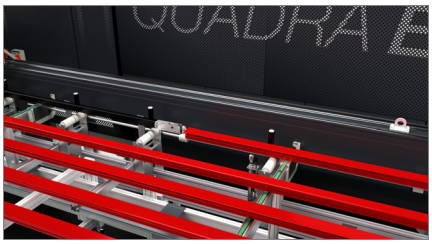
Drilling, milling and end-milling module for head and tail of profile 05



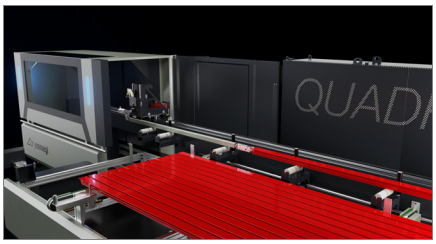
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Clamps with dynamic PROFIX counterblocks 06



Bar feeding 07



Highly flexible FLW loading magazine 08

01 - Milling unit
The core and value of the +QUADRA lie in its rotary base machining section, complete with 4 machining units for +Quadra L0 and 6, or 8 machining units for +Quadra L1 and +Quadra L2, that are controlled and can be interpolated on 4 axes: X, Y, Z, A (360° slewing around the axis of the bar). The work units are fitted with air-cooled high-frequency electrospindles, ER 32 tool connector with power up to 5.6 kW in S1. Each work unit can be equipped with an area disengagement system, by means of recirculating ball slides to increase the working capacity.

02 - Horizontal cutting module
Cutting unit with numerically controlled horizontal feed, with 350 mm blade and a wide cutting range: -45° to +45°. The cutting angle setting is fully automatic; the unit movement is controlled by a 3-axis CNC.

03 - Vertical cutting module
Down-stroking cutting unit on CNC axis equipped with 600 mm blade and a wide cutting range: 0 to 360°. The setting of any cutting angle is fully automatic and CNC controlled. The clamping and handling of the segments are done by means of two motorised clamp units on CNC axes.

04 - End milling module
End milling unit with cutter unit with variable rotation speed up to 8,000 rpm. With quick cutter unit tool change with pneumatic control. Interacts with the horizontal cutting unit, with which it shares the support beam. The three cutting and end milling modules are used to unload rejects into an opening, which can be fitted optionally with a steel evacuation belt.

05 - Drilling, milling and tapping module at the head and tail ends
Drilling unit on 4-axis CNC designed for machining at head and end of profile at any angle. Interacts with the horizontal cutting unit, with which it shares the support beam. The cutting and drilling modules enable unloading swarf into a special opening, which can be fitted optionally with a steel evacuation belt.

06 - Clamps with PROFIX dynamic counterblocks
The clamps are equipped with elements that are positioned through CNC to allow perfect bar clamping without requiring specific counterblocks. The machine recognises the profile and, according to the geometry, sets the clamps and their pressure in optimal way. This solution allows to significantly reduce setting times and increases productivity.
The new multichannel management logic of the machine allows the optimisation of machining cycles by increasing efficiency.

07 - Bar feeding system
Numerically controlled, high precision and high speed bar positioning system. The system is complete with a gripper to block and transport the profile with automatic horizontal and vertical position adjustment and, optionally, the rotation on two CNC axes. A profile lifting system during feeding allows loading in concurrent operation time, with significant reduction of the cycle time.
The belt loading magazine is used for loading profiles with length of up to 7.5 m (9.5 m as optional) and weight up to 120 kg. If required by the cycle, during loading and unloading, a tilting system automatically rotates the workpiece 90°.

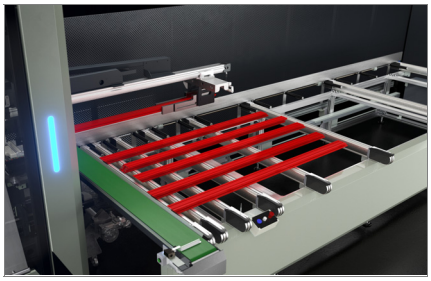
08 - FLW high flexibility loading magazine
As an alternative to the belt loading magazine, which allows the loading of 8 profiles (standard), a high-capacity solution is available which, through transport shuttles, allows full occupation of the loading surface, maximising the number of profiles.

09 - Unloading magazine
Belt magazine for unloading and storage of finished workpieces with large capacity. Available in three versions: for processed workpieces up to 4.0 m and, as an alternative, up to 7.5 or 9.5 m. The unloading magazine is preceded by a chip and short cut extraction system which can be optionally equipped with a conveyor belt and a lifting belt to the collection bag. A conveyor belt for the unloading of short pieces is also available as an option.

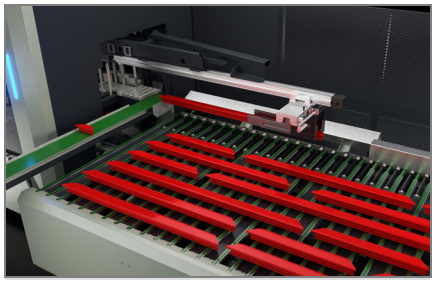
10 - HCS high-capacity unloading magazine
The high-capacity magazine is the highly automated solution that, through a motorised roller lane, aligns the machined workpieces before unloading them on the belt magazine, repositioning all parts of the initial bar on a single line. This system allows to accumulate, without any operator's intervention, the entire volume of profiles contained on the loading magazine.

11 - Industrial printer with ALM automatic positioning
Industrial printer alternative to traditional manual printers for labelling machined workpieces. Thanks to a three-axis Cartesian system, it can automatically position the label on 3 sides of the profile. Together with the high-capacity loading and unloading magazines, it is the ideal solution for an automated production line, for extended unmanned work shifts.

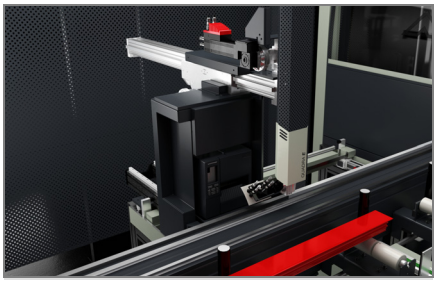
Unloading magazine 09



High-capacity HCS unloading magazine 10



Industrial printer with ALM automatic positioning 11



The images are only given for illustrative purposes

+Quadra

Machining centre

Technical features

FUNCTIONS	
Workpiece milling, cutting and end-milling directly from the whole bar	●
WORKABLE SIDES	
Number of faces (top, side, bottom, heads)	6
AXIS TRAVELS	
X AXIS (longitudinal) (mm)	320
Y AXIS (transversal) (mm)	402
Z AXIS (vertical) (mm)	395
A AXIS (rotary base rotation)	0° ÷ 360°
U AXIS (bar positioning) (mm)	9,660
V AXIS (gripper transversal positioning) (mm)	138
W AXIS (gripper vertical positioning) (mm)	138
H AXIS (cutting unit vertical movement) (mm)	627
P AXIS (cutting unit transversal movement) (mm)	880
Q AXIS (cutting machine rotation)	0° ÷ 360°
B AXIS (motorised clamp movement) (mm)	790
C1 AXIS (pliers rotation)	0° ÷ 180°
ZG AXIS (horizontal cutting unit vertical movement) (mm)	190
YL AXIS (horizontal cutting unit transversal movement) (mm)	1,200
QL AXIS (horizontal cutting unit rotation)	-45° ÷ +45°
YF AXIS (drilling unit transversal movement) (mm)	1,200
XF AXIS (drilling unit longitudinal feed) (mm)	100
POSITIONING SPEED	
X AXIS (longitudinal) (m/min)	30
Y AXIS (transversal) (m/min)	30
Z AXIS (vertical) (m/min)	30
A AXIS (rotary base rotation) (°/min)	6,000
U AXIS (bar positioning) (m/min)	120
V AXIS (gripper transversal positioning) (m/min)	9
W AXIS (gripper vertical positioning) (m/min)	9
H AXIS (cutting unit vertical movement) (m/min)	24
P AXIS (cutting unit transversal movement) (m/min)	30
Q AXIS (cutting unit rotation) (°/min)	6,600
B AXIS (motorised clamp movement) (m/min)	60
ZG AXIS (horizontal cutting unit vertical movement) (m/min)	30
YL AXIS (horizontal cutting unit transversal movement) (m/min)	60
QL AXIS (horizontal cutting unit rotation) (°/min)	7,000
WL AXIS (horizontal cutting unit blade rotation) (rpm)	0 ÷ 3,500
YF AXIS (drilling unit transversal movement) (m/min)	60
WF AXIS (drilling unit mill rotation) (rpm)	0 ÷ 8,000
QF AXIS (drilling unit rotation) (°/min)	7000
XF AXIS (drilling unit longitudinal feed) (m/min)	25
AXIS ACCELERATION	
X AXIS (longitudinal) (m/s2)	1.5
Y AXIS (transversal) (m/s2)	5
Z AXIS (vertical) (m/s2)	5
U AXIS (bar positioning) (m/s2)	7.5
H AXIS (cutting unit vertical movement) (m/s2)	2.5
P AXIS (cutting unit transversal movement) (m/s2)	5
B AXIS (motorised clamp movement) (m/s2)	5
MILLING UNIT	
Electrospindle rotary unit on rotary base	0 ÷ 360°
Standard number of electrospindles with air cooling	4 - 8
Disengagement of the electrospindles from the work area by means of a slide on ball bearings	●
Maximum power in S1 (kW)	5.6
Maximum power in S1 (kW) - optional	7.0
Maximum speed (rpm)	24,000
Toolholder	ER 32
VERTICAL CUTTING UNIT	
Blade diameter at carbide-tipped (mm)	600
NC blade positioning	-48° ÷ 245°
Blade motor power (kW)	3
Maximum machinable profile height (mm)	266*
Maximum machinable profile width (mm)	300*
HORIZONTAL CUTTING UNIT	
Blade diameter at carbide-tipped (mm)	350
NC blade positioning	-45° ÷ +45°
Blade motor power (kW)	0.85
Maximum rotation speed (rpm)	3,500
Maximum machinable profile height (mm)	160*
Maximum machinable profile width (mm)	300*

● included ○ available

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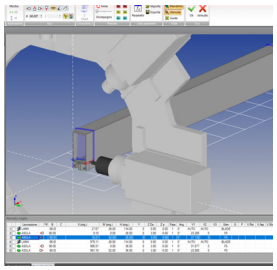
+Quadra

Machining centre

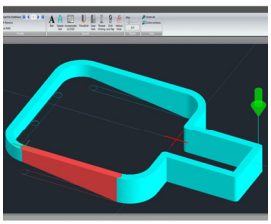
Technical features

HORIZONTAL CUTTING UNIT	
Blade diameter at carbide-tipped (mm)	350
NC blade positioning	-45° ÷ +45°
Blade motor power (kW)	0.85
Maximum rotation speed (rpm)	3,500
Maximum machinable profile height (mm)	160*
Maximum machinable profile width (mm)	300*
END MILLING UNIT	
Maximum mill diameter (mm)	200
Maximum mill pack height (mm)	128.5
Blade motor power (kW)	0.850
Maximum rotation speed (rpm)	8,000
Cutting head sleeve diameter (mm)	32
DRILLING, MILLING AND TAPPING UNIT	
Maximum tool diameter (mm)	16
Maximum tool length (mm)	50
Toolholder	ER 25
Number of tools for drilling unit	2
Drilling unit motor power (kW)	0.850
Maximum rotation speed (rpm)	7,500
Encoder for rigid tapping	●
Tapping capacity	M12
LOADING MAGAZINE	
Belt loading magazine	●
Maximum number of profiles	8
Max. profile weight - optional version (kg)	120
Workpiece tilting device to 90° during loading	○
FLW HIGH FLEXIBILITY LOADING UNIT	
Belt loading magazine with NC transport shuttles	●
Loading surface width (mm)	2,150
Maximum number of profiles with 300 mm width	6
Maximum number of profiles with 30 mm width	32
Max. profile weight (kg)	120
Workpiece tilting device to 90° during loading	●
Variable pitch NC feed	●
Shuttle system on Y and Z axes for profile positioning on the machining surface	●
ALM AUTOMATIC LABEL PRINTER	
Industrial printer with peeling device	●
Three-axis NC positioning device	●
Positioning on profile upper side	●
Positioning on profile front side	●
Printing labels in customised format	○
UNLOADING UNIT:	
Belt unloading magazine for up to 4000 mm workpieces	●
Belt unloading magazine for up to 7500 mm workpieces	○
Belt unloading magazine for workpieces up to 7500 mm, double capacity and two-zone unloading management	○
Depth of the unloading surface of the belt magazine [mm]	2,150
HCS HIGH-CAPACITY UNLOADING UNIT	
Belt unloading magazine for up to 7500 mm workpieces	●
Loading surface width (mm)	2,150
Maximum number of profiles with 300 mm width	6
Maximum number of profiles with 30 mm width	32
Number of transport belts	72
Distance between transport belts (mm)	120
Minimum workpiece length that can be unloaded on high-capacity surface (mm)	250

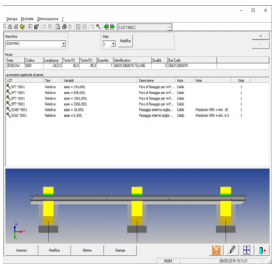
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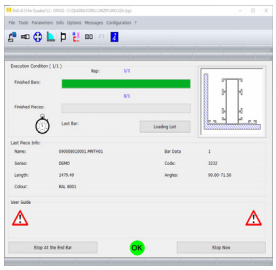
Camplus



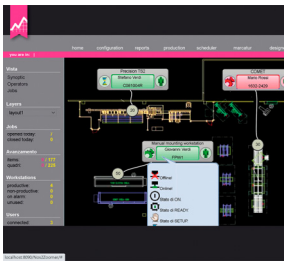
Shape



Job



Drill



Mac-X

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