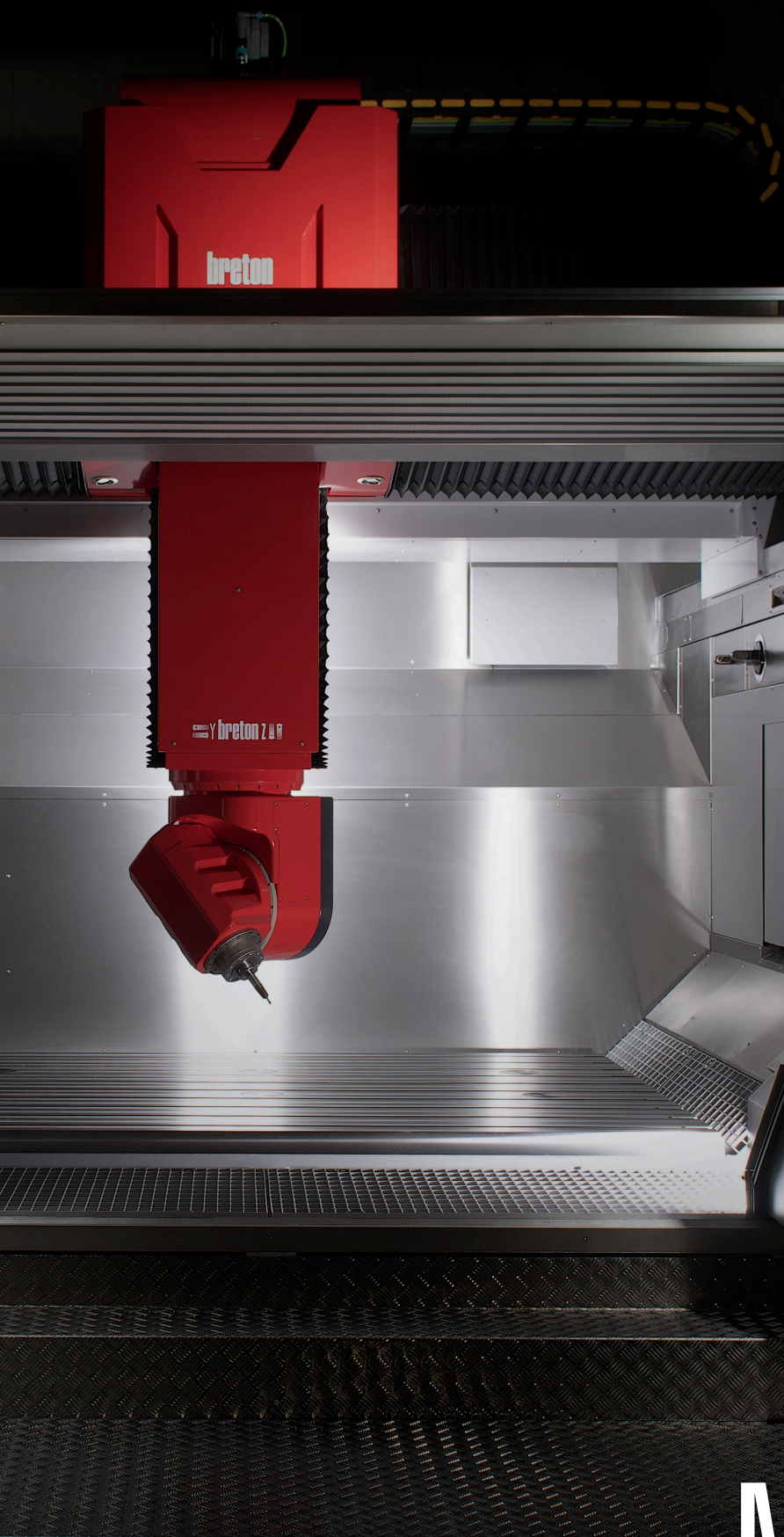




breton
Machine Tools



MATRIX 800

↓ TECHNOLOGIES



HIGH DYNAMICS



THERMOSTABLE



THERMAL SHIELD



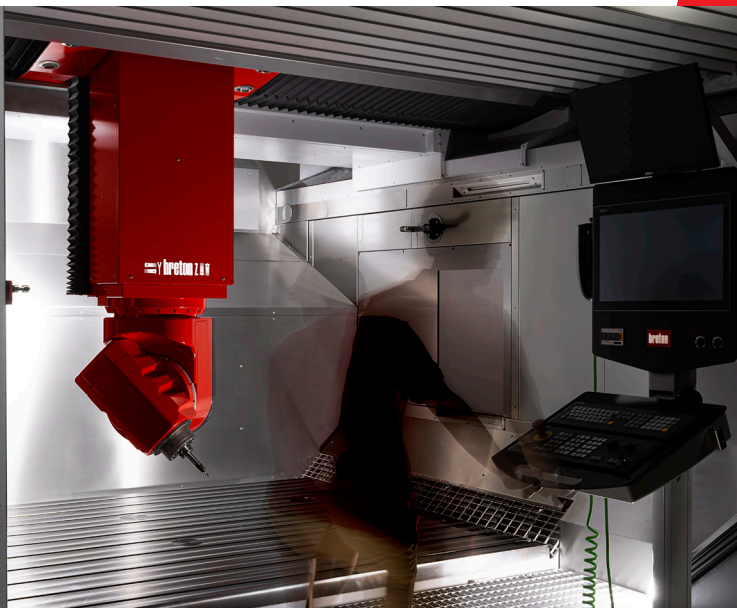
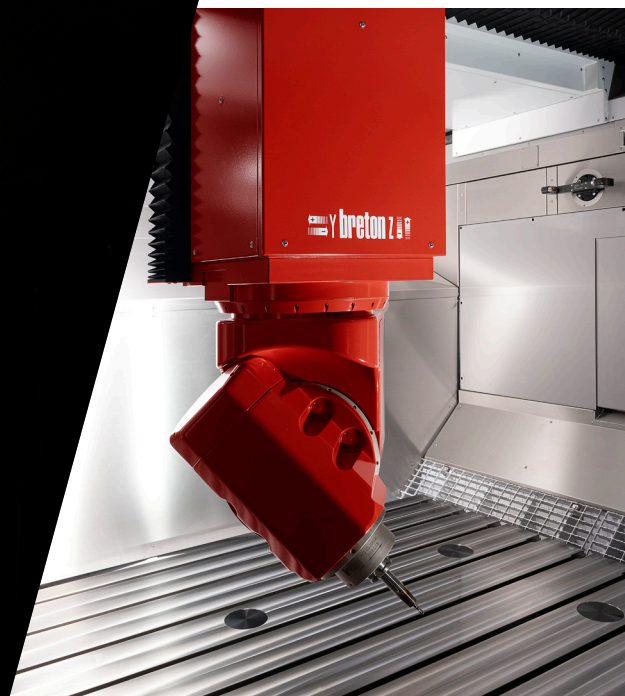
DIRECT DRIVE

High-precision 5-axis vertical machining centre with 2000 x 2500 x 800 mm travel, particularly suitable for hi-feed roughing, semi-finishing and finishing operations on medium size applications made of steel, light alloys, and composites. It has been designed, developed and optimized through the most advanced Digital twin simulation technologies that, besides guaranteeing excellent working performances, allow using this technology to speed up all simulation and machine configuration phases.

The high degree of stiffness guaranteed by the monobloc structure is combined with technological solutions like the High Dynamic technology which can maintain high dynamics and reduce friction factors, thus allowing to obtain higher jerk, acceleration and speed.

The thermo-symmetric structure along with the Thermal Shield technology ensure the total control of thermal expansions, the direct motors used for the axis movements remove the backlash and the vibrations.

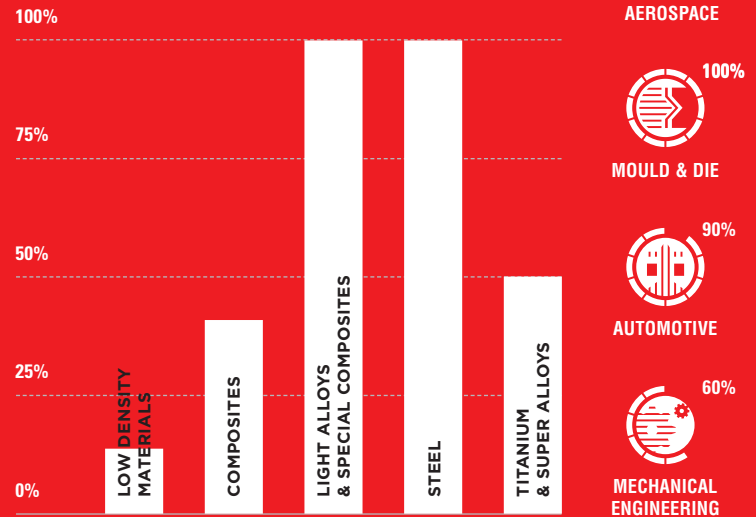
The A and C-axis are motorized by Direct Drive motors: all these features make possible to halve commissioning times and to reduce Customer's operative costs.



5

REASONS WHY

↓ EFFICIENCY INDICATOR



COMPACTNESS

Best optimization of the ratio between machine size and axis strokes, i.e. the footprint efficiency ratio. The transversal arrangement of the layout (transversal stroke 2500 mm and longitudinal stroke 2000 mm) allows to push the machine rear side against the wall, improve the machine visibility to the operator and deliver the machine to the customer already assembled.

HIGH PRECISION

The thermo-symmetric structure along with the Thermal Shield technology considerably improves the control of the thermal expansion and allow reducing structural deformations without using expensive cooling systems. The direct motors for the axes movement remove the backlash and the vibrations caused by the belts; the Direct Drive motors for A and C-axis guarantee the necessary power when required.

The head is equipped with large bearings to ensure the utmost vibration damping and the best positioning precision provided by the high-resolution integrated encoders; moreover, both torque motors and electrospindle are coolant-refrigerated.

VERSATILITY

This machining centre guarantees enough thrusts and rigidity to perform high-feed roughing and top-of-the-range semi-finishing and finishing operations. At the same time, it offers the ideal dynamics, speed and accelerations for those who are looking for the highest production performances even on the most demanding parts made of hardened steel or non-ferrous metals.

REDUCED INSTALLATION TIME AND COST

Installation times and costs have been halved. The monobloc structure allows delivering the machine already assembled to the customer, considerably simplifying installation time on site. The structural rigidity just requires simple flat foundations, thus minimizing the use of anti-shrinkage cement and chemicals for ground anchoring.

MINIMIZED OPERATING COSTS

The reduction of operating costs represents, of course, an added value. The kinematics and mechanisms lubrication has been completely reconceived, replacing the traditional systems with an advanced plant for lubricant control and distribution. In this way, the most common problems such as dirt, stains, dangerous vapors, and relevant maintenance costs are solved. Any variations in temperature are stabilized thanks to thermo-symmetrical structures and the patented Thermal Shield.

The working area is covered with modular stainless steel panels which, combined with the chip discharging system, allow keeping it clear and safe for the operators and also to extend the machine life.

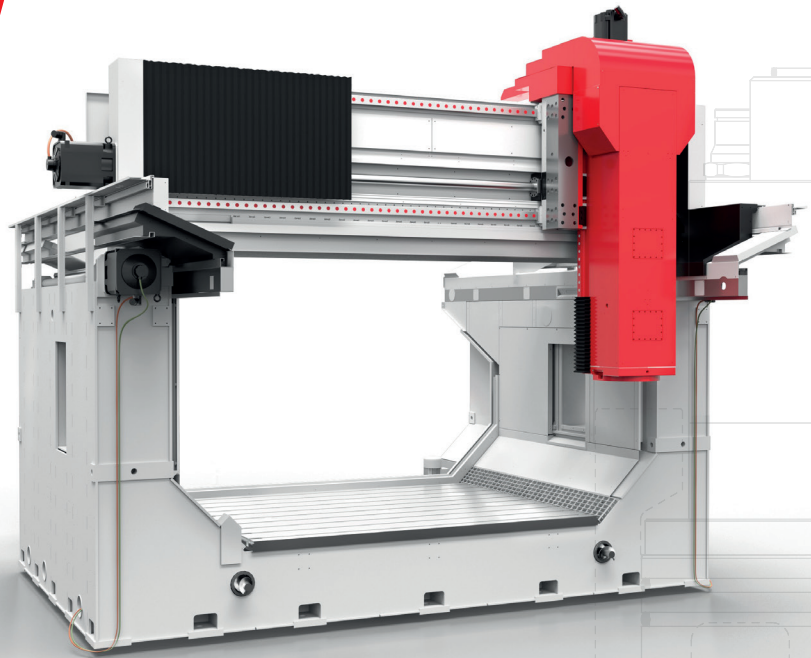
→ MONOBLOC STRUCTURE

A rigid **monobloc structure** made of electro-welded steel has been **designed to guarantee stiffness and vibration damping** during the most demanding operations. Since columns and table are made of a single structure, remachining or readjustments at the installation site are no longer necessary. The structure incorporates a **complete series of chip conveyors** which can be replaced by a convenient **dust extraction system** when working on composites. Both bridge and RAM, among the sturdiest in their category, ensure **greater stability in roughing operations** while maintaining **high dynamics and accuracy in finishing operations**.

28.3

**FOOTPRINT
EFFICIENCY RATE**

Machine dimensions (mm)
6.500w x 4.350l x 5.000h /
 Machine axes stroke (mm)
2.500Y x 2.000X x 800Z



MATRIX 800		
X stroke	mm in	2.000 79
Y stroke	mm in	2.500 98
Z stroke	mm in	800 32
X / Y / Z axes rapid feedrate	m/min ipm	50 / 50 / 40 1,969 / 1,969 / 1,575
A axis rotation		-105° +120° — ±115°
A axis rapid feedrate	rpm	30
C axis rotation		±305° - endless
C axis rapid feedrate	rpm	30
Milling tool taper		HSK - A63
Milling table dimension	mm in	2.500 x 2.000 98 x 79
Max. table payload	Kg/m2 lb/ft2	5.000 1,024

MATRIX 1000	MATRIX 1300/1500
2.500 - 4.000 98 - 158	3.000 - 8.000 118 - 315
2.500 98	3.000 - 4.000 118 - 158
1.000 39	1.300 - 1.500 51 - 59
50 / 50 / 40 1,969 / 1,969 / 1,575	50 / 50 / 40 1,696 / 1,696 / 1,575
±115°	±115°
30	30
±305° - endless	±305° - endless
30	30
HSK - A63 – HSK - A100	HSK - A63 – HSK - A100
2.000 - 4.000 x 2.500 79 - 158 x 98	2.500 - 3.500 x 3.000 - 8.000 98 - 138 x 118 - 315
15.000 3,072	15.000 3,072

→ HEADS

↓ ELECTROSPINDLES

M 52/16

POWER S6/S1 → 31/25 kW
TORQUE S6/S1 → 65/52 Nm
SPEED → 16.000 rpm
HSK - A63

M 48/28

POWER S6/S1 → 22/20 kW
TORQUE S6/S1 → 60/48 Nm
SPEED → 28.000 rpm
HSK - A63

M 62/28

POWER S6/S1 → 41/37 kW
TORQUE S6/S1 → 89/62 Nm
SPEED → 28.000 rpm
HSK - A63

M 87/24

POWER S6/S1 → 115/87 kW
TORQUE S6/S1 → 110/83 Nm
SPEED → 24.000 rpm
HSK - A63

M 100/18

POWER S6/S1 → 40/40 kW
TORQUE S6/S1 → 137/100 Nm
SPEED → 18.000 rpm
HSK - A63



GHIBLI

Type	FORK HEAD	
Transmission	HIGH PRECISION GEARBOX	
A axis rotation	± 115°	
C axis rotation	± 270° - ENDLESS	
A axis rapid feedrate	rpm	12
C axis rapid feedrate	rpm	18
Pivot distance	mm in	250 9.8
Interchangeable spindle	-	
Compatible electrospindles		
M 52/16 - M 48/28 - M 62/28		



PHOENIX

Type	FORK HEAD	
Transmission	DIRECT DRIVE	
A axis rotation	-105° +120°	
C axis rotation	± 305° - ENDLESS	
A axis rapid feedrate	rpm	30
C axis rapid feedrate	rpm	30
Pivot distance	mm in	265 10.4
Interchangeable spindle	-	
Compatible electrospindles		
M 48/28 - M 62/28		



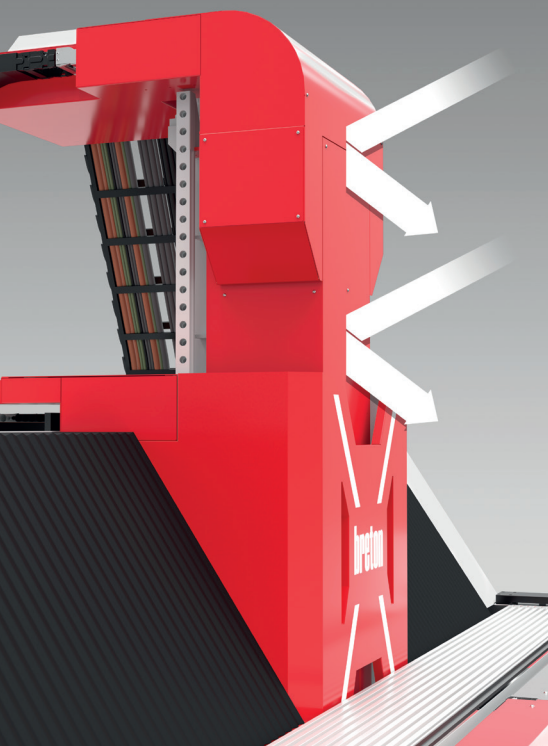
TORNADO

Type	FORK HEAD	
Transmission	DIRECT DRIVE	
A axis rotation	-105° +120°	
C axis rotation	± 305° - ENDLESS	
A axis rapid feedrate	rpm	30
C axis rapid feedrate	rpm	30
Pivot distance	mm in	320 12.6
Interchangeable spindle	-	
Compatible electrospindles		
M 83/24 - M 100/18		



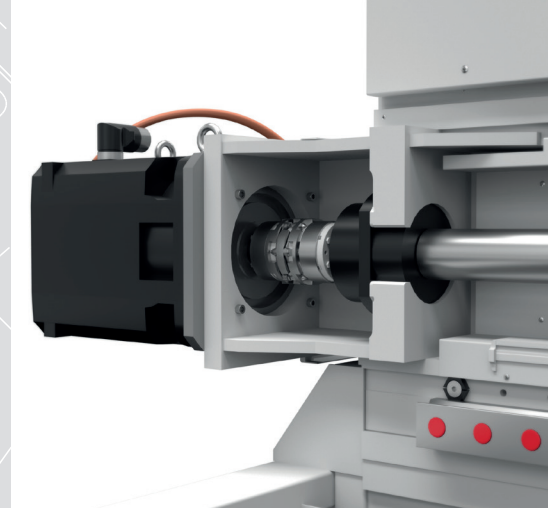
TYPHOON

Type	ORTHOGONAL		
Transmission	DIRECT DRIVE		
A axis rotation	± 115°		
C axis rotation	± 305° - ENDLESS		
A axis rapid feedrate	rpm	30	
C axis rapid feedrate	rpm	30	
Pivot distance	mm in	260 10.2	350 13.8
Interchangeable spindle	OPTIONAL		
Compatible electrospindles			
M 48/28 - M 62/28 - M 83/24 - M 100/18			



→ DIRECT MOTORS

The use of direct motors for the axis movement **allows removing the backlash and the vibrations** caused by the transmission belts, thus obtaining a **much greater dynamic response**. Moreover, by removing the driving belts we eliminate "noisy frequencies" thus achieving **higher finishing qualities** even on complex surfaces.

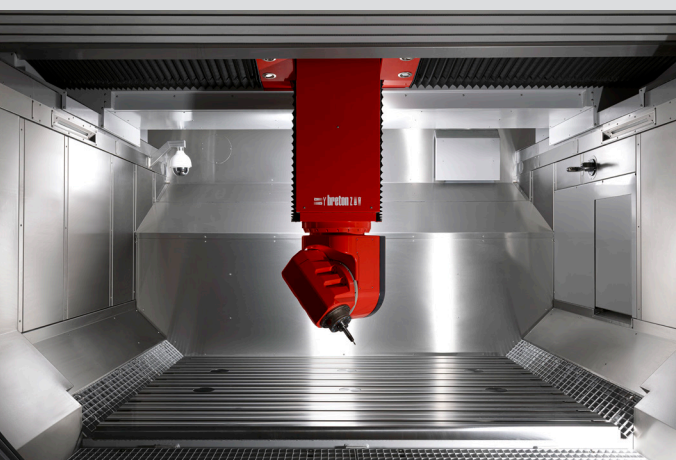
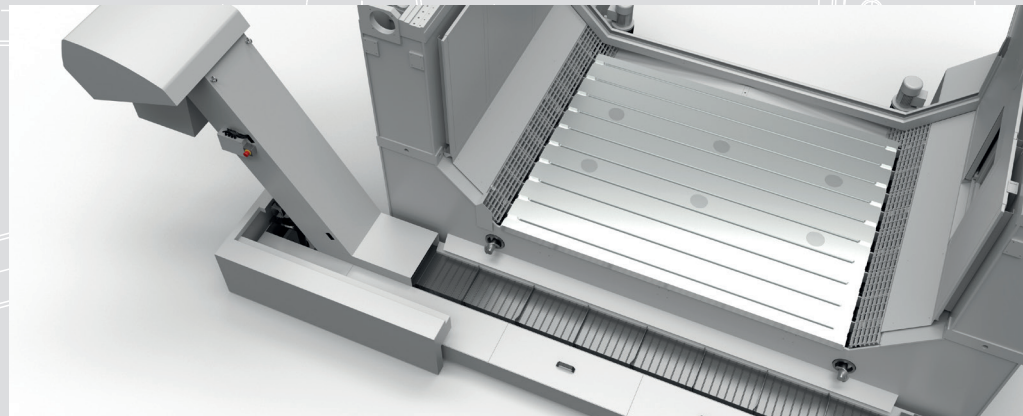


← THERMAL SHIELD

Our patented Thermal Shield technology considerably **improves thermal expansion control and reduces structural deformations** without using expensive cooling systems. This technology creates an **advanced thermal coat** that keeps the temperature between structures and workpieces as stable as possible. The maximum difference in temperature among various points of each machine structure is of 0.2°C, avoiding the risk of angular deviations or excessive expansions.

→ CHIP DISCHARGE

An efficient chip discharging system, consisting of **screw and belt conveyors positioned around the table**, allows to keep the working area free from accumulations of chips and safe for the operators who will be able to devote their time to more profitable activities than cleaning.



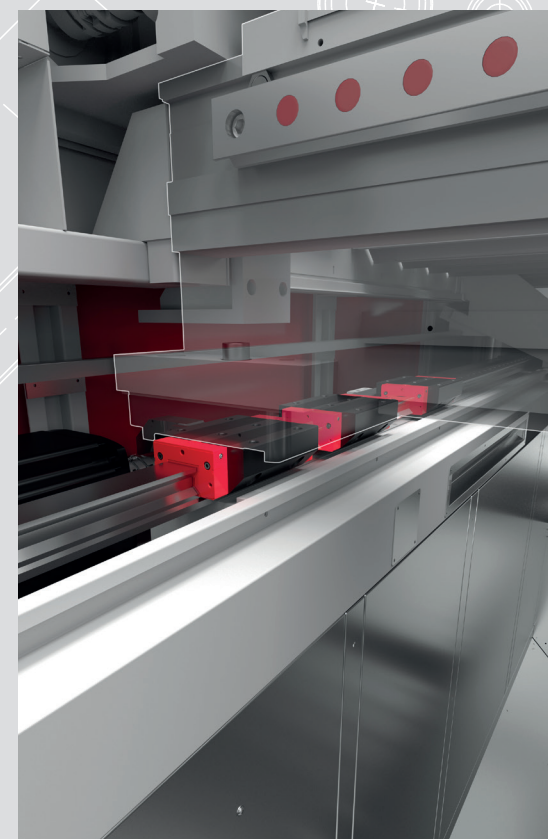
← WORKING AREA

A clean machine lasts much longer. For this reason, the working area is covered with **modular stainless steel panels** that not only keep themselves cleaner but also remain virtually **unchanged over time** even if continuously exposed to swarf and chips.

→ ROLLER PADS

To provide the bridge with maximum rigidity, we use **3 roller pads on each shoulder guideway** in order to more effectively contrast the thrust forces and facilitate the vibration damping while maintaining a high dynamism.

The RAM, with a **section of 450 x 450 mm** among the sturdiest in its category, is fixed to the carriage by means of **6 roller pads**, 3 per side, in order to support all the efforts and ensure a high movement speed.



→ TOOL CHANGE

Matrix 800 can integrate various types of tool stores, all perfectly compatible with the new **exchanging arm**, even more **compact and faster**. This choice allowed for the design of more rigid shoulder, and open to expand or modify the store over time as needed.



→ CONTROL PANELS

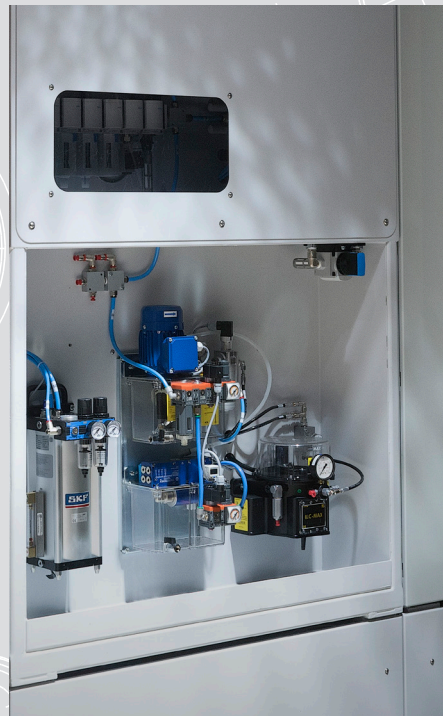
Matrix 800 has been designed and tested together with the suppliers of the most advanced CNC systems so that its features can enhance the functions provided by electronics and improve the precision and finish of machined parts.

This machining centre can, therefore, be equipped with both the **latest version of the Heidenhain** numerical control and the **brand new Siemens Sinumerik One**, of which we have been **co-developers and partners selected for the launch**.



← MAINTENANCE AREA

On the machine side, we have dedicated an area to hydraulic and pneumatic utilities. Here, in a tidy and compact panel, **all the modules required for diagnostics and maintenance are grouped at sight**. The **modular upper part** is prearranged for possible future expansions of the machine with new accessories and/or automation. For cleaning and safety purposes, the lower part of the panel is fitted with a tray dedicated to the collection of fluids so as not to disperse polluting liquids into the environment.



→ ROTARY TABLE

It is possible to configure the machine with a rotary table, available with a **diameter ranging from 1000 to 1600 mm**, to perform polar milling operations on cylindrical elements or complex geometries, obtaining higher precision.

In this way, we can also load parts with a larger volume, as we maintain the required space for head and tool on one side only, using the rotation of the part to process it in any direction.

The **Direct Drive motorization of the table** allows to have a sufficient number of revolutions also to carry out turning operations.



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Machine Tools

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