

# MATRIX E3



**Modular 5-axis gantry vertical machining center with high dynamics and high precision.**

Careful technical choices made it possible to combine thrust and strength with dynamics and precision in order to obtain the ideal performance in hi-feed roughing, semi-finishing and finishing operations on large parts in steel, light alloy or special composites.

**breton**

## Breton Matrix E3

It's a machining center that allows **combining the robustness and thrust** required in the roughing phases with the **dynamic and precision** required in the finishing phases.

A stable and robust base but at the same time extremely dynamic, which can be configured with a wide range of components and accessories to perform entire work processes in multiple sectors.

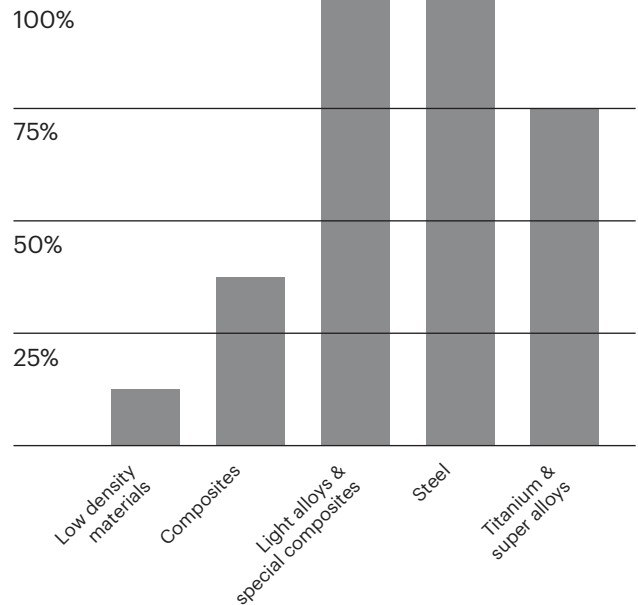
Matrix E3 is used in applications where high precision and large part machining is required, such as in the aerospace (structure and tool machining), automotive (high precision prototyping, moulds and composite structures), mould making and general precision engineering.

The **Dual Drive motors guarantee power and precision**; they move together to achieve maximum thrust when the machining requires significant effort, while working "in preload" when the machine is performing high precision machining.

Breton technologies such as High Dynamics and Thermal Shield provide a **superior surface finish**.

The real benefit is having a **single setup for all phases**: roughing, semifinishing, finishing, measurement and check of the surface.

### Investment efficiency



*The High Dynamics removes all friction factors to obtain more jerk, acceleration and speed, thus improving both precision and quality of the surface in the finishing phase.*

## EXCLUSIVE TECHNOLOGIES

Breton Matrix E3 is equipped with the most advanced technologies to guarantee excellent machining performance.

Hi-speed milling



High Dynamics



Direct Drive Head



Dual Drive motors  
(on X and Y axes)



Thermostable



Thermal Shield



**1.** Stainless steel working area for easy cleaning and reduced downtime

**2.** Easy accessibility to the working area by the operator

**3.** Designed and tested with Heidenhain e Siemens, the most advanced CNC

**4.** Faster and compact exchanging arm with various types of tool store

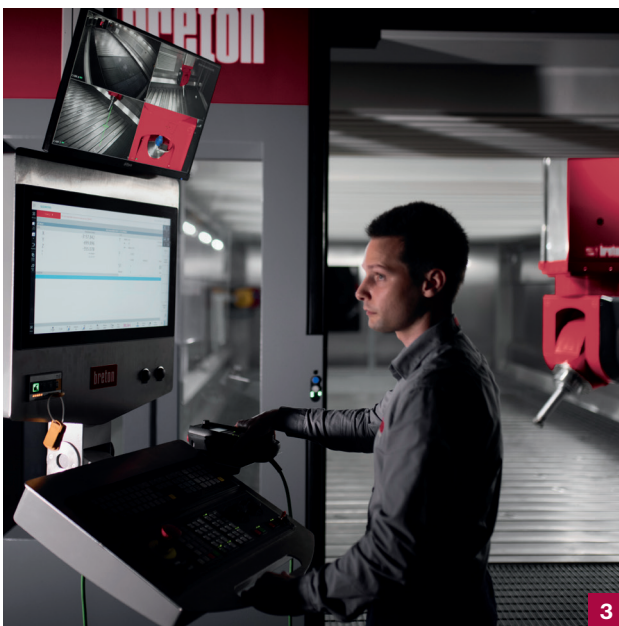
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4

## 5 reasons to choose Matrix E3

### 1 / Strength, speed and higher precision

The main advantage is having **multiple production possibilities** in a single solution: roughing, semi-finishing, finishing, measurement and check of the surface. A careful design and **structural optimization supported by the Digital Twin** allowed us creating a machine that combines the strength and robustness required in the roughing phases with the speed and precision required in the superfinishing phase.

### 2 / Minimized installation and operating costs

In the operational life of a machining center, every euro saved on the hourly cost becomes extremely important. The use of new, carefully integrated subsystems allowed us to **eliminate all unnecessary energy consumption**, thus achieving high savings in operational use. This led to choices such as the ThermalShield technology and the Dual Drive motors, the **renewed hydraulic system with Rexroth CytroPac** and the **new lubrication system**.

### 3 / Ergonomics and higher safety

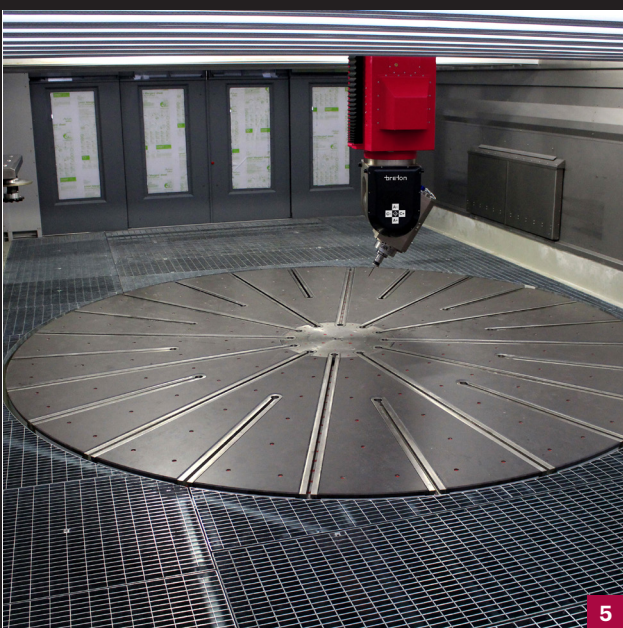
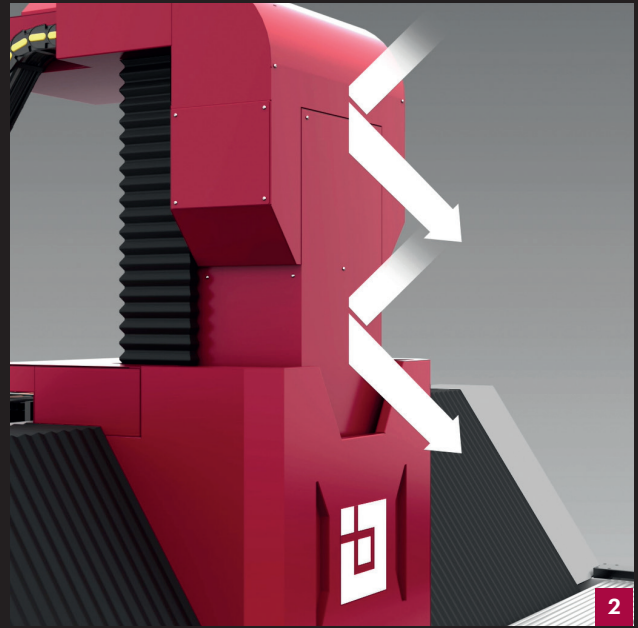
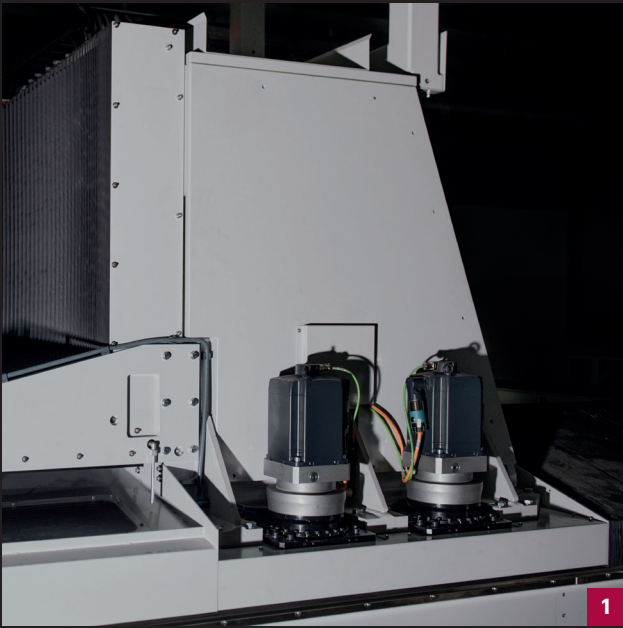
Every detail has been carefully studied to guarantee the **maximum safety** and make it easier for the operator to use the machine. The flush floor work table and the automatic ceiling bellows guarantee a **fast and safe workpiece loading/unloading** by entering directly into the machine with the overhead crane. In addition, the **working area is completely closed to avoid the release of chips, dust or fumes** that could be dangerous for the operator. Optimum visibility of the work is guaranteed by large, **shatter-proof and scratch-proof glazing** in addition to the internal cameras that can be integrated into the control panel.

### 4 / Connectivity and advanced technology

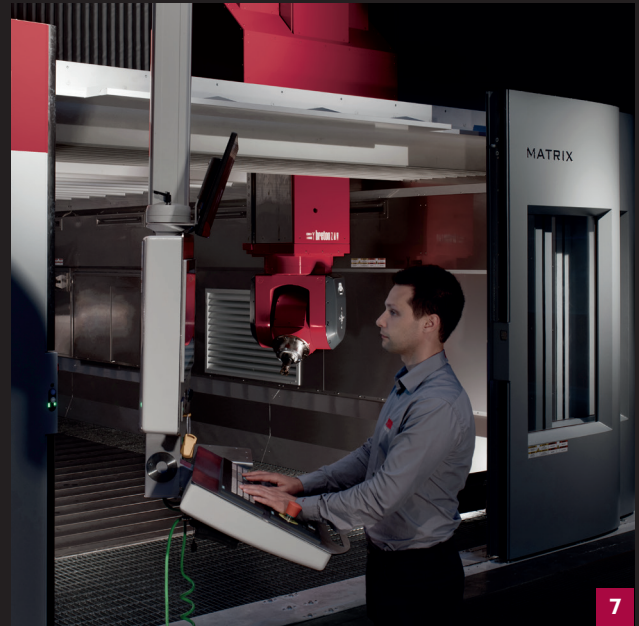
Matrix E3 has been **designed taking advantage of the Digital Twin** potential. Inside a virtual environment, all the machine features have been included to obtain a realistic simulation and verify its behaviour in the various use scenarios. The result is a **structure built on the basis of simulations**, which allows for targeted optimization and increased performance. Matrix E3 is available with the most advanced Heidenhain and Siemens controls. It is **fully connected** allowing speeding up both programming and maintenance. It also allows integration with Industry 4.0 software to analyse operating statistics, optimise operations and for predictive maintenance.

### 5/ Engineered on your needs

Matrix E3 is available in different configurations to meet the needs of specific sectors, including yours. In this way, we offer you a **tailor-made solution** depending on whether it is **wet or dry machinings** on special composites, aluminium, steel or superalloys. Breton analyses every single request in detail and proposes the ideal machine for every application, defining it among several customization options: heads and related electrospindles, laser measuring systems, different types of part probes, pallet change (frontal, rear or integrated in an existing FMS), rotary tables, tool stores up to 300 places, software for Industry 4.0 and solutions for pendular machining. Innovative technologies such as **ultrasonic cutting** of aeronautical materials (honeycomb), **ultrasonic thickness control systems**, **automated countersinking systems** and much more can be integrated as well.



1. Dual Drive motors, they work together for the maximum thrust and high precision
2. Patented Thermal Shield technology, for a better control of the thermal expansions
3. Service unit with fast access for maintenance and Rexroth CythroPac as a new efficient lubrication system
4. Working area completely closed with automatic ceiling bellows
5. Configurable milling and turning tables for seamless workbench integration



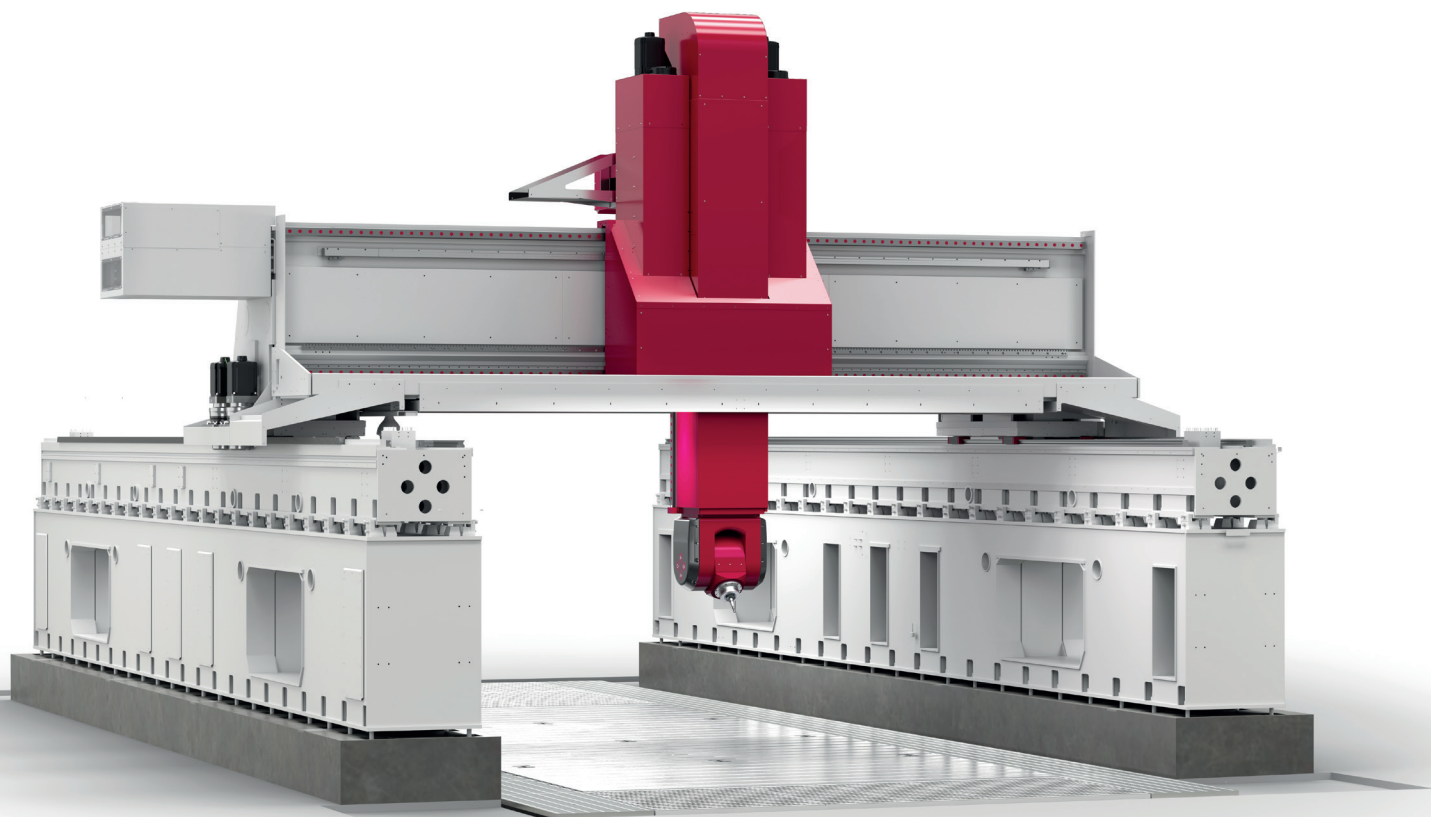
**6.**  
Fume extraction hoods  
integrated into shoulders  
and piping system  
connecting to main vacuum  
filtration unit

**7.**  
Designed and tested with  
the most advanced CNC  
suppliers (Heidenhain e  
Siemens)

**8.**  
Various types of tool store  
compatible with the new  
exchanging arm

**9.**  
Z-axis free of components  
interfering with the  
workpiece and allowing  
machining to be approached  
from all 4 sides

Reinforced modular, thermo-symmetrical structure to ensure high thrusts and dampen vibrations during heavy-duty machining.



<b>X axis stroke</b>	3.000 / 4.000 / ...+2.000... / 30.000 mm	118 / 157 / ...+79... / 1.181 in
<b>Y axis stroke</b>	3.000 / 4.000 mm	118 / 157 in
<b>Z axis stroke</b>	1.300 / 1.500 mm	51 / 59 in
<b>X / Y / Z axes rapid feedrate</b>	50 / 50 / 40 m/min	1,969 / 1,969 / 1,575 ipm
<b>A axis rotation</b>	-105° +120° / ±115°	
<b>A axis rapid feedrate</b>	30 rpm	
<b>C axis rotation</b>	±305° / endless	
<b>C axis rapid feedrate</b>	30 rpm	
<b>Milling tool taper</b>	HSK-A63 / HSK-A100	
<b>Table payload</b>	15.000 Kg/m <sup>2</sup>	19.35 pound/inch <sup>2</sup>

**Breton - a pioneer in the development of advanced technologies and materials - is a world leader in the design and manufacture of state-of-the-art industrial machinery for processing natural stone, ceramics, metals and the development of engineered stone plants.**

Founded in 1963 by Marcello Toncelli, with headquarters in Treviso (Castello di Godego), two other production sites in Italy and six foreign branches (USA, Australia, India, China, UK, Brazil), the company is recognized worldwide thanks to its philosophy always aimed at research.



The desire to explore new technologies, as integral part of the company's DNA, has in fact led to the establishment of the BIT (Breton Institute of Technology), where different dedicated teams design and test innovative solutions to develop materials that anticipate the needs of businesses.