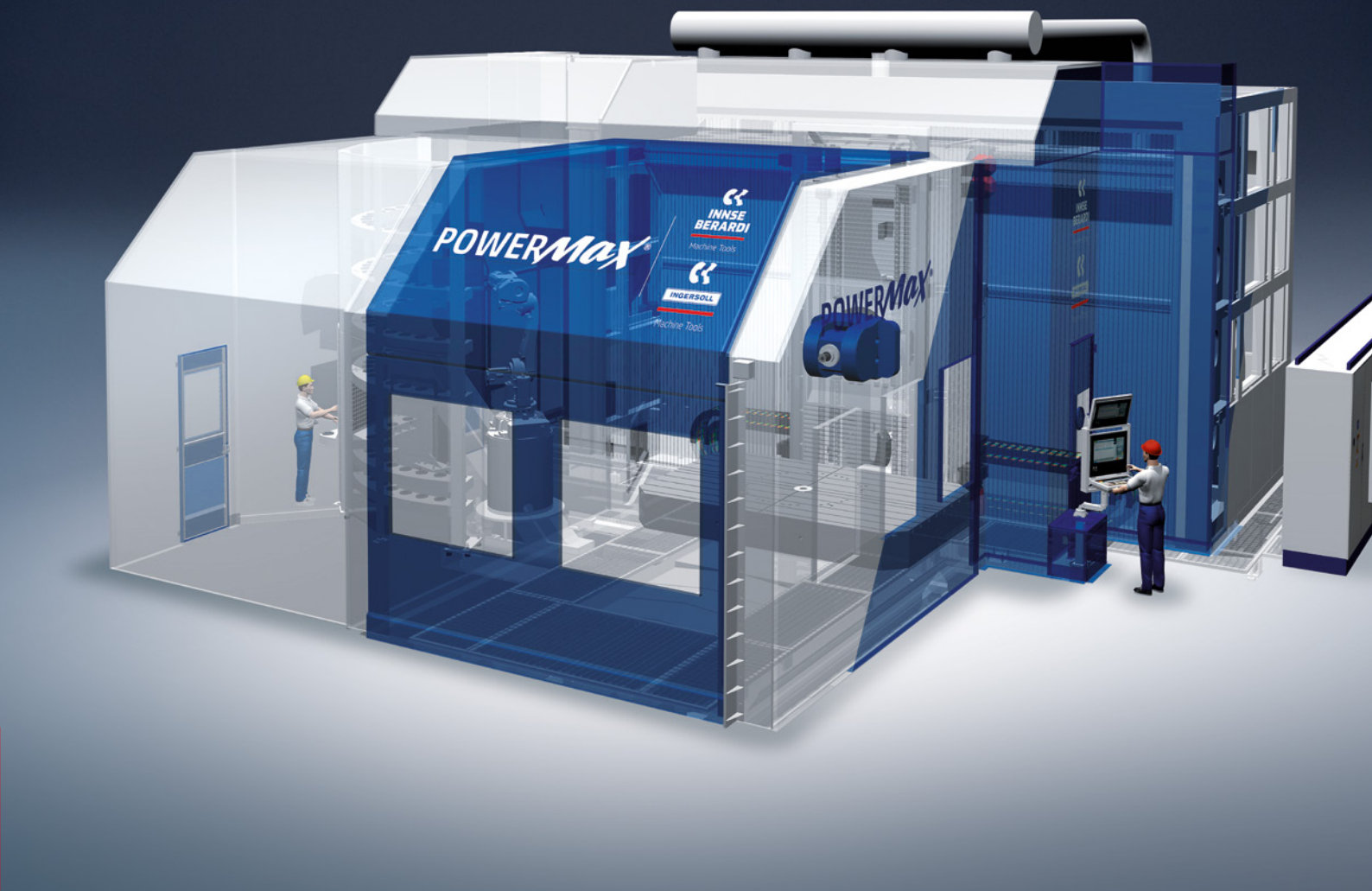
INNSE BERARDI
Machine Tools

INGERSOLL
Machine Tools

POWERMAX® ST

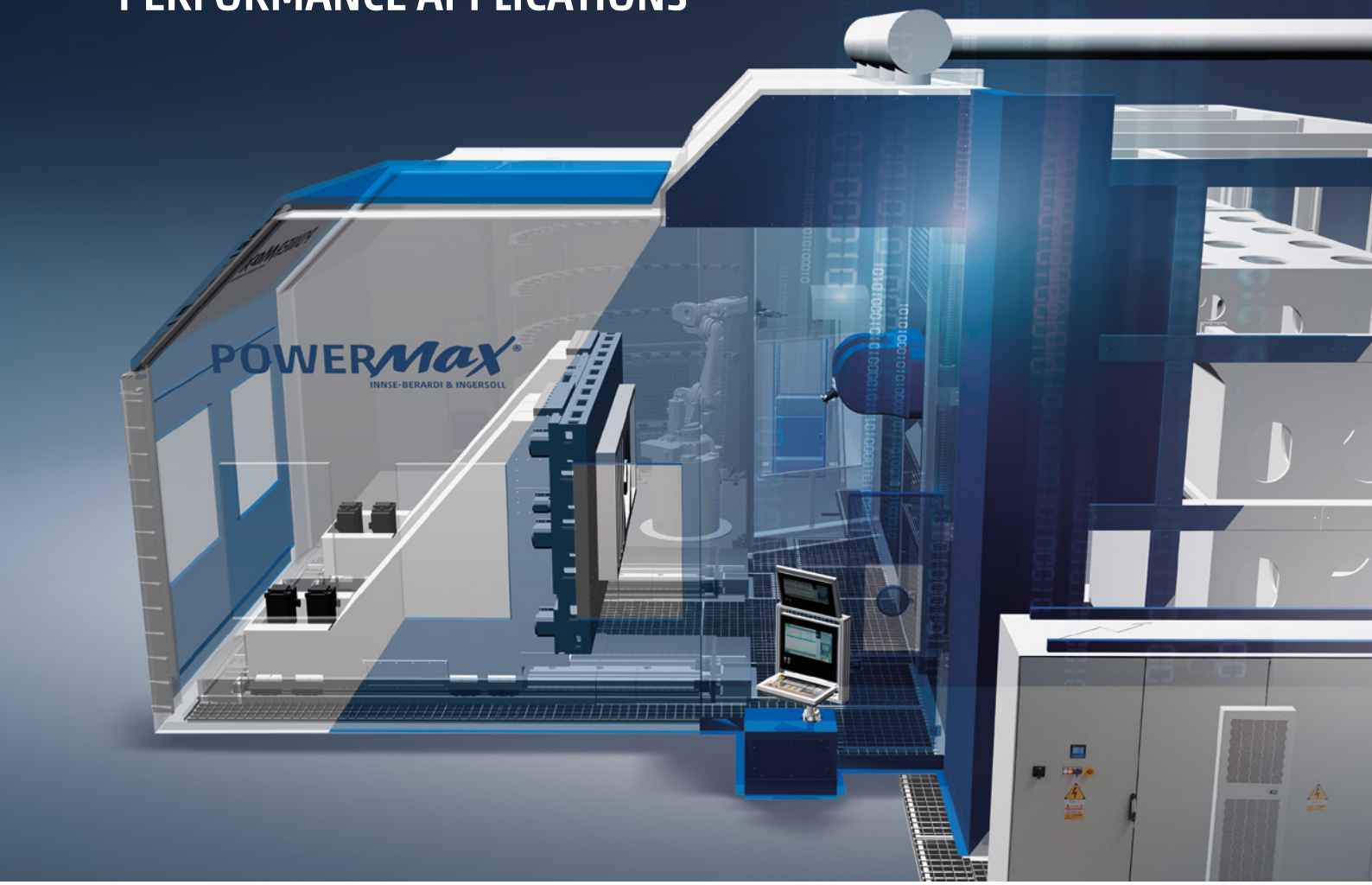
INNSE-BERARDI & INGERSOLL

INNOVATIVE LARGE MANUFACTURING CENTER FOR HIGH PERFORMANCE APPLICATIONS



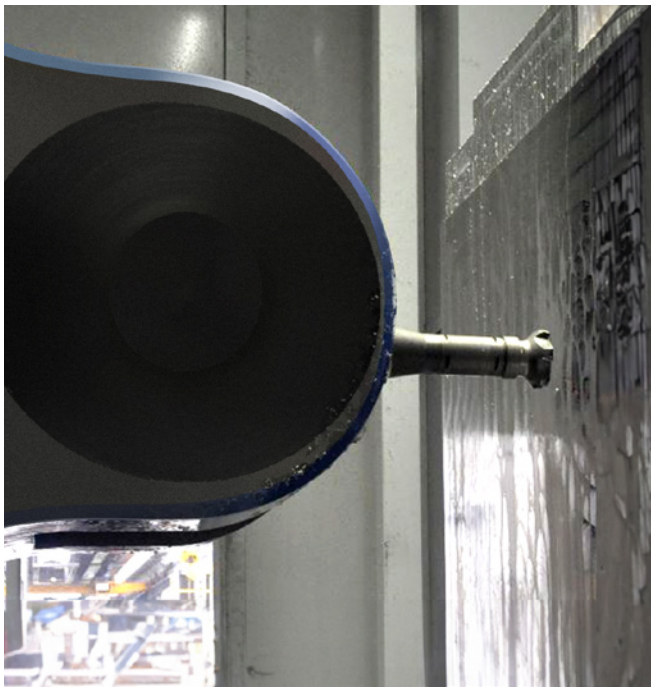
POWERMAX® ST
INNSE-BERARDI & INGERSOLL

LARGE WORKING-VOLUME 5/6 AXES MANUFACTURING CENTER FOR HIGH PERFORMANCE APPLICATIONS



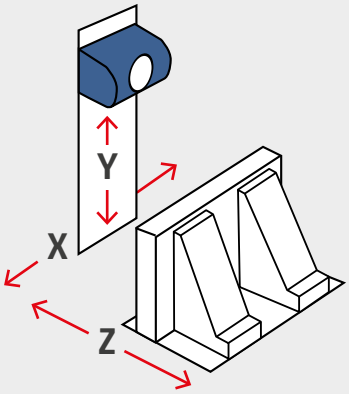
PowerMax®'s 3 linear axes travel along parallel sets of linear guides and optical scales mounted to thermally-symmetric sub-structures, driven with high-torque, high-power, coupled gear-motors controlled via **Siemens, Fanuc or Heidenhain CNCs**. The same approach has been adopted for its C and A axes.

The design provides PowerMax® with **superior static and dynamic positioning accuracies** at high speeds and accelerations in its working envelope for a constant chip removal rate throughout the entire milling volume.

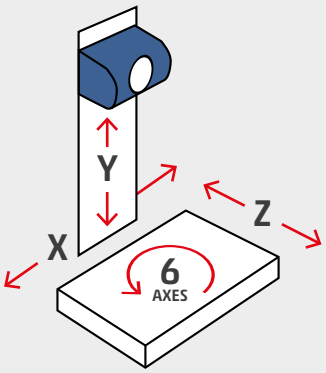


TWO MORPHOLOGIES

HORIZONTAL PROFILER



MACHINING CENTER



Kinematic Configuration is partially reversed

- The milling head moves:
  - horizontally along X with the column
  - vertically along Y within the column
- The part being milled moves horizontally along Z axis on the pallet
- In the 6 axes version the pallet is replaced by a moving rotary table

BENEFITS

Feasibility
Manufacturing of complex geometry parts

Quality
Tight tolerances and surface finishing throughout the entire working volume

Capacity
Large milling volume

Productivity
Reduced machining time

High ROI/ Low TCO
Low capital investment and low operational cost

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FEATURES AND BENEFITS

01

Multiple optical scales and sets of high torque, high power, coupled gear motors for each one of its X, Y, Z, C, A axes (Patent pending on X-Y-KINEMATIC)

BENEFIT

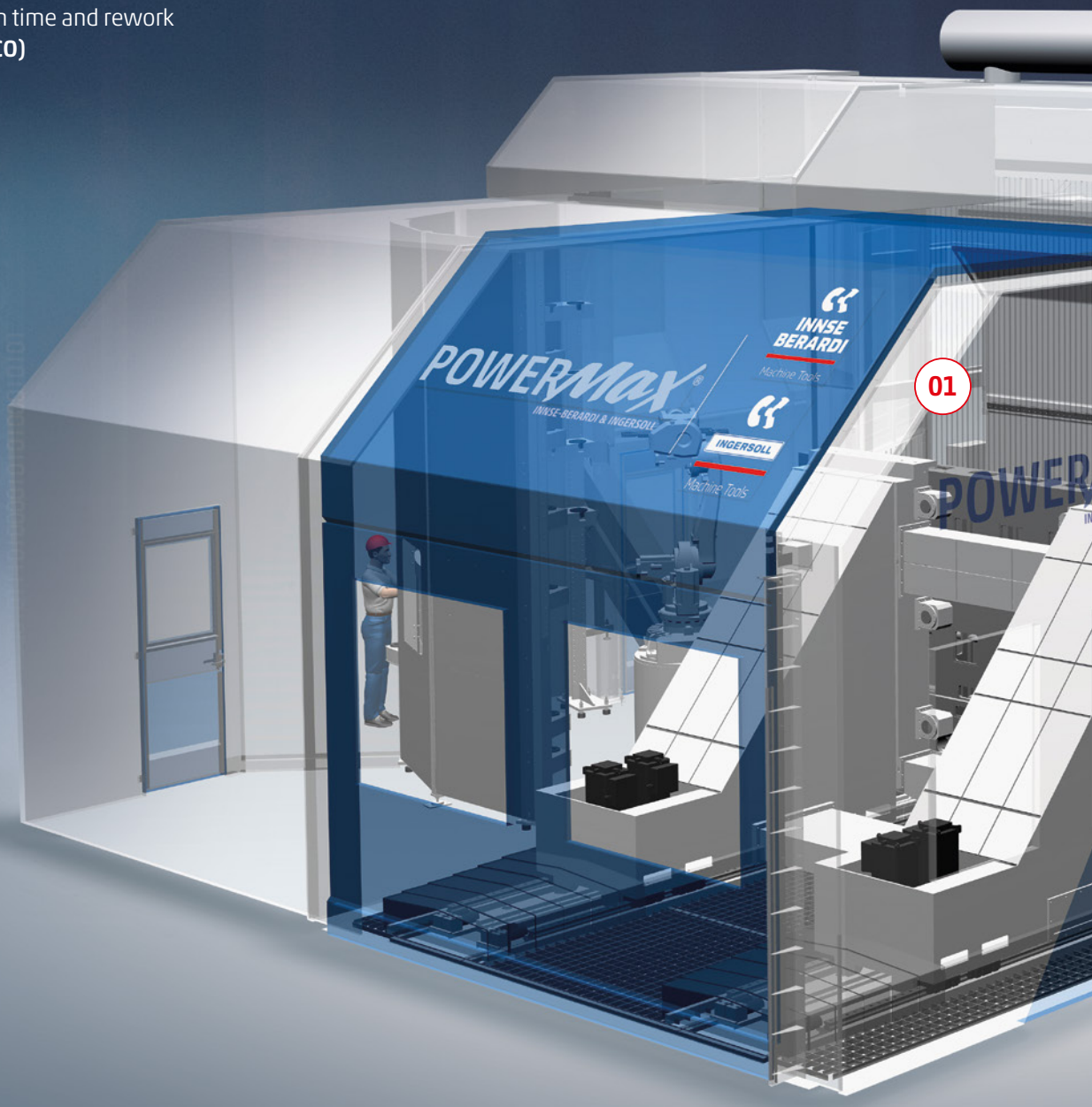
- superior dynamic positioning accuracy in the entire large working envelope at all speeds and accelerations for constant chip removal rate throughout the entire milling volume **(quality, capacity, productivity)**
- outstanding milling ac/dec and speed for high productivity (quality, low OPEX, low TCO)
- reduced inspection time and rework **(low OPEX, low TCO)**

02

With no ram, the large, thermally symmetric XYZ-C structure is designed specifically to minimize static deflections throughout its travels

BENEFIT

- superior static positioning accuracy throughout the entire large working volume **(quality and capacity)**



03

Siemens Sinumerik One, Fanuc, Heidenhain controls: most powerful reliable and widespread, industrial CNCs

BENEFIT

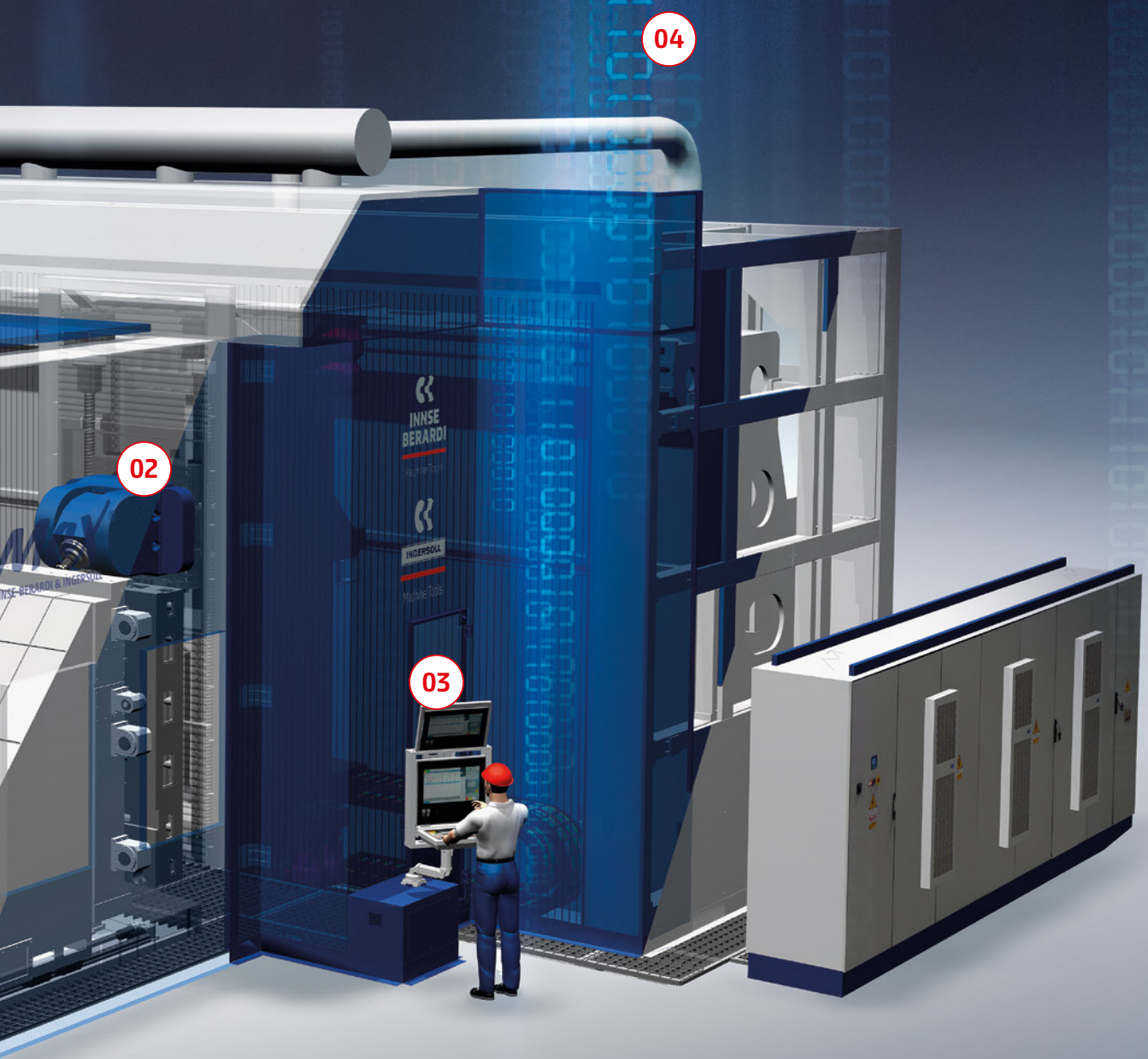
- minimal user training, widespread responsive OEM assistance, industry standard **(low OPEX, low TCO)**

04

IBRM: Equipment Monitoring, Process Monitoring, Digital Twins, Remote Diagnostic, Preventative Maintenance

BENEFIT

- Reduced maintenance cost, minimized downtime, continuous process improvement, digital parts certification **(low OPEX, low TCO)**



Al POWERMAX® ST

The stiffness of the PowerMax® allows it to keep a constant feed rate when machining in multi-axes, holding the dynamic tolerance while milling on 3D surfaces.

Dynamic tolerance is the maximum allowed difference between the given tool path and the followed path by the machine (accuracy on machined part).

Good dynamic is needed to be fast and accurate and can be obtained only out from a specific structure and performing kinematics.

- **Two polar axis head with electro spindles with torque up to 444 Nm and power up to 150 KW.**

Axes data

AXIS	TRAVEL [mm]	MAX. FEED RATE [m/min]	MAX. ACCELERATION [m/s²]	MAX. THRUST [N]
X	4.300 – 5.300 – 6.300	50	4	10.000
Y	2.200 – 3.200	50	4	10.000
Z (Horizontal Profiler)	1.000 - 1.500	40	4	10.000
Z (Roto Traversing Table)	2.000 - 3.000	40	4	10.000

Spindle / Heads data

	TORQUE (S1) [Nm]	96	307	444
Spindle	Power (S1) [kW]	150	65	93
	Max. speed [rpm]	20.000	15.000	8.000
	Taper size	HSK-A-100	HSK-A-100	HSK-A-100
C Axis	Stroke [°]	720 (+/-360)		
	Max. speed [rpm]	50		
	Max. acceleration [°/2]	1.000		
	Clamping torque [Nm]	12.000		
	Machining torque [Nm]	7.000		
A Axis	Stroke [°]	190 (+/-95)		
	Max. speed [rpm]	25		
	Max. acceleration [°/s²]	1.000		
	Clamping torque [Nm]	12.000		
	Machining torque [Nm]	7.000		

APPLICATION SECTORS

AVIATION & AEROSPACE

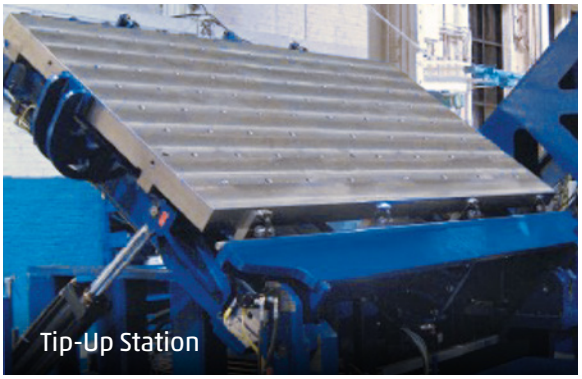
PowerMax® machine has been conceived for highs demanding applications for the aircraft and space exploration like **frames, ribs, joints, landing gear, rings and bulkheads**.

GENERAL MULTI AXIS MACHINING

The machining center version with roto-traversing table offter the maximum flexibility for the **machining of complex components that need to be oriented by the rotary table**.

AUTOMATION

A wide portfolio of automation modules is available to configure machining cells and FMS system.

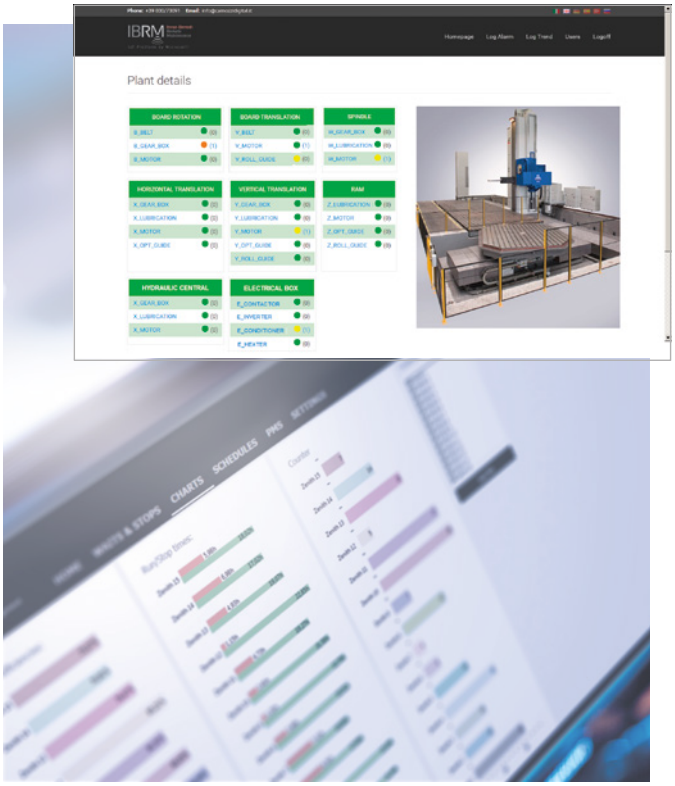


Tip-Up Station

Pallet Shuttle

IBNET & IBRM

IBRM is the first software tool conceived for predictive maintenance on machine tools. IBNet also allows the user to interact directly with the machine.



MIX COMUNICAZIONE - MI

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