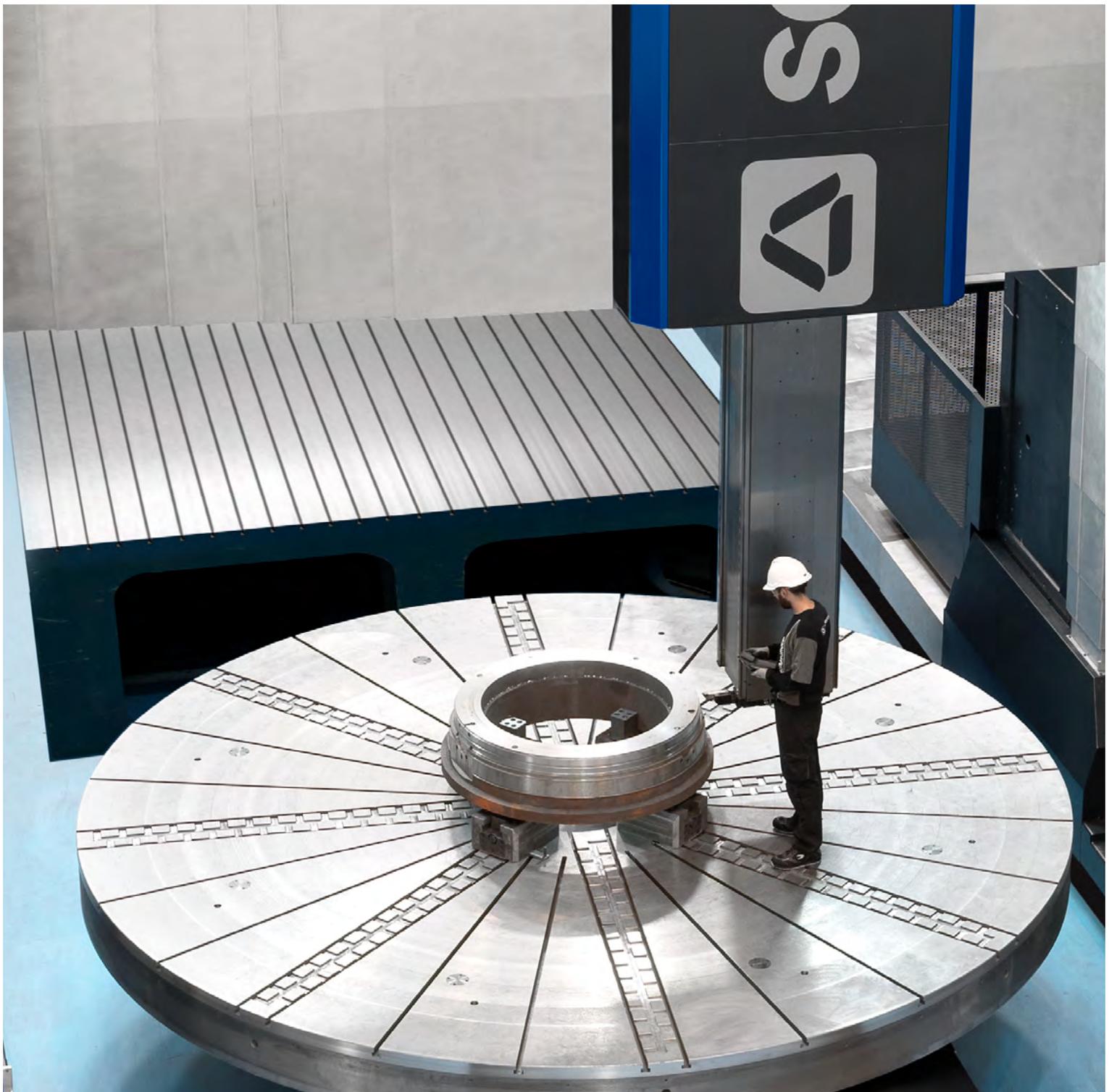




PRECISION AND VERSATILITY AT A LARGE SCALE

**PORTAL AND GANTRY MULTITASK
MACHINES › [PM](#) | [PMG](#) | [PRG](#) | [PXG](#)**





PRECISION AND VERSATILITY AT A LARGE SCALE

The new generation of SORALUCE PM - PMG - PRG - PXG is the expression of SORALUCE's values: reliability, precision and competitiveness.

The SORALUCE PM - PMG - PRG - PXG portal and gantry multitask machines stand out for:

- › High capacity machine
- › Enhanced precision
- › Multitask: milling and turning capability
- › Working area adapted to customer's requirements
- › High stock removal
- › Customised milling and turning heads

The SORALUCE PM - PMG - PRG - PXG range is ideal for the machining of prismatic and cylindrical parts in a single set-up.

This highly versatile range is designed to meet the machining requirements for a range of highly demanding parts used in the construction of machinery for the energy industry, the machining of marine and CHP motors and general machining of large and complex workpieces.



BACKGROUND CONCEPTS

DESIGN

The design of the machine structure and dimensions have been optimised by an analysis based on “Finite Element Method” (FEM) simulation technique, optimising:

- › Static stiffness
- › Dynamic stiffness
- › Residual stress analysis
- › Complete mechanical stability

LONG LASTING PRECISION

Full cast iron, enabling:

- › Accuracy: long lasting precision
- › Stiffness: proven physic stability
- › Productivity: high cutting capacity

Thanks to the unique mechanical features of the cast iron and the optimised design, the precision and robustness of the machine are ensured for all the machine's life.

PROVEN STABILITY

The general performance of the machine is deeply analysed to correct the different characteristic deformations caused by the displacement of the moving parts of the system.

SORALUCE applies a number of devices that largely offset the natural deformations caused by the weight of those moving parts.

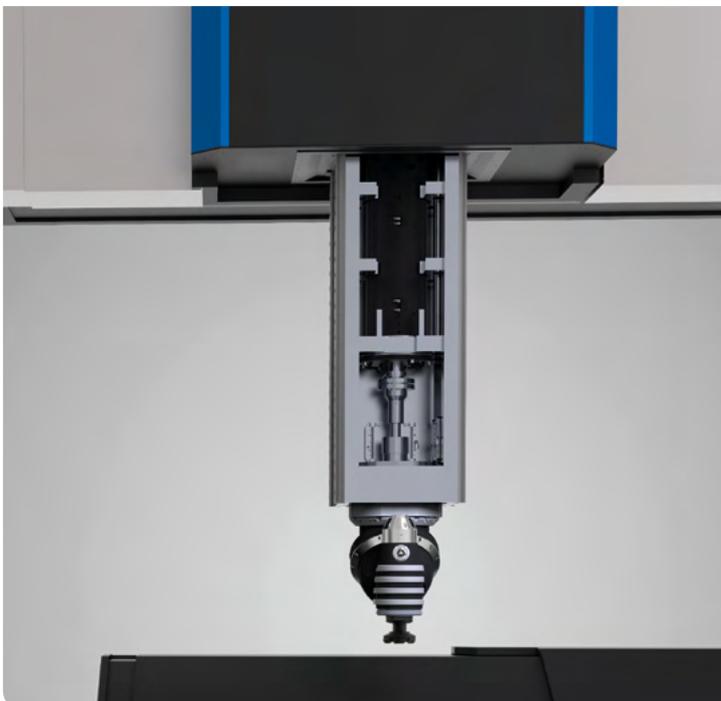
- › Thermal compensation algorithms developed by SORALUCE, applied to all structural components
- › Compensation of the characteristic deflection generated by the moving mass of the saddle and the ram
- › Compensation of the deflection of the cross beam

HIGH PERFORMANCE

High torque direct drive spindle motor inside the ram, with a built-in cooling system, providing:

- › Great precision
- › High efficiency
- › Low heat
- › Reduced noise
- › No maintenance
- › No losses in the transmission
- › Stable working conditions

It ensures high stock removal thanks to the high main spindle power and torque.



COMBINED GUIDING AND DAMPING SYSTEM

SORALUCE is a pioneer in the use of linear guiding systems in large machines and heavy duty applications.

- › The system combines our own specially developed damping pads with INA guiding systems on each axis
- › The system guarantees immense stability eliminating any vibration during machining processes
- › Using heavy duty linear guiding systems since 1992
- › More than 1500 references in the market working with this system
- › It guarantees high precision and dynamics, low friction, low heat levels, minimum maintenance and reduced grease consumption



HIGH ACCURACY

Optimised machine structure and guiding system that guarantee the precision along the machine's life.



INCREASED PRODUCTIVITY

High dynamics on the axes and machine's stability provide the right features to ensure stable machining on demanding applications while enables the high performance tools to give their best.



ENERGETIC EFFICIENCY

- › Low maintenance costs
- › Low heat levels
- › Reduced grease consumption



THE NEXT LEVEL OF INNOVATION

DAS SYSTEM (DYNAMICS ACTIVE STABILISER)

Beyond machine tool limits

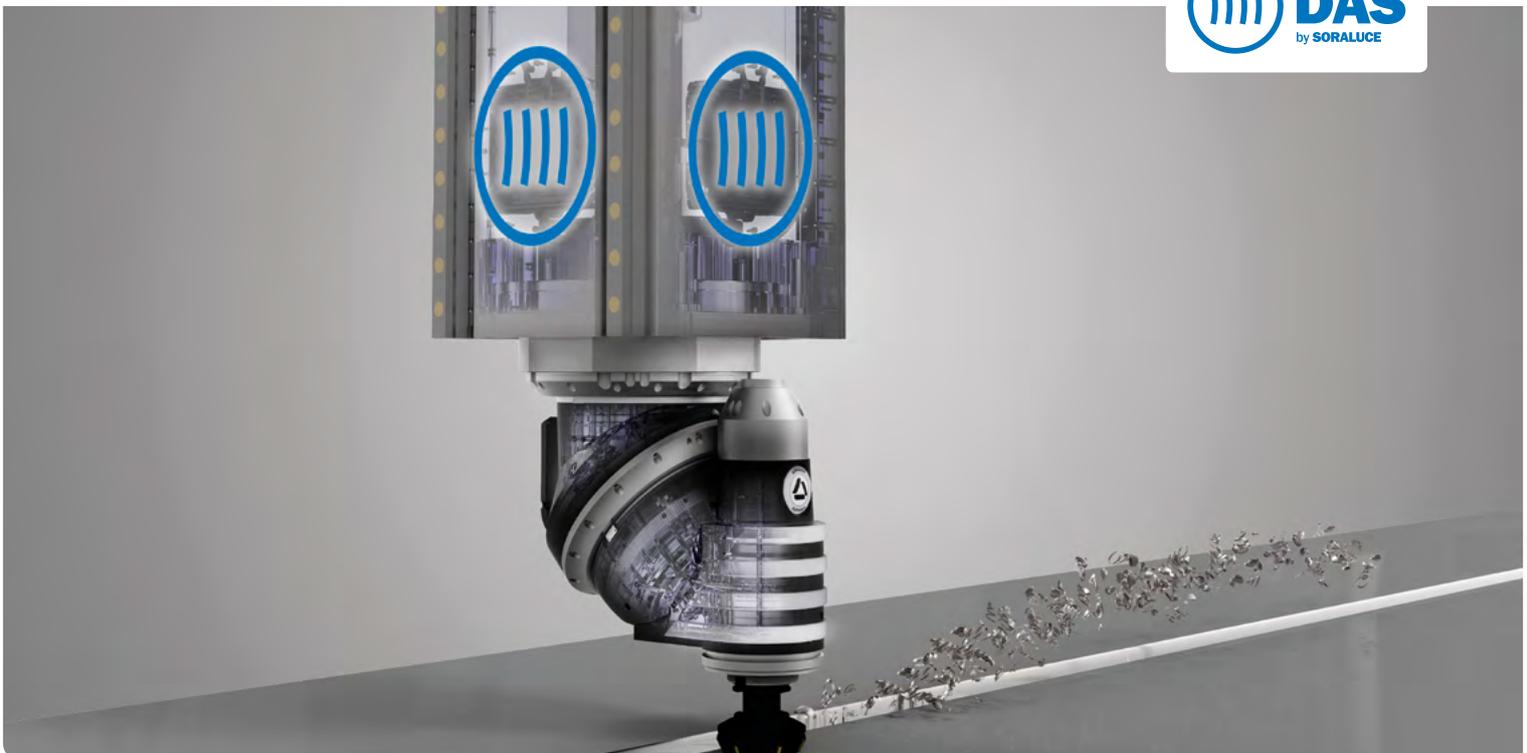
The DAS system is a device capable of actively increasing the dynamic rigidity of the machine, which reduces the risk of chatter and increases the cutting capacity by up to 300% improving dramatically the production time during the roughing process.

The DAS system measures the vibrations during the machining process and generates, in real time, by means of ram built-in actuators, an oscillation force that opposes the vibration.

- › Increases the cutting capacity throughout the whole working area
- › Up to 300% improvement of productivity
- › Better surface quality of the machined part
- › Extends lifetime of the tools
- › Avoids premature aging of machine components

Awarded with Quality Innovation of the Year 2015 and Best of Industry 2015

PATENTED
EP 3 017 911



PATENT
PENDING

VERTICAL RAM BALANCE

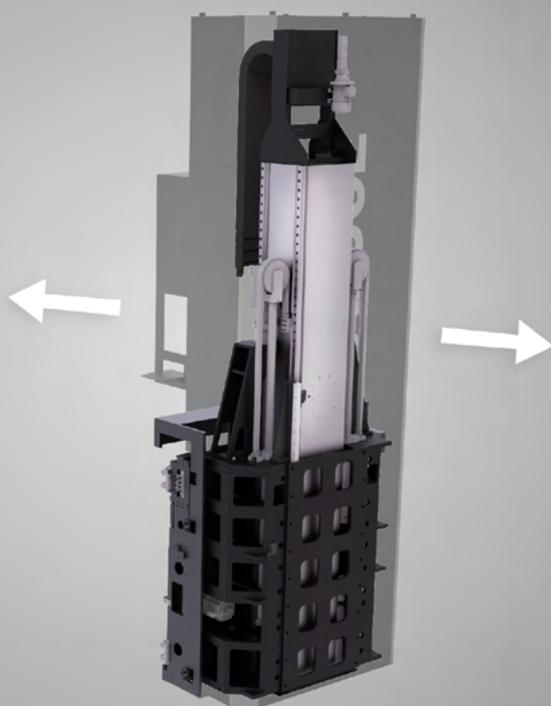
Improved precision in big working volumes

The innovative Vertical Ram Balance System, patent pending, compensates for the rolling caused by the torsion of the cross beam and the differential bending of the columns when the ram moves along the cross axis of the machine (Y).

The system consists of a CNC controlled electromechanical system assembled within the RAM vertical saddle and measured by a linear scale.

The system ensures maximum accuracy in the perpendicularity of the X-Y axes, whatever the working position.

- › The system is 100% controlled at any time, in any position
- › Configurable compensation values
- › Real-time compensation
- › Works both in positive and negative directions



SORALUCE MONITORING I4.0

THE INDUSTRY OF THE FUTURE IS 4.0

In the Industry 4.0 framework, SORALUCE offers SORALUCE MONITORING I4.0, a comprehensive monitoring package.

Thanks to the use of a specific hardware and applying the latest enabling technologies in the field of big data and cloud computing, SORALUCE MONITORING I4.0 collects, stores and transforms all essential data obtained from CNC, PLC and sensors integrated in the machine into useful information, obtaining:

- › An improved machine performance
- › An increase in process productivity
- › Reduced operating costs
- › Makes it available for Heidenhain, Fanuc, Siemens and Fagor CNC units
- › Easy to use thanks to an efficient, fast and intuitive interface.
- › Employed in many manufacturing environments

It enables the user to remote connect the machine using mobile devices such as a PC, Smartphone or Tablet as well as to the client's factory logistics systems or other machines in the production process.





REAL-TIME STATUS

The status of the machine is displayed in real-time, providing relevant information about the performance of the machine.

Display

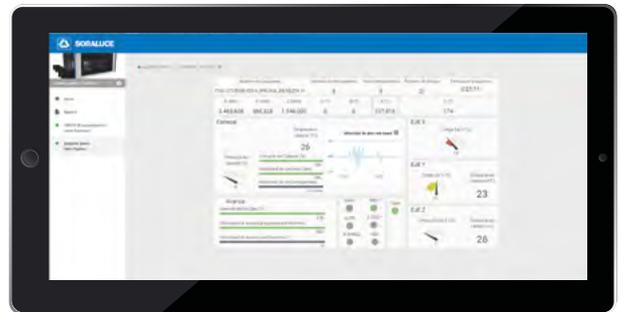
It displays the current program, tool number, position of spindle/axes/table, cycle time, override spindle/axes, programmed/current spindle speed and programmed/current axes feed.

Alarms

Alarms and activated alarms notification.

Power consumption

Real-time electricity consumption of relevant components of the machine-tool such as the spindle, axes, hydraulic and pneumatic units and cooling units.



REPORTING

A complete suite of reports that summarize the activity of the machine in order to inform about trends in its performance, enabling analysis and improvements to be implemented on the machine and /or production process.

Alarms

Alarm log history for analysis.

Use of the machine

Activity of the machine based upon its track record.

Power consumption and temperature

Electric consumption over time of each relevant component.

Optimization of the process

Based upon the data analysis from the machine-tool such as programs, time, speed and alarms.



TOTAL MACHINE

THE COMPLETE WORKING AREA ANALYSED FOR AN OPTIMAL RESULT

The new SORALUCE PM - PMG - PRG - PXG Generation is based on a complete revision of the machine from the user's point of view focusing on improving operation efficiency and developing a Total Machine Concept.

The Total Machine Concept takes into account the machine but also the complete working area. All the interactions of the operator with the different machine elements are analysed for an optimal implementation.

Not only the machine, but the work area and its surroundings are analysed as a whole in order to guarantee an optimal final result. All of the interactions are studied to optimise from the clamping and loading of the workpiece to its removal once machined and its subsequent cleaning. The environment and its processes must be linked to the machine's own work, making all parts of the entire process as simple, safe and ergonomic as possible.

With this new design concept, SORALUCE has added to its equipment large number of innovations not only with the aim of facilitating work and making them a safer environment, but also to simplify maintenance and to minimise stoppage times, thus increasing the productivity and profitability of the machine.



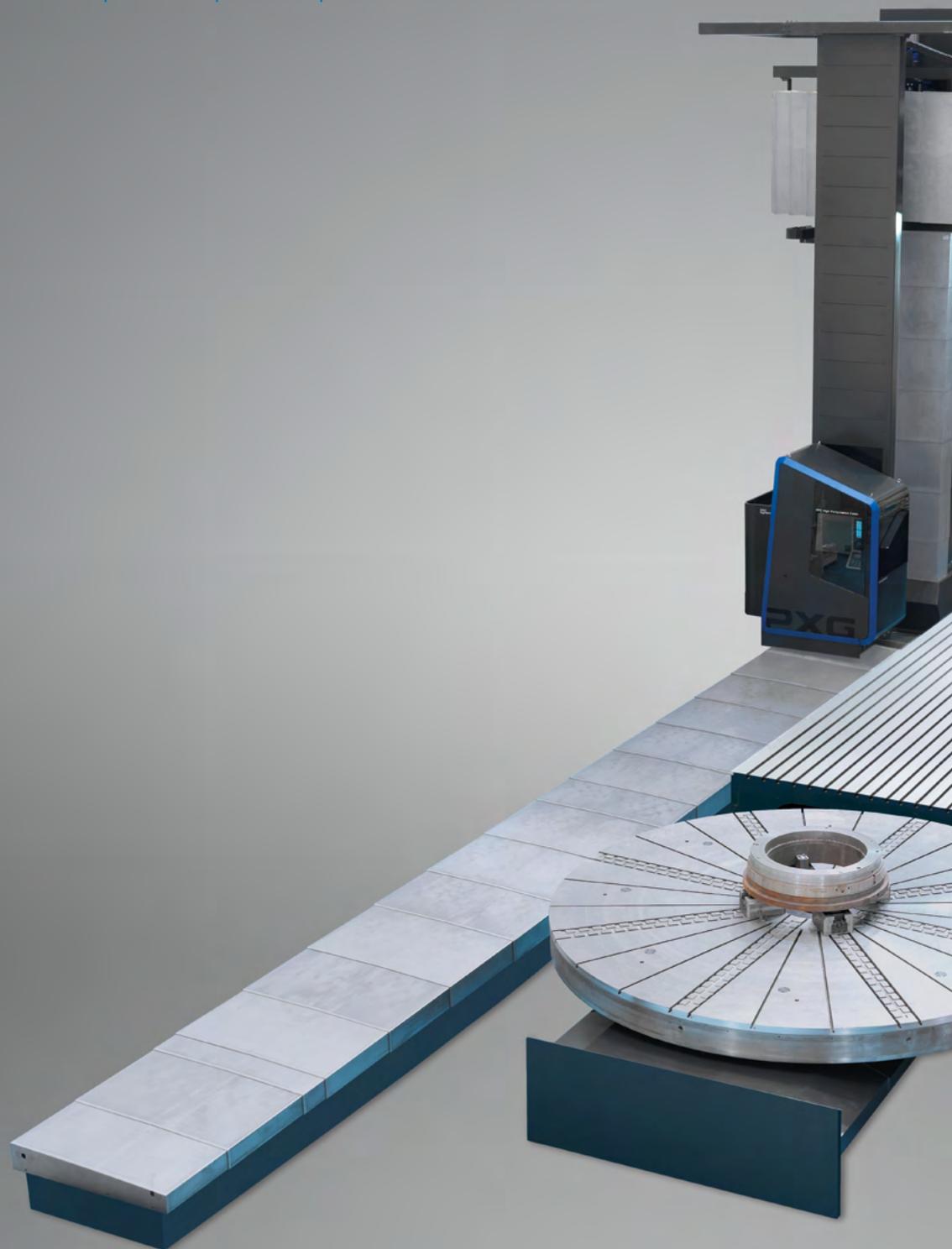
PORTAL MOVING TABLE MILLING BORING **PM**

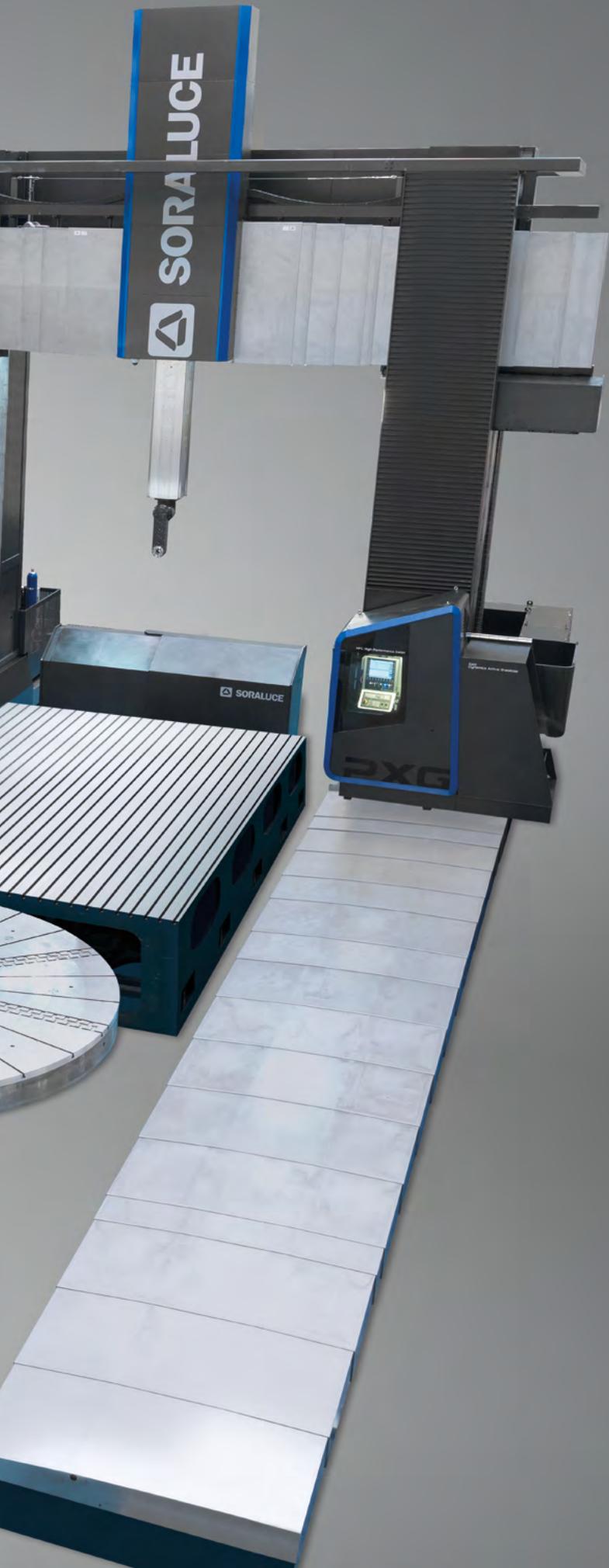
		PM
Table length	mm	5000 / 6000 / 7000
Table width	mm	2500 / 3000 / 3500
Longitudinal traverse "X" axis	mm	5600 / 6600 / 7600
Cross traverse "Y" axis	mm	3950 / 4450 / 4950
Vertical traverse, Ram "Z axis"	mm	1600 / 2000
Clearance between columns	mm	3300 / 3800 / 4300
Clearance height	mm	Up to 2800 (It can be adapted to customer needs)
Spindle power	kW	43 / 60
Spindle speed range	min ⁻¹	4000 / 5000 / 6000 / 7000
Spindle nose taper		ISO-50 / HSK-100
Rapid traverse	mm/min ⁻¹	30000
CNC system		Heidenhain TNC 640 / Siemens 840 D SL
Coolant system		External coolant system over a ring / Internal coolant system up to 70 bar
Tool magazine	No. tools	60 / 80 / 120

GANTRY MULTITASK MACHINE **PMG**

		PMG
Longitudinal traverse "X" axis	mm	6000 / 8000 / 10000 - n x 2000
Cross traverse "Y" axis	mm	3950 / 4450 / 4950
Vertical traverse, Ram "Z axis"	mm	1600 / 2000
Clearance between columns	mm	3300 / 3800 / 4300 / 4800
Clearance height	mm	Up to 2800 (It can be adapted to customer needs)
Floor plate	mm	2000 / 2500 / 3000 / 3500 / 4000
Spindle power	kW	43 / 60
Spindle speed range	min ⁻¹	4000 / 5000 / 6000 / 7000
Spindle nose taper		ISO-50 / HSK-100
Rapid traverse	mm/min ⁻¹	30000
CNC system		Heidenhain TNC 640 / Siemens 840 D SL
Coolant system		External coolant system over a ring / Internal coolant system up to 70 bar
Tool magazine	No. tools	60 / 80 / 120

PORTAL AND GANTRY
MILLING BORING
MACHINES › **PM | PMG | PRG | PXG**





GANTRY MULTITASK MACHINE **PRG**

		PRG
Longitudinal traverse "X" axis	mm	8000 / 10000 / 12000 / n x 2000
Cross traverse "Y" axis	mm	5000 / 6000 / 6500 / 7000
Vertical traverse, Ram "Z axis"	mm	2000 / 2500
Vertical traverse, Cross beam "W axis"		1000 / 1500 / 2000
Clearance between columns	mm	4000 / 4500 / 5000 / 5500
Clearance height	mm	3425 / 3925
Floor plate width	mm	3000 / 4000 / 5000
Spindle power	kW	43 / 60
Spindle speed range	min ⁻¹	4000 / 5000 / 6000 / 7000
Spindle nose taper		ISO-50 / HSK-100
Rapid traverse	mm/min ⁻¹	X = 15000, Y/Z = 20000
CNC system		Heidenhain TNC 640 / Siemens 840 D SL
Coolant system		External coolant system over a ring / Internal coolant system up to 70 bar
Tool magazine	No. tools	60 / 80 / 120 / 150

GANTRY MULTITASK MACHINE **PXG**

		PXG
Longitudinal traverse "X" axis	mm	8000 / 10000 / 12000 / n x 2000
Cross traverse "Y" axis	mm	6500 / 7500 / 8500 / 9500 / 10500
Vertical traverse, Ram "Z axis"	mm	2500 / 3000
Vertical traverse, Bridge "W axis"		3000 / 4000 / 5000
Clearance between columns	mm	5000 / 6000 / 7000 / 8000 / 9000
Clearance height	mm	5000 / 6000 / 7000
Floor plate width	mm	4000 / 5000 / 6000 / 7000 / 8000
Spindle power	kW	60 / 80 / 100
Spindle speed range	min ⁻¹	2500 / 3000 / 4000 / 5000 / 6000
Spindle nose taper		ISO-50 / ISO-60 / HSK-100
Rapid traverse	mm/min ⁻¹	X = 12000, Y/Z = 20000
CNC system		Heidenhain TNC 640 / Siemens 840 D SL
Coolant system		External coolant system over a ring / Internal coolant system up to 70 bar
Tool magazine	No. tools	80 / 120 / 150

MILLING AND TURNING HEADS

IN-HOUSE MANUFACTURED
HIGH RELIABILITY
BROAD RANGE

In order to cater to the diverse needs of each customer, SORALUCE's contrasted head technology is fundamental and provides the necessary customisation for an optimal

configuration, with the possibility of including a large variety of standard heads and special solutions.

FIXED HORIZONTAL HEAD



81 / 106 kW
2000 min⁻¹

AUTOMATIC ANGULAR ROTARY HEAD



81 kW
2.5°
2000 min⁻¹

UNIVERSAL HEAD



46 / 55 kW
2.5° X 2.5° / 0.001° X 0.001°
4000 / 6000 min⁻¹

ORTHOGONAL HEAD



46 kW
1° / 1°
3750 min⁻¹

CUSTOMISED HEADS

AUTOMATIC ANGULAR ROTARY HEAD



30 / 55 kW
2.5° / 1°
2000 min⁻¹
A axis (optional)

FIXED HORIZONTAL HEAD



30 kW
4000 min⁻¹

TURNING TOOL HOLDERS

AXIAL



RADIAL



MANUAL



HEAD CHANGING SYSTEM

SORALUCE has developed an automatic head changing system with adapter flanges. The system consists of a specially prepared machine ram and a specific head adapter flange in each head.

Accurate ram and head fitting is achieved by hirth couplings, with each milling head clamped by several hydraulic clamping cylinders. Fluid and electricity supplies are provided via quick release couplings.

Fully enclosed pick-up stations for milling heads are provided to protect heads from pollution from the machining processes and workshop environment when not in use.

Pick-up station for turning holders attached to the cross beam in order to minimise the head changing system cycle in any position of the longitudinal axis.

- › Experience since 1996
- › Fully modular system
- › More than 400 machines working with this system



MOVING CROSS BEAM

In PRG and PXG models, the position of the cross beam is configurable thanks to the W axis.

This makes the machine very flexible in terms of working volume.

The movement of the system is driven by means of two ballscrews working in gantry mode, and it is equipped with the corresponding security devices like safety brakes and the friction safety nut on each ballscrew.

The positioning of the axis is fully automatic and the accuracy is ensured thanks to a laser interferometer-based calibration.

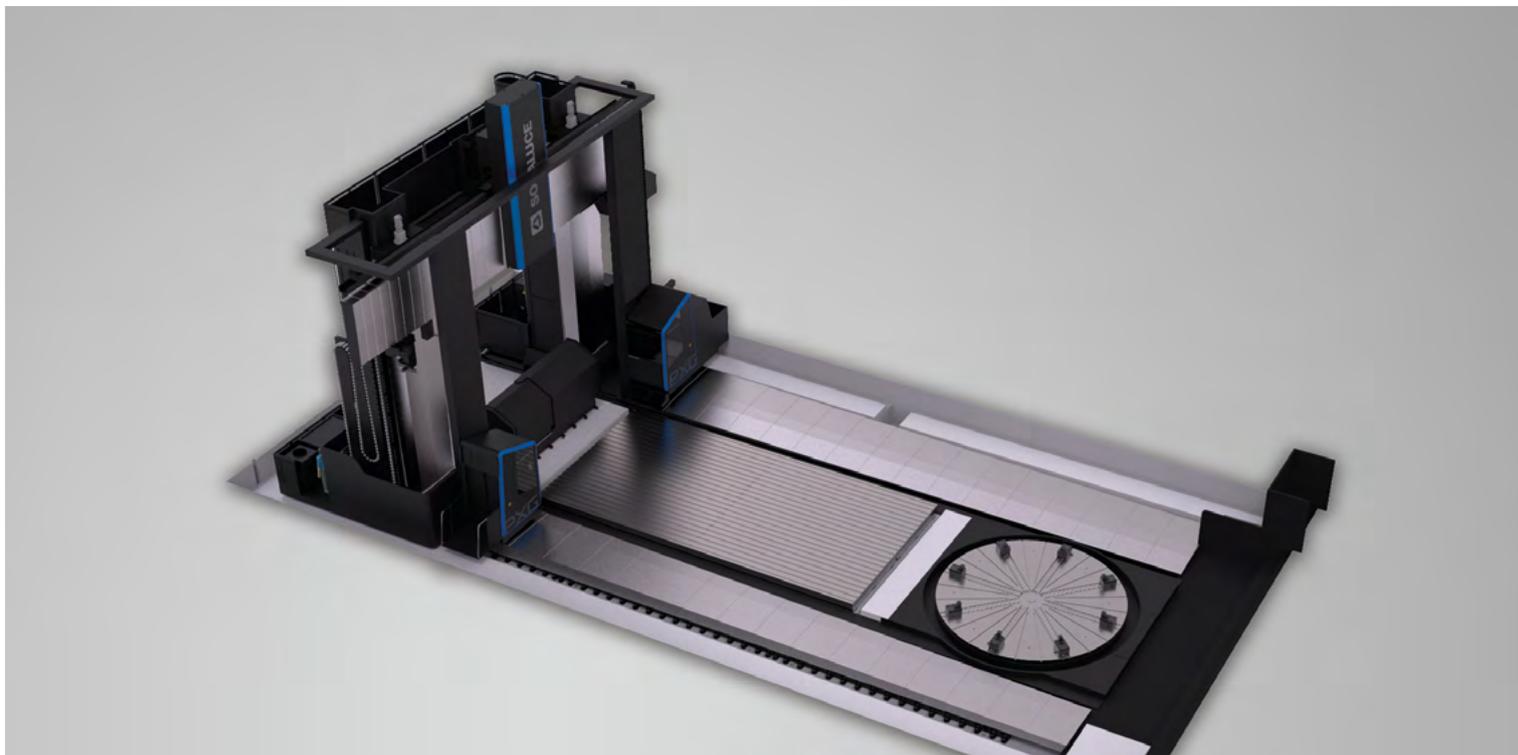


VERSATILITY HIGHLY CONFIGURABLE

WORKSTATIONS

The work area can be configured according to the specific needs of each customer, with one or several workstations, which makes it possible to carry out simultaneous machining and part preparation operations.

It can integrate floor plates, auxiliary tables, milling tables and turning tables.



MULTITASKING

SORALUCE P range is a versatile multitasking solution oriented to maximize productivity. It can integrate several cutting processes including turning, milling, boring, drilling and tapping in one machine, offering increased capability and functionality.

It provides the highest parameters of profitability in the machining of pieces of big size and great technical complexity, allowing the machining of several morphologies and sizes.

Full complement of multi-tasking capabilities by SORALUCE design turning heads, tables and customer cycles.

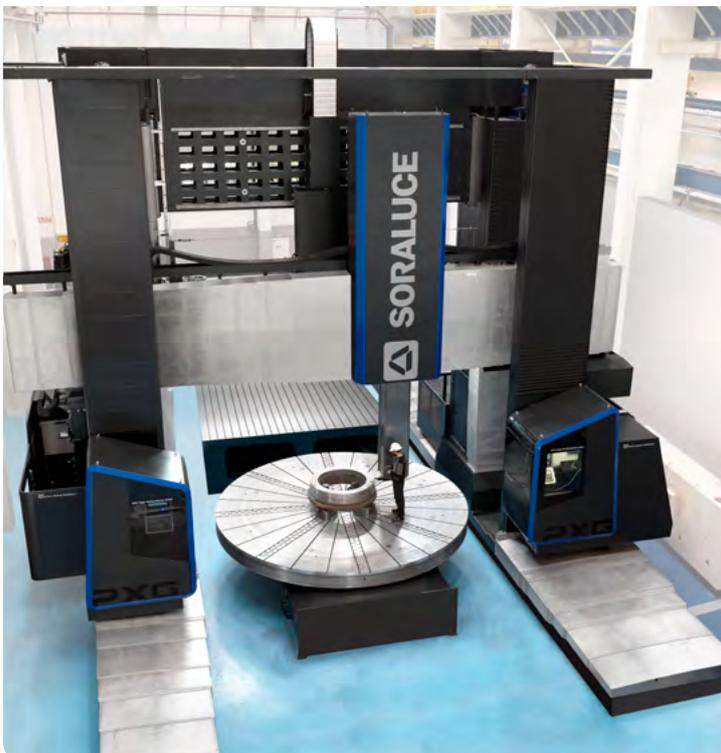
Turning table

The rotary table is directly mounted on a high precision crossed roller bearing. The SORALUCE design enables highest accuracy and rigidity for hard vertical turning operations. The main crossed roller bearing is assembled one by one based on SORALUCE expertise in this field.



The turning table is equipped with sensors that, by means of a function built into the CNC, it is rebalanced according to the weight of the workpieces with asymmetric geometries.

		Turning table
Diameter	mm	3000 - 8000
Load capacity	Tn	20 - 150
Power	kW	82 - 202



TOOL MAGAZINE

SORALUCE offers a wide range of standard tool magazines as ad-hoc systems responding to customer requirements.

Tool management features:

Length, diameter, tool wear, coolant section



CNC UNITS

Heidenhain TNC 640

The TNC 640 NC system by Heidenhain boasts the qualities demanded by highly technological machines now including multitasking capabilities.

- › Wide variety of milling and turning cycles
- › Time and cost saving
- › HEIDENHAIN conversational or DIN/ISO programming with the simple Klartext dialogue

Siemens 840 D SL

The SINUMERIK 840D SL is a premium class CNC, with a superior system flexibility. It is the CNC of choice when opening up completely new technology fields.

- › Modular and scalable
- › Benchmark in open architecture
- › Communicative at all levels



HUMAN MACHINE

COMFORT, SAFE AND ERGONOMIC

SORALUCE has created a new range of machines that will revolutionise the market thanks to the creation of a more human and ergonomic environment, while also significantly increasing the safety and ergonomics parameters.

OPERATOR'S PLATFORM

- › One or two operator's platforms with their respective control panels, thus allowing the best location of the operator in each operation.
- › Operator platform vertical and cross movements
- › Complete workbench with a panel to hang drawings and documents
- › Folding seat
- › Soundproofed cabinet
- › Sound system (option)
- › Generous interior lighting integrated in the ceiling
- › Air conditioning (option)
- › Sliding door with a window that gives the possibility of manually unfold a balcony to approach to the head in any position
- › Enhanced visibility, ample glass surface
- › Support for special tools in the external platform
- › Uncontrolled descent prevention system
- › Floor with special anti-slip paint that minimizes wear and tear

Best location of the operator
in each operation



TOOL MAGAZINE

- › Full visibility of tool magazine
- › Storage area's closure protecting sensitive items inside it from chips and coolant
- › Sliding shutter to ease tool loading / unloading

MAINTENANCE

- › The intervention areas are now more accessible
- › Sliding shutters and doors to avoid the disassembly of panels
- › Improved protection of the critical areas of the equipment
- › Gauges and levels visible from the outside the machine without removing panels
- › Ample areas to ease the maintenance tasks
- › Specific signals to indicate maintenance and service points

Safe maintenance machine access

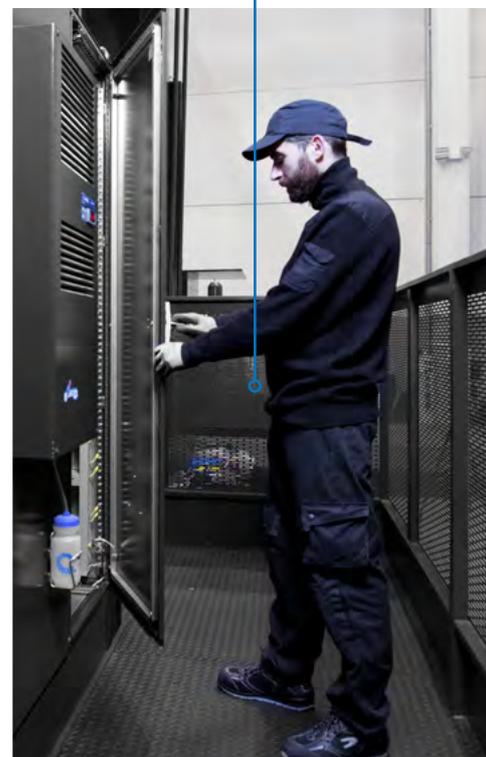


Full visibility of tool magazine



Electrically driven tool magazine

Easy to maintenance



DANOBATGROUP

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