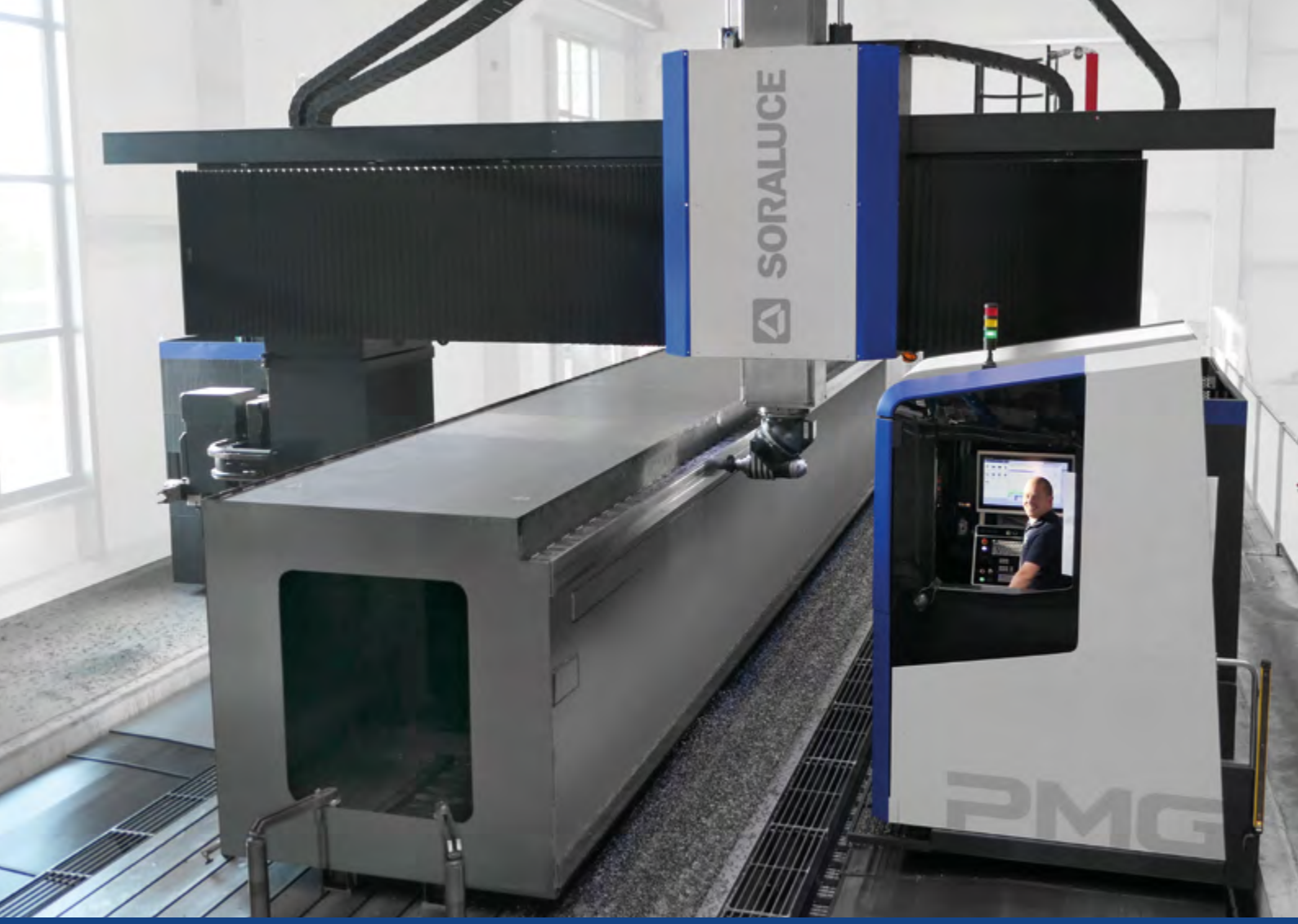


PM | PR | PX

Heavy-Duty Line

Robust. Precise.

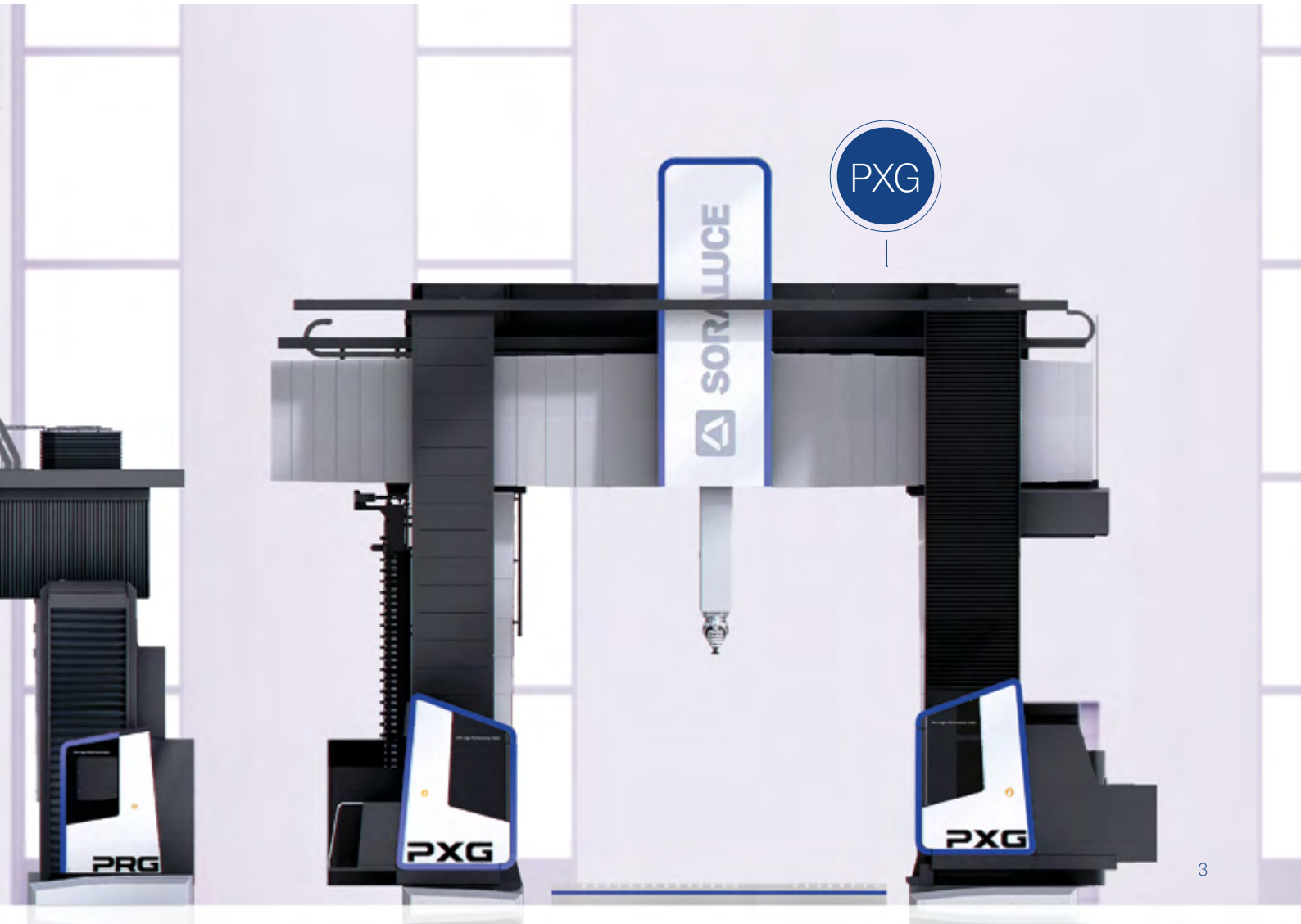
SORALUCE

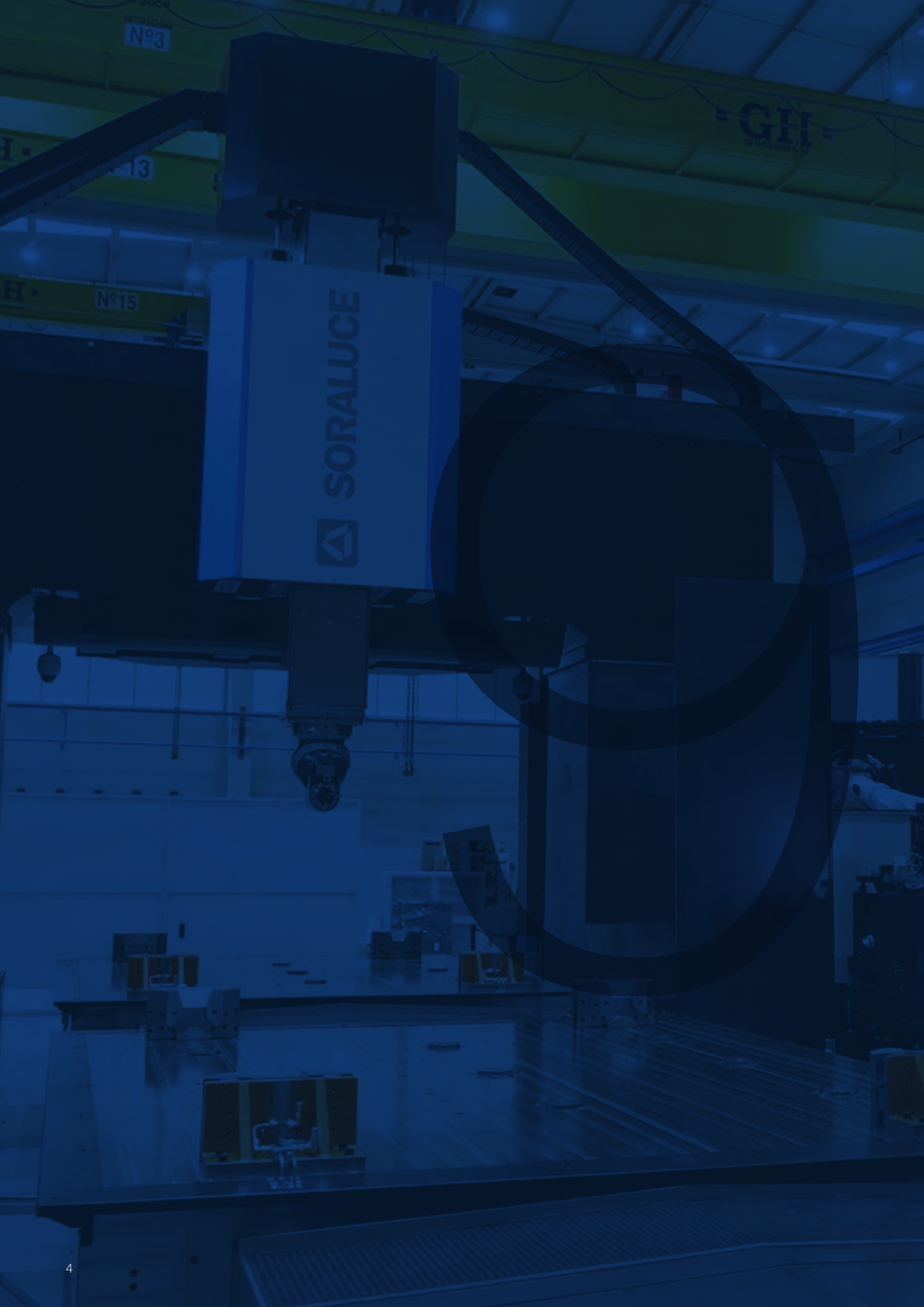
As part of our premium solutions, the Heavy-Duty Line Portal & Gantry milling machines of Soraluce provides **highest best stock removal rate in roughing** and **best in class precision in finishing** for heavy duty components and extremely complex machining operation.

Heavy-duty
Robust
Precise

TOP BENEFITS	PRECISION	PRODUCTIVITY	RELIABILITY	VERSATILITY
Design	■	■	■	■
Full cast iron structure	■	■	■	
Multiple configurations		■		■
Linear guiding & Damping Pads	■	■	■	
DAS+	■	■	■	
Driving system	■	■	■	

PM | PR | PX: Moving table portal milling machine
PMG | PRG | PXG: Gantry type milling machines



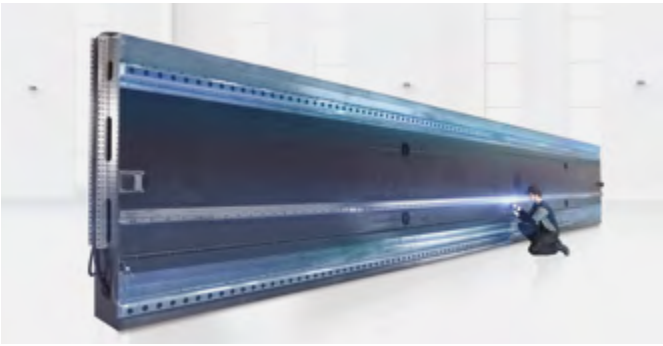

SORALUCE

Nine reasons to choose Heavy-Duty Line

01.

A winning combination

The most rigid and dynamic solution on the market

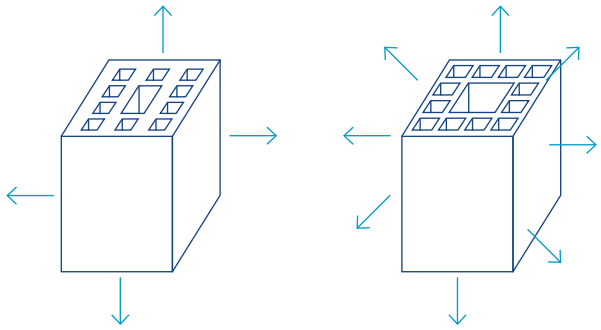


Full cast iron

Long term stability.

Thermostability

— Expansion under control: quantity, speed, direction.
— Vibrations absorption, damping capacity.
— No need of electronic compensations.
— Best performance against temperature variations.
— Main structure: column, saddle, ram.



Cast iron

Fabricated steel

Linear guiding

Lifelong durability.

— Soraluce is a pioneer in the use of linear guiding systems in large machines and heavyduty applications.
— Design proven since 1991.
— Lifelong durability > 10 years maintenance free at maximum performance.

TOP BENEFITS	Linear guiding	Prismatic guiding	Hydrostatic guiding
Precision	↑↑↑	→	↑↑
Dynamics	↑↑↑	↓	↑↑
Maintenance free	↑↑↑	↓	↓
Loading capacity	↑↑↑	↑↑	↑↑
Thermal stability	↑↑↑	→	→
Sustainability	↑↑↑	↑	↓↓↓
Foundation cost saving	↑↑↑	↑↑↑	↓↓

Full cast iron

— Accuracy
— Stiffness
— Productivity

Linear guiding

— Best precision
— High dynamics

DAS+

— No chatter, best stock removal rate
— Optimized process thanks to real time vibration surveillance

Damping pads

— Stability during machining process
— Vibration absorption

Damping pads

Great stability.

— Own development of special damping pads combined with linear guides.
— Eliminates any vibration during machining processes.

DAS+

No chatter.

Active damping system

— 100% cutting capacity through the complete workpiece volume.
— Reduced cycle time up to 45%.
— Increased productivity up to 300%.
— Improved surface quality.
— Extended tool life.
— Machine protected: long term precision as reduces machine's key components wear (ballscrew, guideway, gearbox, head), in both roughing and finishing operations.

How does DAS+ work?

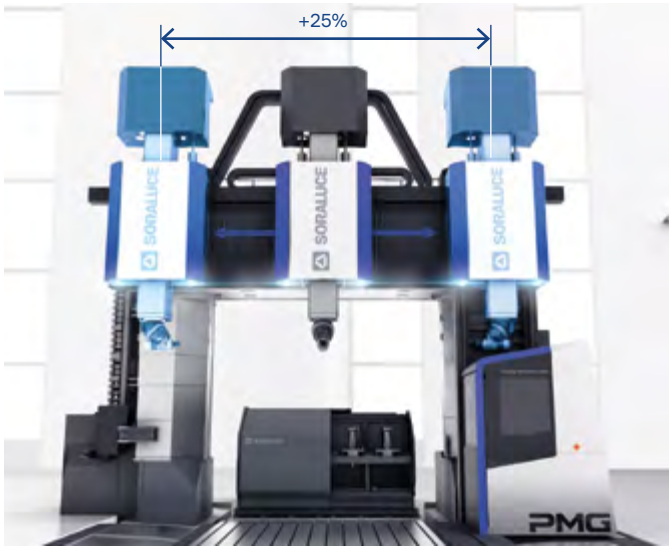
DAS+ is a smart system which oversees the machining process and selects the best technological alternative to eliminate chatter:

— Active damping in the ram.
— Spindle speed tuning by automatic selection of optimum speed.
— Harmonic oscillation of spindle speed.

02.

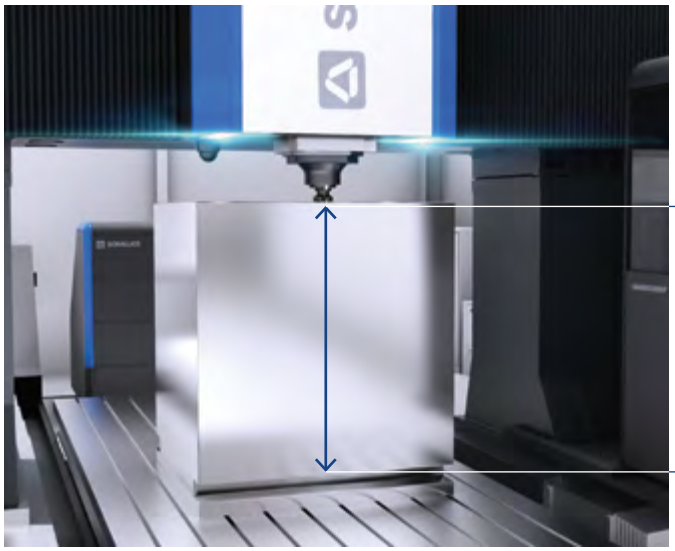
Next level technologies

Maximum machining volume



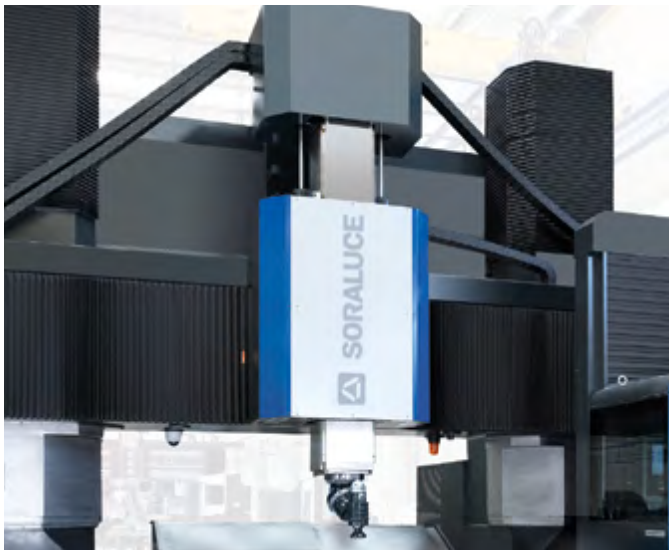
— Maximum use of the cross traverse compared to box-in-box concept: +25%
— No workpiece width limitation.
— Compact machine: more working space for same machine dimension.
— Deep drilling capability from both lateral sides.

Compact ram



— Head positioning “C” axis is incorporated in the head, enabling a compact ram design.
— Compact ram design and Soraluce special short heads optimize the machining of high workpieces, providing great rigidity.

Driving system



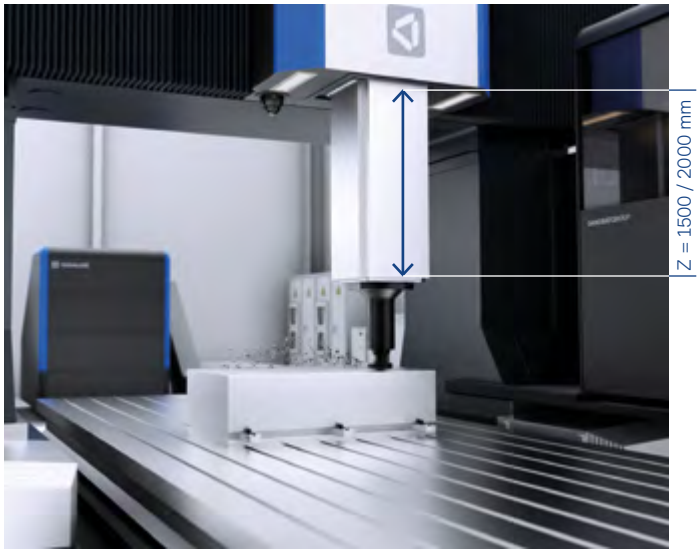
Reliable
Double rack and pinion system in the longitudinal and cross axes. The best existing solution for long travel axes.

Dynamic
Up to 35.000 mm/min.

Long term accuracy
— No backlash, no wear.
— Highest surface quality.

Maintenance free
Automatic lubrication of the rack and pinion system.

Best stock removal



— Best stock removal with extended ram.
— Great cutting capacity through the complete workpiece volume.

Results Z: 1500 mm

Stable working conditions, material DIN CK45.

Ø 160 mm milling tool, 8 teeth	Ap: 6 mm Ae: 120 mm F: 1075 mm/min Q: 774 cm^3/min Power consumption: 92%
Ø 70 mm drilling tool	F: 91 mm/min

Main spindle transmission

Two configurations to cover all your needs.

Inline transmission

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

Best reliability

No belts, no reducers, neither long transmission bars.

Great precision

Best thermal stability provided by cooled inline motor.

Enhanced rigidity

Frontal assembly, all sides of the ram are solid.

Ease of maintenance

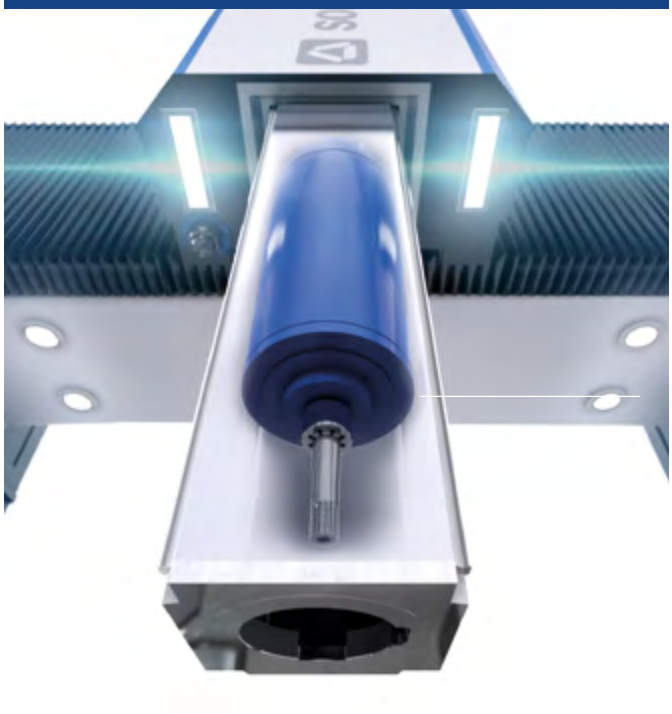
Quick exchange of the main spindle motor.

— Up to 60 kW / 2000 Nm.
— High efficiency.
— Minimum noise level.
— High performance thanks to optimized power-torque curve.
— Full power at low rpm.
— Short distance between main motor and head transmission.

Compact-design transmission shaft.

Placed at the front of the ram close to the head.

Up to 60 kW



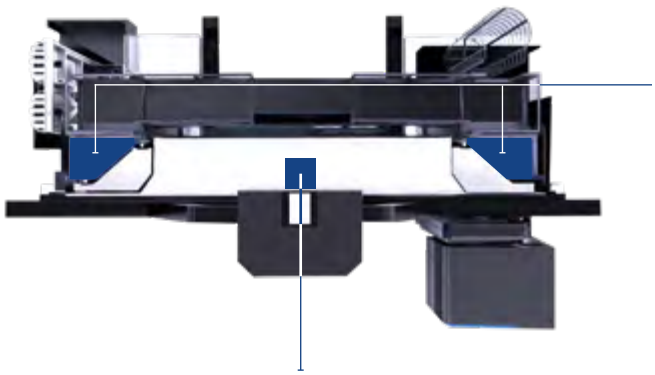
Parallel transmission

— High power and torque range: up to 100 kW (S1-100%).
— 3 speed gearboxes.
— Suitable for large size boring operations.
— Low noise.
— High reliability and long life.
— Ease of maintenance.

Mobile cross beam

Improved working volume.

Variable working height in all portal machine's models thanks to the vertical travel of the cross beam.



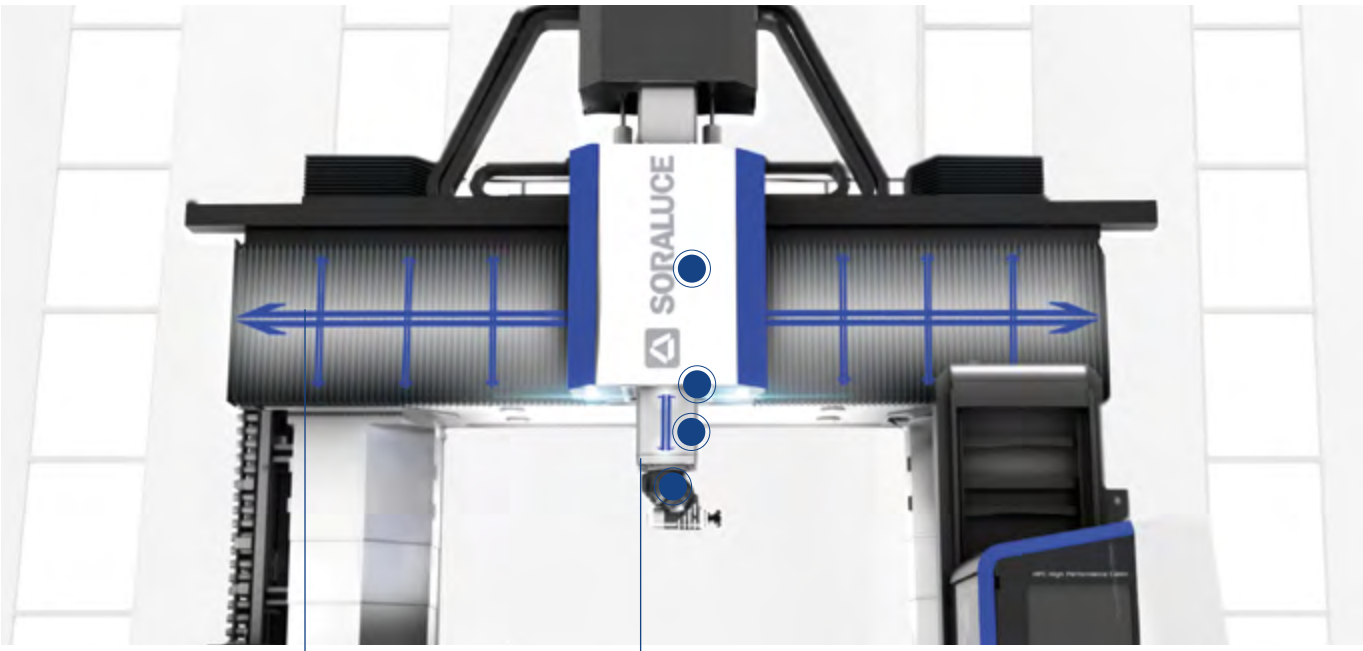
Center of gravity

- Live axis allowing interpolation with the rest of machine's axes.
- Soraluce's specific design column geometry allows a centered driving system location, resulting in a better-balanced movement and great accuracy.
- Highly flexible in terms of working volume.
- Enables an optimized ram positioning during machining.
- Driving system: two ballscrews working in gantry mode.
- Hydraulically counterweighted.

03.

Accuracy in the DNA

Superpositioning



No deformation

Unique solution for vertical deflection of the cross beam, by means of a specific linear guide configuration that improves the squareness of the ram all along the cross-rail axis.

No bending

Best lateral positioning accuracy powered by Soraluce software.

Compact design

Special Soraluce design with minimum distance between the ram and the cross beam.

"We machine complex components for our H6 / H7 tolerances with stitch, shape and position in the 0.01 to 0.05 mm range".

Hans Jürgen Hinzmann
Production manager
SMS group GmbH

"We get up to 0.015 mm precision in Ø 600 mm circular interpolation (IT3) in our components".

Aitor Txurruka
Managing Director
GOIMEK

Superb precision in positioning

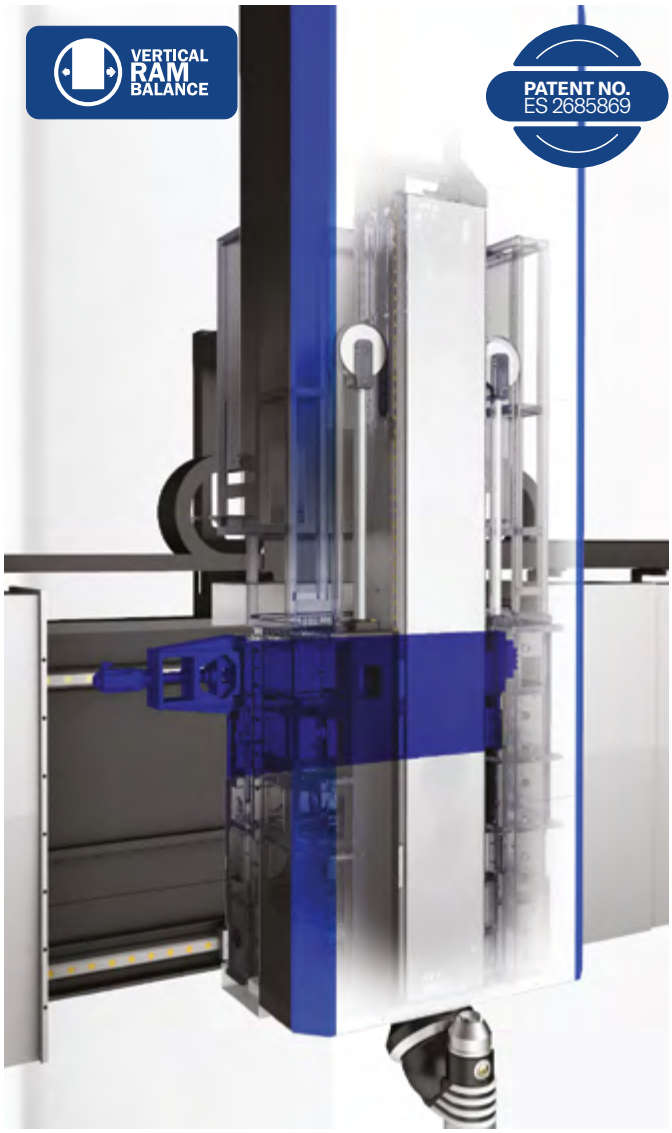
The system compensates the angular deflection of the cross beam of large portal machines caused by the moving weight of the saddle, ram and heads along the cross beam.

Basic system set-up

— NC controlled.
— Direct measuring system.
— Works both in positive and negative directions.

Benefits

— Ensures maximum accuracy in the perpendicularity of the X-Z axes, whatever the working position.
— Improved finishing results.
— Real time compensation for different head weights: Maximum guaranteed accuracy, straightness and parallelism for any vertical position of the traverse and ram.



04.

Smart Technology

ACCURA HEADS

Automatic re-setting of head kinematics to increase accuracy. It compensates the head articulation positioning deviation for one particular position of the head.

+ ACCURACY

DAS+

Eliminates any chatter that may arise during the machining process.

Machine protected: long term precision as reduces machine's key components wear.

+ PRODUCTIVITY

Patent no. EP 3017911

DWS

Eliminates chatter originated on either fixtures or workpieces.

+ PRODUCTIVITY
+ QUALITY

Patent no. EP 2517823 B1

ENERGY SAVE

Energy save Package

+30% save
on energy consumption

You decide how and when the different components of the machine are switched on / off!

— Spindle
— Axes
— Machine power
— Control
— Lightning
— Air supply
— Hydraulic parts
— Warm-up program
— Calendar planning

VERTICAL RAM BALANCE

Compensates the deformation of the cross beam of large portal machines.

+ ACCURACY

Patent no. ES 2685869

ADAPTIVE CONTROL

Smart and automatic setting of defined cutting parameters according to actual machine power consumption.

30% time saved in roughing process!

+ PRODUCTIVITY

TBS

Hydrostatic table balancing system to correct distribution of asymmetric loads.

+ ACCURACY

VSET by SORALUCE

Fast and simplified component set-up.

+ PRODUCTIVITY

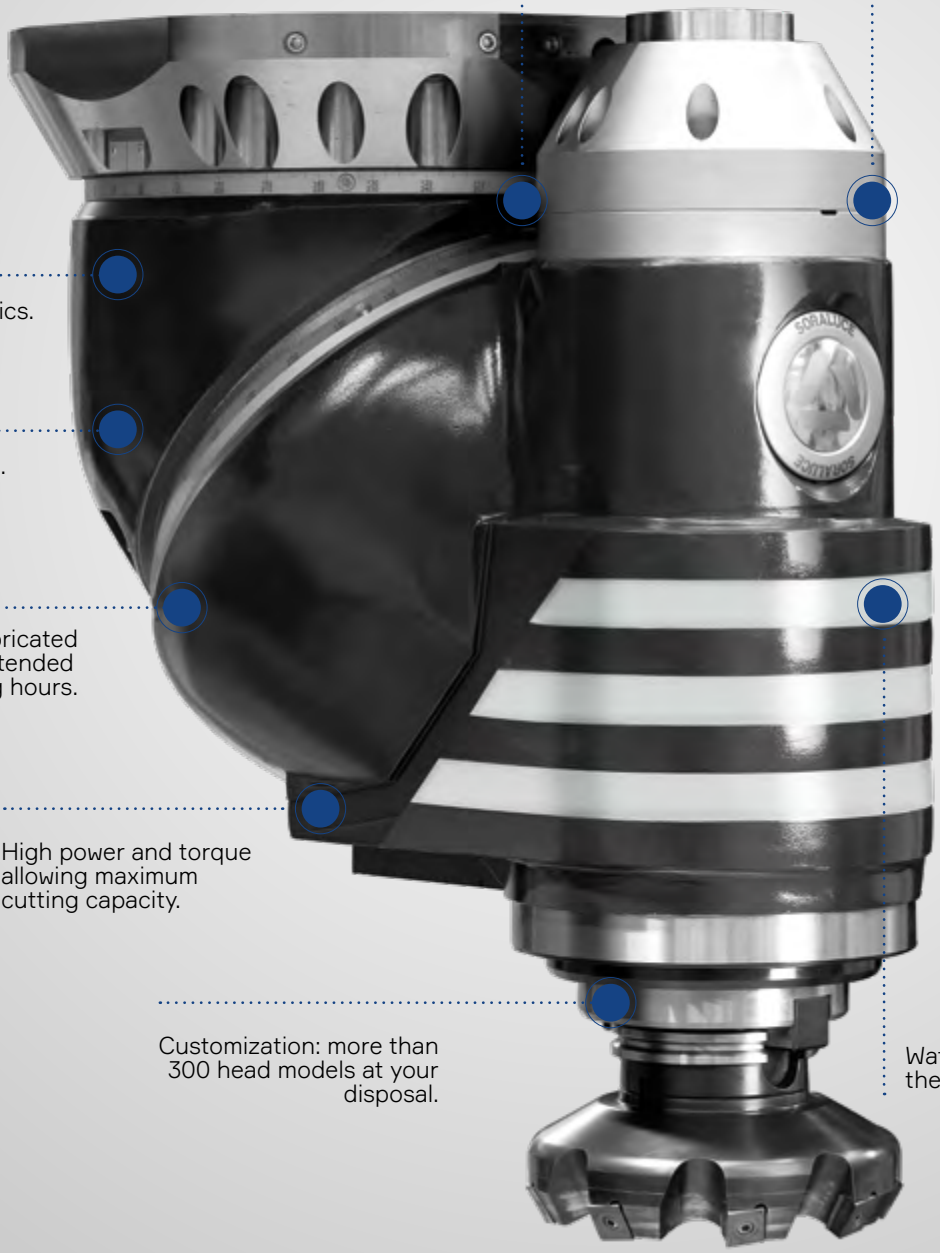
Patent no. EP 2570236

05.

Soraluce heads

More than 300 head models

Precision & High performance



Maintenance friendly: wear parts can be easily replaced on site.

Precise machining results due to high positioning accuracy.

High dynamics.

Robust design.

Air-oil lubricated gears; extended operating hours.

High power and torque allowing maximum cutting capacity.

Customization: more than 300 head models at your disposal.

Water-cooled for best thermal stability.

The most advanced head manufacturing center

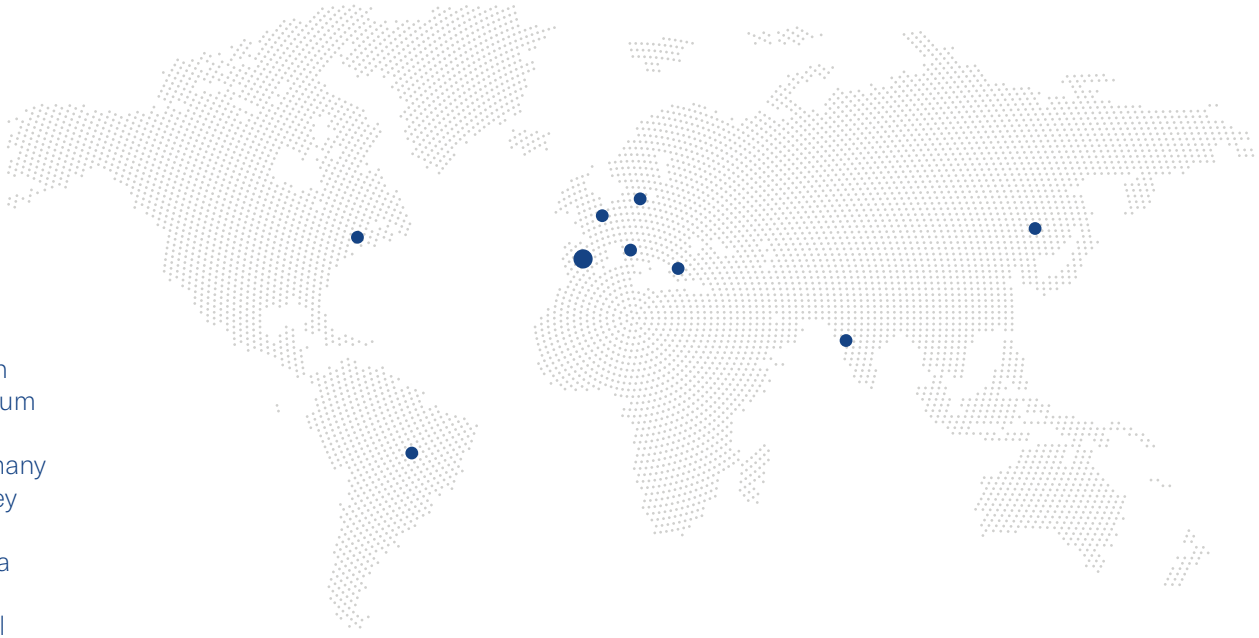
In-house made

Design — Manufacturing — Machining — Assembly — Running-in — Verification

Head service hubs

— Your trusted service partner.
— Know-how directly from the manufacturer.
— Maintenance & repair.
— Spare head service available.

150
Spare heads available



Spain
Belgium
Italy
Germany
Turkey
India
China
USA
Brazil

Heavy-duty heads

Cooled oil lubrication

— Up to 60 kW (S1-100%).
— Robust performance.
— Highest reliability.
— Long-life design (wear-free gears and bearings).
— Maintenance free.
— Thermal stability.
— Quick change for maintenance purposes.

High performance heads

Air-oil lubrication

— Up to 37 kW (S1-100%).
— High speed up to 7000 rpm.
— Optimum accessibility thanks to reduced size.
— Robust performance.
— Highest reliability.
— Fast positioning.
— Thermal stability.
— Quick change for maintenance purposes.

Thousands of possibilities

5-axis continuous head

37 / 60 kW
0.001° x 0.001°
Up to 7000 min^{-1} (mechanical) /
Up to 30000 min^{-1} (electrospindle)

Multitasking head

Up to 37 kW
2.5° x 2.5° / 0.001° x 0.001°
Up to 7000 min^{-1}

Orthogonal head

37 / 46 kW
1° x 1°
Up to 7000 min^{-1}

Universal head

37 / 60 kW
2.5° x 1° / 0.001° x 0.001°
Up to 7000 min^{-1}

Fixed Boring head

30 / 46 / 60 / 81 / 101 kW
2000 / 3000 / 4000 / 5000 min^{-1}
Different lengths and diameters

Power Angular Rotary Head

60 / 81 / 101 kW
2.5° x 1°
3000 min^{-1}

Automatic Angular Rotary Head

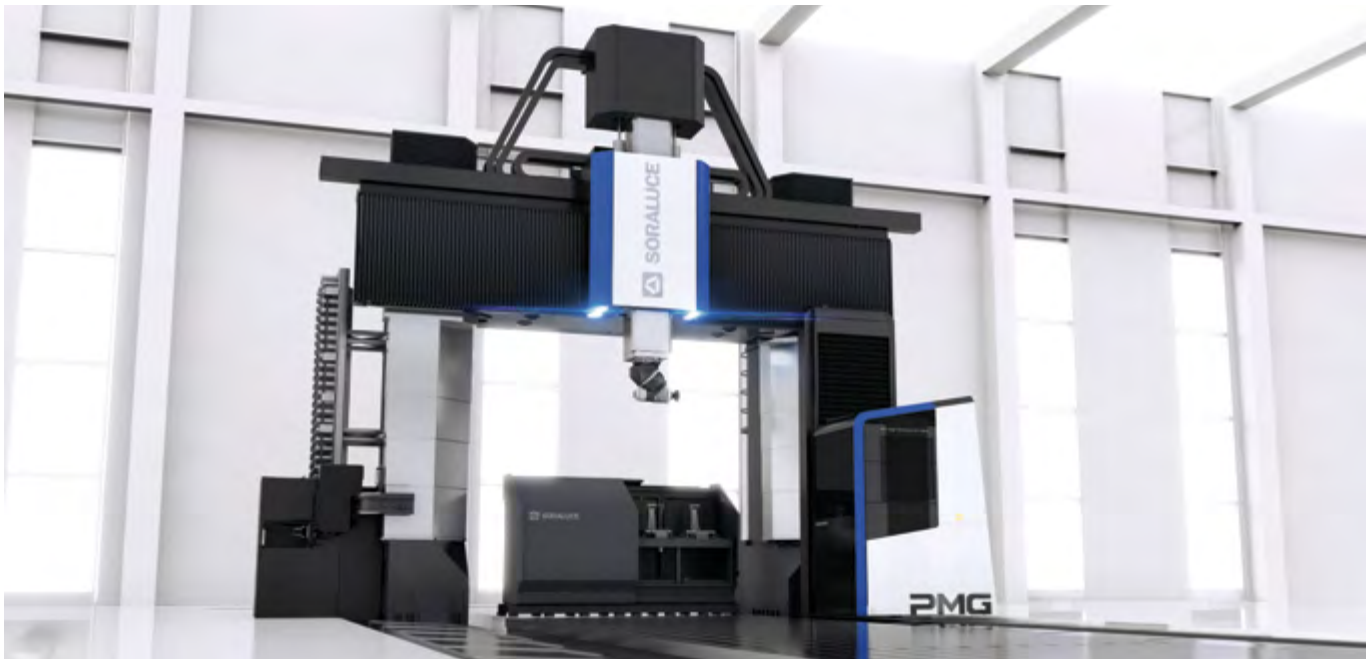
15 / 30 kW
2.5° / 1° / 0.001°
2000 min^{-1}

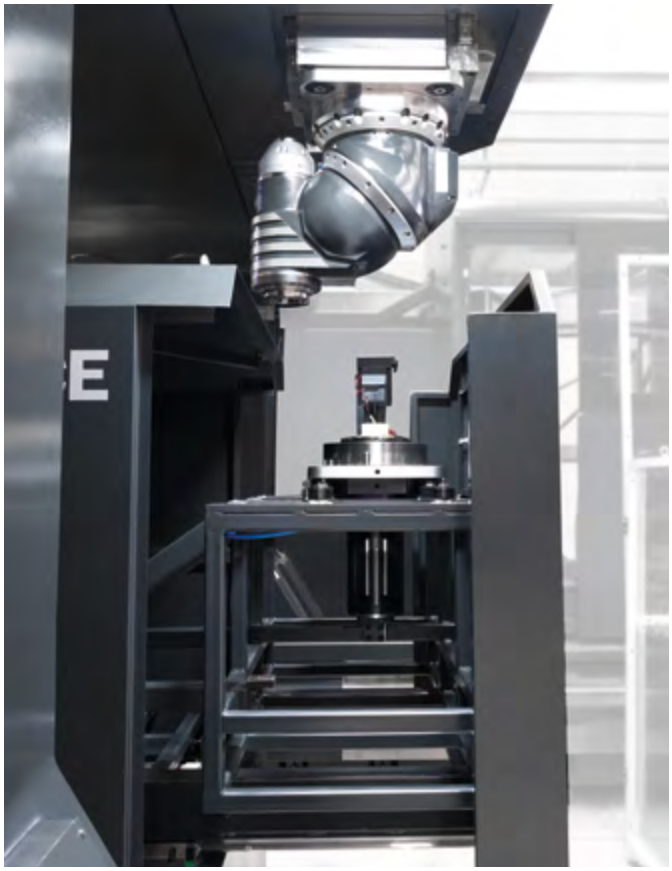
Radial & Axial Turning Tool Holder

Manual 40 x 40 Turning Tool Holder

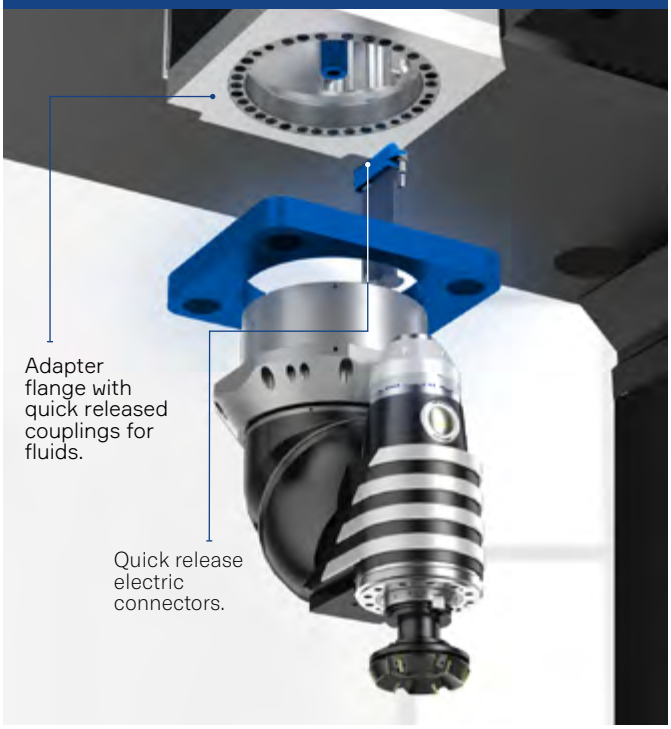
Head changing system

— Rapid.
— Accurate.
— Applicable to any head.
— Universal system: heads are fully standard.
— Head's pick-up fully covered.





Fully modular system through adapter flanges



06.

Multitasking

All in one: milling, turning, grinding and gear cutting in a single machine.

— Improved machining accuracy and overall part quality.
— Significant reduction in production lead time.
— Cost benefits: fewer fixtures, tools and labor requirements.
— Single machine investment for multiple processes.
— Optimized use of floor space.
— Machining of several morphologies, sizes and complexities.
— Improved precision due to minimum workpiece set-ups.
— Fewer operators involved in the machining process.

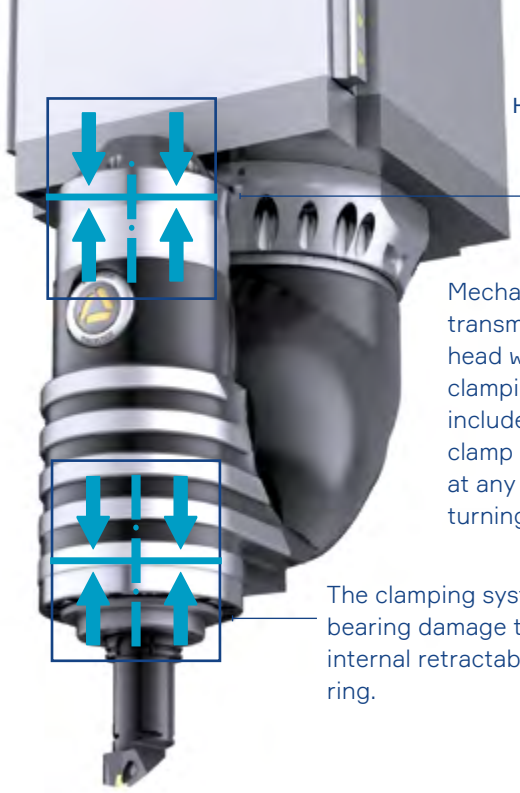
Ø 2000 ÷ 3500 mm	> Ø 3500 mm
up to 40 Tn	up to 200 Tn
up to 150 min^{-1}	up to 60 - 100 min^{-1}
Roller bearing	Hydrostatic bearing
Double pinion and crown system, high precision, no backlash	
	TBS available

Home Made

High Torque Multitasking Head

Head and spindle orientation at any angle.

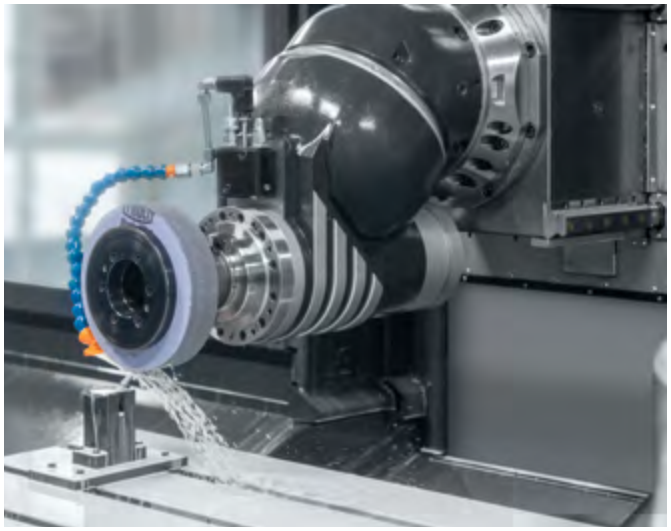
— Standard tools, no adapter needed.
— Automatic tool changing system.
— Standard range, availability of spare parts.
— Ease of use thanks to specific positioning cycle.



Mechanical transmission head with spindle clamping system: includes a clutch to clamp the spindle at any angle during turning operation.

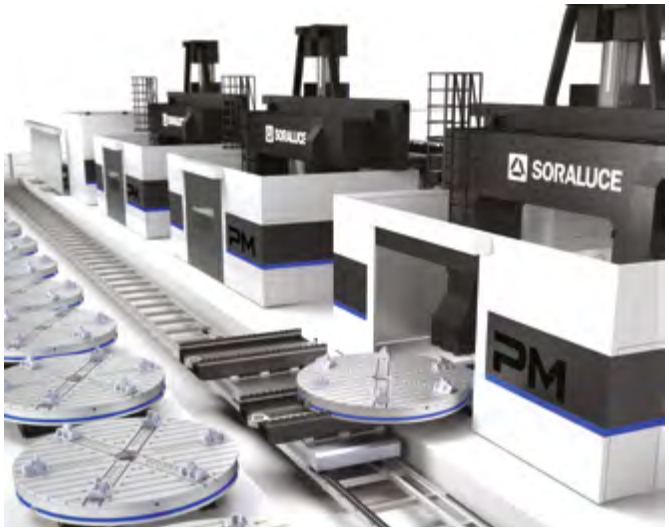
The clamping system prevents bearing damage thanks to an internal retractable support ring.

Grinding capability



— Table mounted dressing unit.
— Wheel holder with integrated nozzle.
— Balancing unit.
— Fume extraction.
— Specific cooling system.
— Double protection for guideways and telescopics.
— Grinding cycles and functionalities by Soraluce Software Factory.

Multitasking applicable to moving table portal machines:



— Excellent alternative to VTL machines.
— Much more milling capacity.
— Higher workpiece swing.
— Easy workpiece loading / unloading.

07.

Soraluce Software Factory

Smart HMI, Intelligent interface.

— Ergonomic and intuitive workspace.
— Soraluce's APPS available.
— Parallel work during NC program running.
— Minimized downtimes.
— Real time machine status.
— Energy consumption monitoring.
— Simplification of repetitive tasks.

Home Made

01

Modular and robust; configurable according to customer's requirements.

02

Own methodology; complete integration, approved in Soraluce.

03

Development of specific custom cycles.

04

Capability for automated system, flexibles lines, centralized tool magazines.


Softkeys & Customized masks


Manufacturing cycles


Dynamic collision monitoring


Advanced tool management

08.

Digital services

Advanced Digital Services, based on the Soraluce Data System comprehensive monitoring platform:

Reportya

Regular customized reports.

FactoryConnect

Machine park monitoring and integrations with corporate management systems (ERP, MES, etc.).

Autocheck

Self-Assessment using Fingerprint benchmark parameters.

JobManager

Traceability of manufacturing orders, programs, tools and process incidences.

Emaintenance

Digital management of maintenance tasks.

OEEMonitor

Availability & Performance & Quality parameters calculation.

09.

Ergonomic & Safe

Tool changing system

Tool loading
non-stop machining

— Simple and ergonomics.
— Allows tool loading/unloading with machine in operation.
— Full safety for the operator.
— No downtimes:
  — Tool storage is protected from chips and coolant.
  — Inductive detectors protected.
— Advanced tool management options available on request.

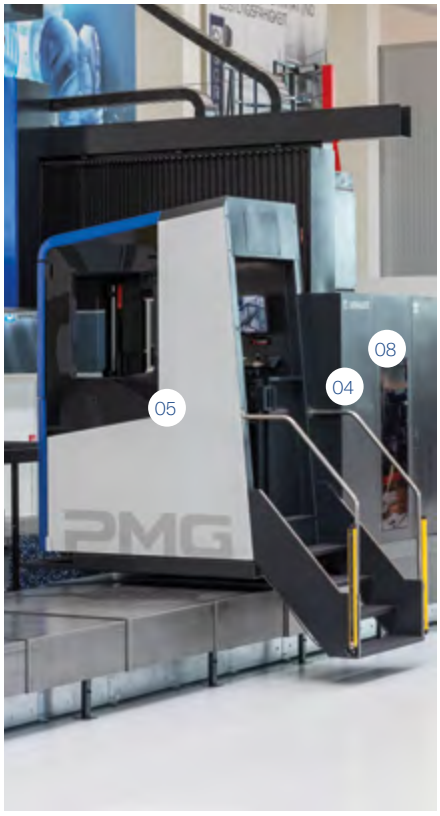
Totally reliable

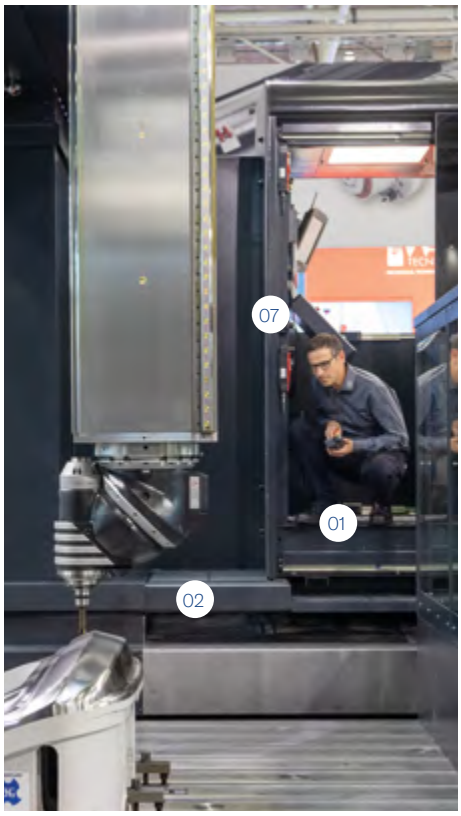
— NC controlled.
— No impacts with head.
— Tool control.

Non-stop machining

Robotized tool changer available

Easy maintenance and accessibility





01 Accessible intervention areas.

02 Accessible and spacious work area.

03 Sliding shutters and doors to avoid the disassembly of panels.

04 Visible gauges and levels.

05 Specific signals to indicate maintenance and service points.

06 Ample areas to ease maintenance tasks.

07 Operator platform with vertical and cross movement.

08 Machine grease lubrication; consumption is kept to the minimum necessary.

Comfort pack

Focused to increase operator's comfort and productivity.

— Folding seat.

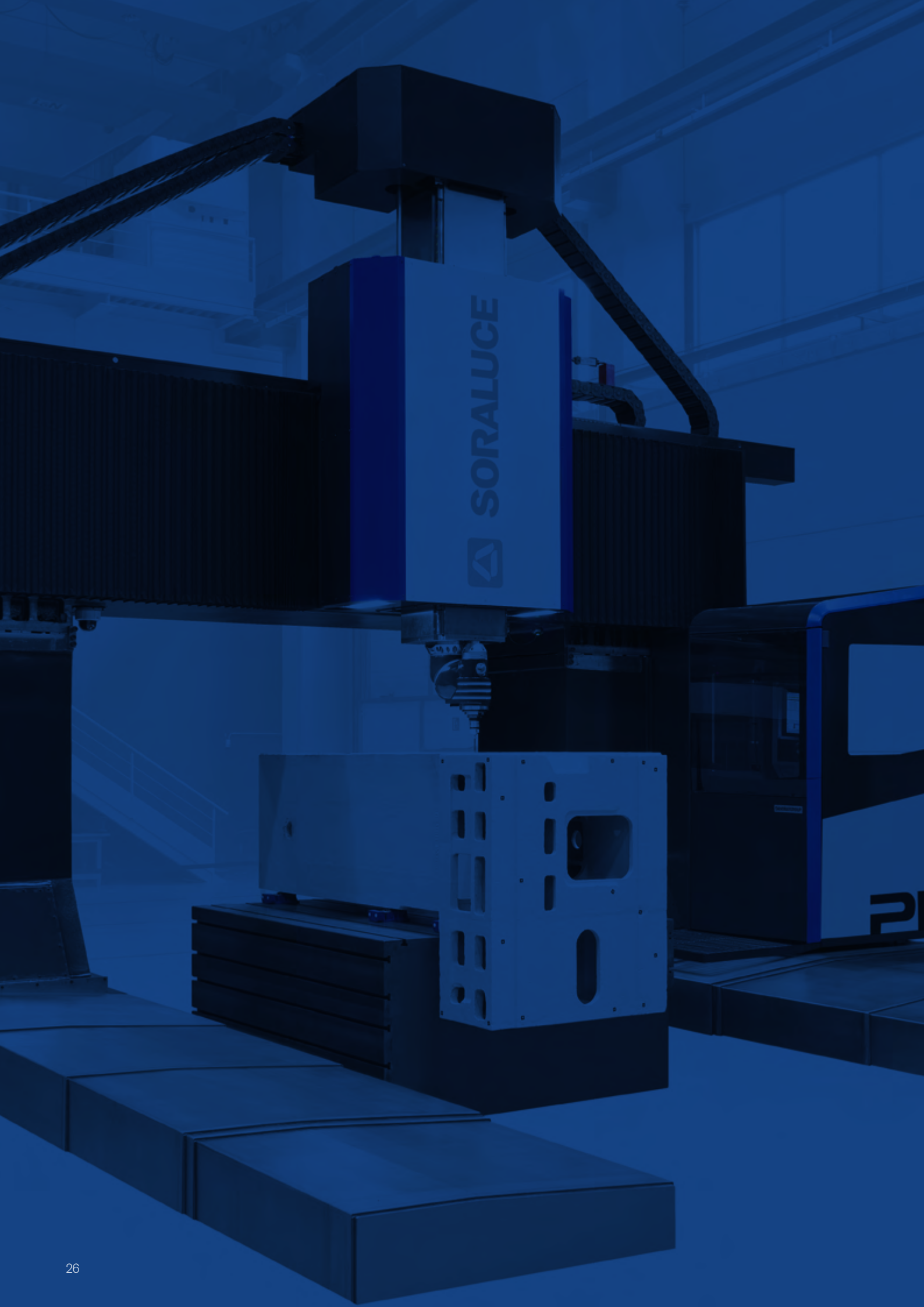
— Sound system.

— Extra space.

— Air conditioning (optional).

— Workbench with a panel (optional).

— Tool cabinet (optional).

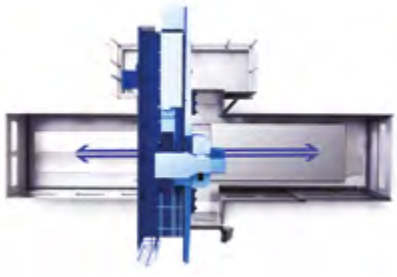

SORALUCE

Meet the machines

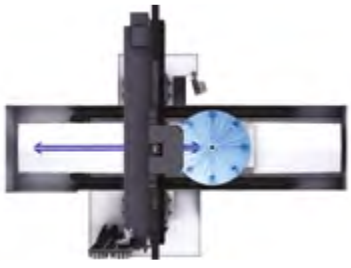
PM | PR | PX

Moving table portal milling machine

Choose the configuration of your moving table portal machine



Moving table



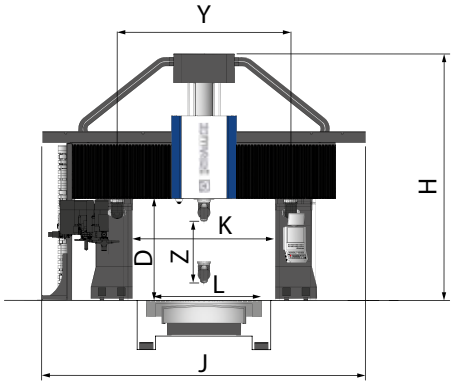
Multitasking

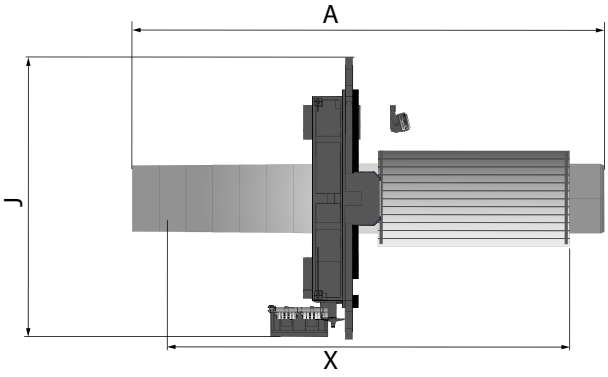
Mobile cross beam

Technical characteristics

		PM	PR	PX
Table length	mm	5000 / 6000 / 7000	5000 ÷ As per request	
Table width	mm	2500 / 3000	3500 / 4000 / 4500	5000 / 5500 / 6000
Longitudinal traverse “X” axis	mm	5600 / 6600 / 7600	5600 ÷ As per request	
Cross traverse “Y” axis	mm	4000 / 4500	5500 / 6000 / 6500 / 7000	7500 / 8500 / 9500 / 10500
Vertical traverse Ram “Z axis”	mm	1500 / 2000	2000 / 2500	2500 / 3000
Vertical traverse cross beam “W” axis	mm	1000 / 1500 / 2000	1000 / 1500 / 2000	2000 / 3000 / 4000
Spindle power	kW	43 / 60	43 / 60 / 81	60 / 81 / 101
Spindle speed range	min^{-1}	Up to 7000		
Rapid traverse	mm/min	X = 30000 Y/Z = 35000	X = 20000 Y/Z = 25000	X = 12000 Y/Z = 20000
Tool magazine	No. Tools	40 / 60 / 80 / 100 / 120 / 140	60 / 80 / 120 / 140 / 180	60 / 80 / 120 / 140 / 180

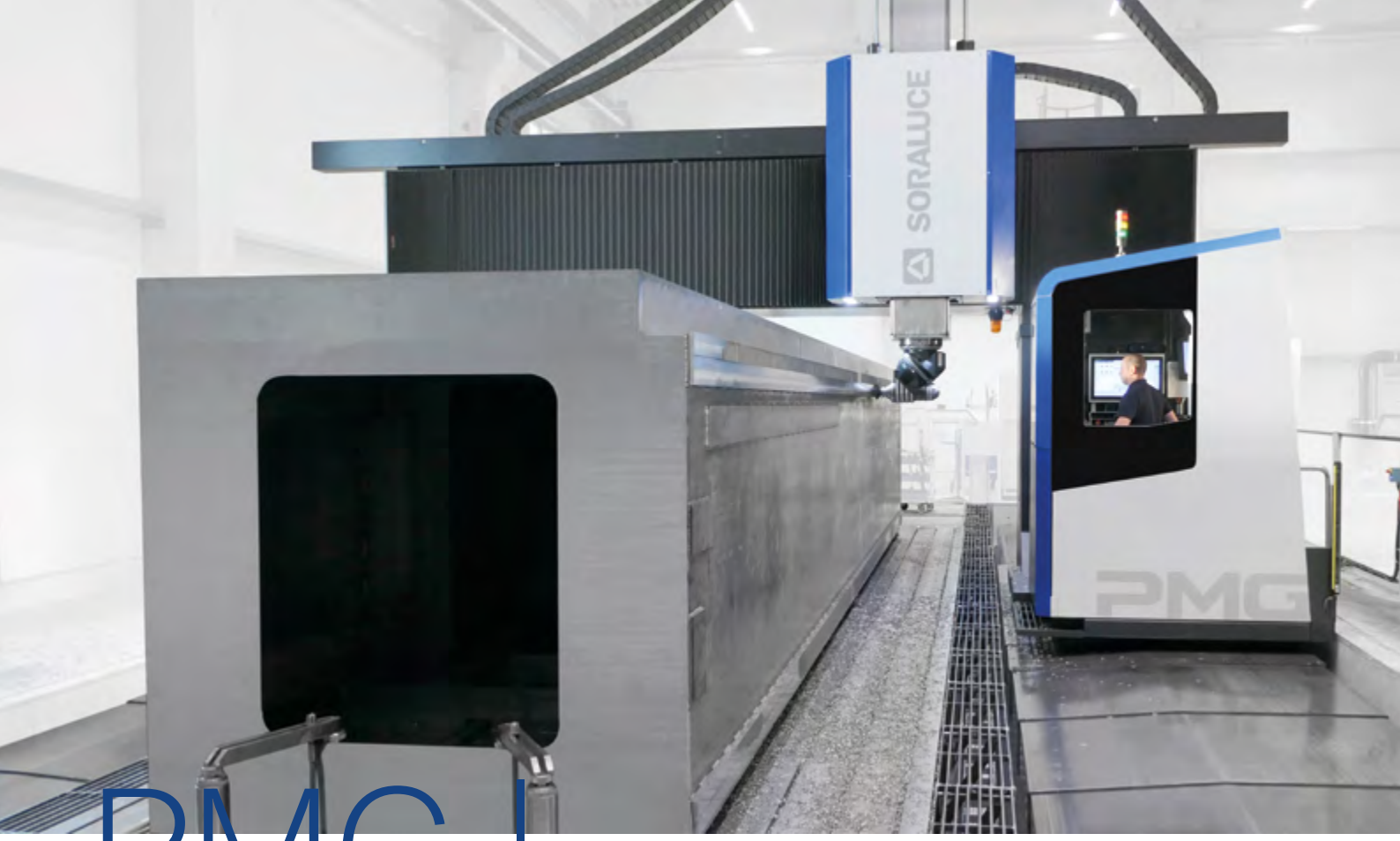
Layout





Layout	X	Y	Z	W	A	D	H	J	K	L
PM50	5600	4000 / 4500	1500 / 2000	-	12800	2100 / 2600	6180 / 7480	8000 / 8500	3540 / 4040	2500 / 3000
PM60	6600				14800					
PM70	7700				16800					
PMW50	5600			1000 / 1500 / 2000	12800	2750 / 3250 / 3750 (Z: 1500) 3250 / 3750 / 4250 (Z: 2000)	6805 / 7305 / 7805 (Z: 1500) 8105 / 8605 / 9105 (Z: 2000)		3080 / 3580	
PMW60	6600				14800					
PMW70	14000				16800					
PR60	6600	5500 / 6000 / 6500 / 7000	2000	1000 / 1500 / 2000	15200	3250 / 3750 / 4250	8100 / 8600 / 9100	10000 / 10500 / 11000 / 11500	4780 / 5280 / 5780 / 6280	3500 / 4000 / 4500
PRW60										
PX60		7500 / 8500 / 9500 / 10500	2500	2000 / 3000 / 4000		4750 / 5750 / 6750	10700 / 11700 / 12700	13350 / 14350 / 15350 / 16350	6100 / 7100 / 8100 / 9100	5000 / 5500 / 6000
PXW60			3000			5250/ 6250 / 7250	11200 / 12200 / 13200			

Dimensions in mm.

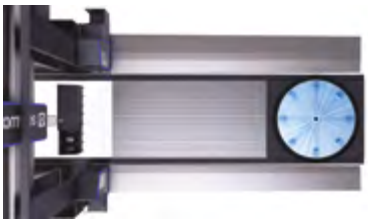


PMG | PRG | PXG

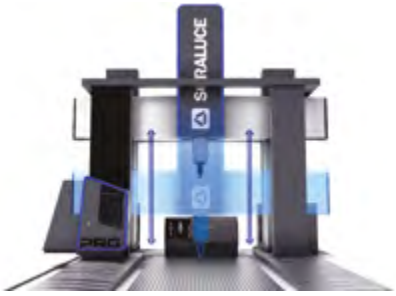
Gantry milling machine

Choose the configuration of your gantry milling machine

Gantry



Multitasking

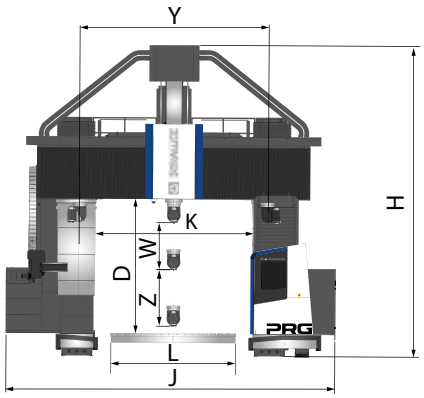


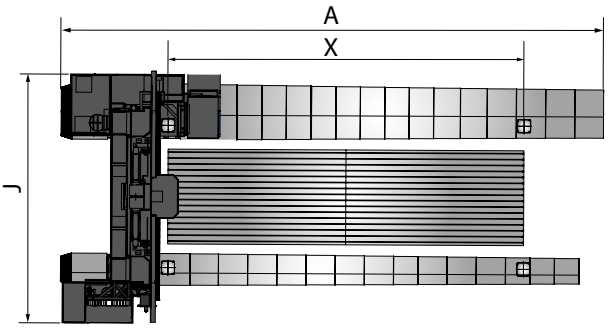
Mobile cross beam

Technical characteristics

		PMG	PRG	PXG
Longitudinal traverse “X” axis	mm	6000 / 8000 / 10000 / n x 2000		
Cross traverse “Y” axis	mm	4000 / 4500 / 5000 / 5500	5500 / 6000 / 6500 / 7000	7500 / 8500 / 9500 / 10500
Vertical traverse ram “Z” axis	mm	1500 / 2000	2000 / 2500	2500 / 3000
Vertical traverse cross beam “W” axis	mm	1000 / 1500 / 2000	1000 / 1500 / 2000	2000 / 3000 / 4000
Floor plate width	mm	2000 / 2500 / 3000 / 3500	3500 / 4000 / 4500 / 5000	5000 / 6000 / 7000 / 8000
Spindle power	kW	43 / 60	43 / 60 / 81	60 / 81 / 101
Spindle speed range	min^{-1}	Up to 7000		
Rapid traverse	mm/min	X = 30000 (without W) Y/Z = 35000	X = 20000 Y/Z = 25000	X = 12000 Y/Z = 20000
Tool magazine	No. Tools	40 / 60 / 80 / 100 / 120 / 140	60 / 80 / 120 / 140 / 180	80 / 120 / 140 / 180

Layout





Layout	X	Y	Z	W	A	D	H	J	K	L
PMG60	6000	4000 / 4500 / 5000 / 5500	1500 / 2000	-	11100	2100 / 2600	6725 / 8025	8000 / 8500 / 9000 / 9500	3520 / 4020 / 4520 / 5020	2000 / 2500 / 3000 / 3500
PMG140	14000				19670					
PMGW60	6000			1000 / 1500 / 2000	12500	2750 / 3250 / 3750 (Z: 1500) 3250 / 3750 / 4250 (Z: 2000)	7350 / 7850 / 8350 (Z: 1500) 8650 / 9150 / 9650 (Z: 2000)	8500 / 9000 / 9500 / 10000	3080 / 3580 / 4080 / 4580	
PMGW140	14000				21070					
PRGW60	6000	5500 / 6000 / 6500 / 7000 / 8000	2000 / 2500		12500	3250 / 3750 / 4250	8900 / 9400 / 9900	10000 / 10500 / 11000 / 11500	4780 / 5280 / 5780 / 6280	3500 / 4000 / 4500 / 5000 / 6000
PRGW140	14000				21070					
PXGW60	6000	7500 / 8500 / 9500 / 10500	2500 / 3000	2000 / 3000 / 4000	15145	4750 / 5750 / 6750 (Z: 2500) 5250 / 6250 / 7250 (Z: 3000)	11500 / 12500 / 13500 (Z: 2500) 12000 / 13000 / 14000 (Z: 3000)	13350 / 14350 / 15350 / 16350	6100 / 7100 / 8100 / 9100	5000 / 6000 / 7000 / 8000
PXGW140	14000				23440					

Dimensions in mm.

Portal Factory

The most comprehensive and advanced manufacturing center for large-scale, heavy duty portal machines.

— Production of complete range of portal machines; moving table milling machines, gantry milling machines, multitasking machines, with fixed and moving cross beams.

— Full range of heads and option for portal machines.

— Practice-oriented and innovative technologies.

— Research and development projects for Soraluce's portal machines.

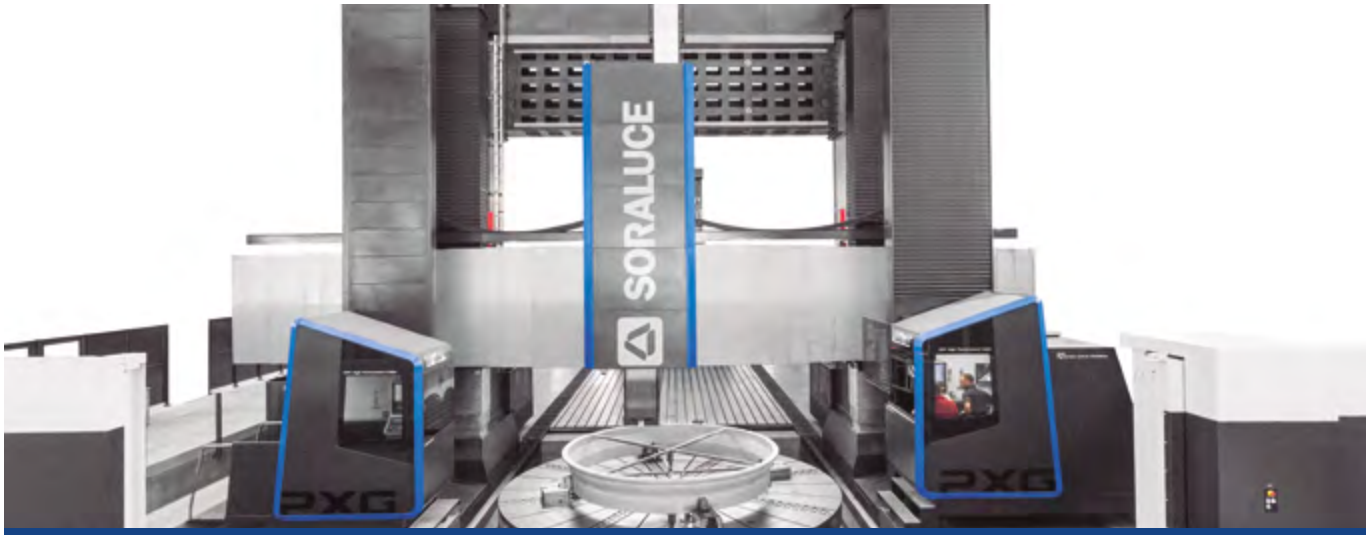
— Adapted to customer requirements.

— Designed for a proper temperature variation control.

— Special super-floor surface.

Applications

PMG
Molds & Dies



PXGW
Energy

PMG
Railways / Bogie

PMG
Molds & Dies

PXG
Shipyard / Energy

PMG
General Engineering

PM
Oil & Gas

PM
Capital Goods / Beverage Industry

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