

# PM | PR | PX

## Heavy-Duty Line

Robust. Precise.

 **SORALUCE**

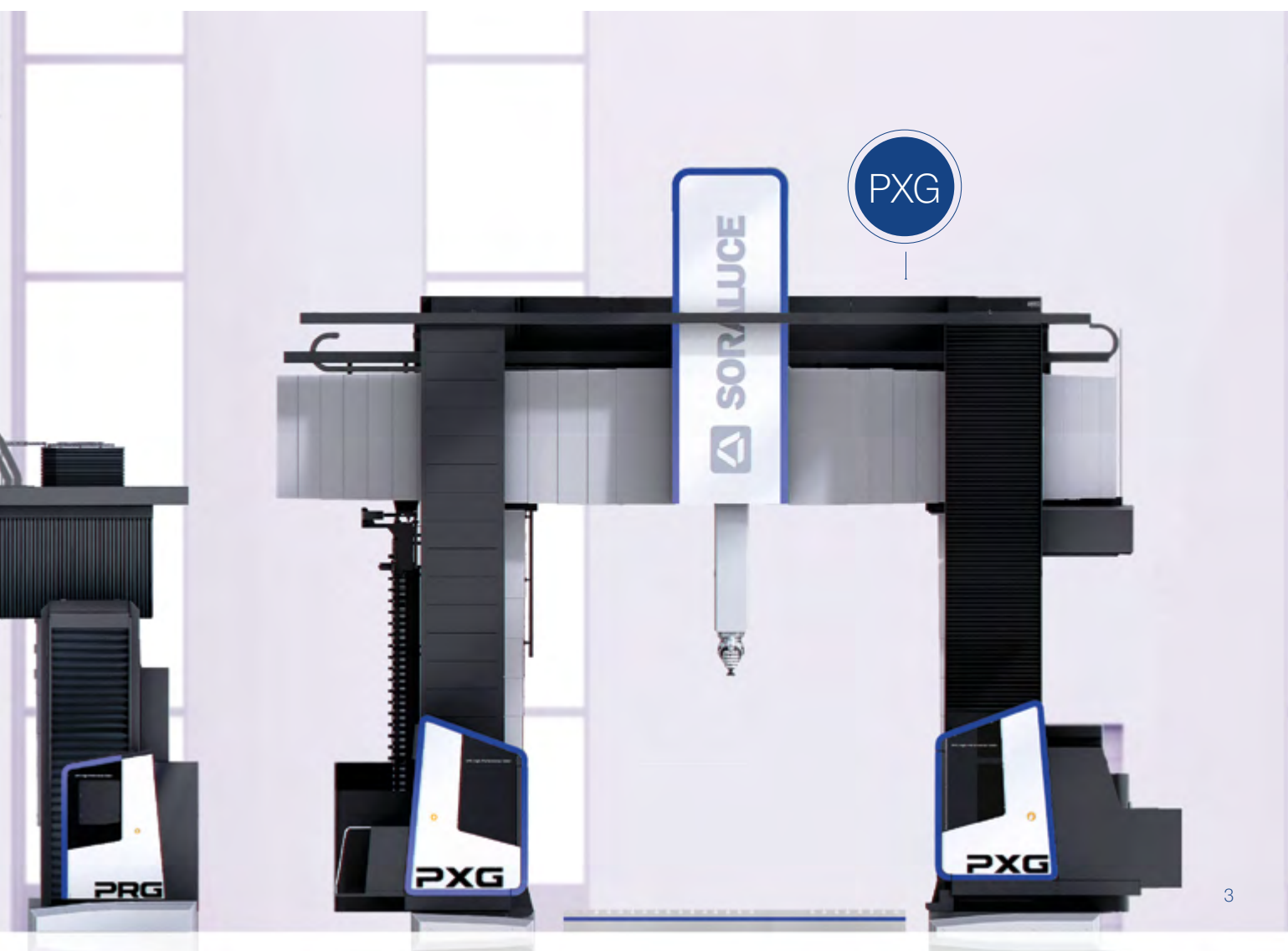
As part of our premium solutions, the Heavy-Duty Line Portal & Gantry milling machines of Soraluce provides **highest best stock removal rate in roughing** and **best in class precision in finishing** for heavy duty components and extremely complex machining operation.



# 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





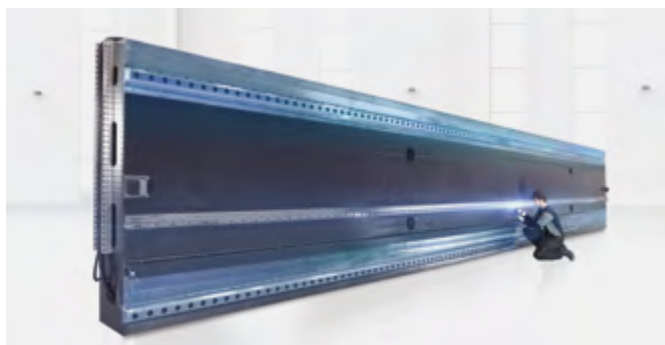
# Nine reasons to choose Heavy-Duty Line



01.

# A winning combination

The most rigid and dynamic solution on the market

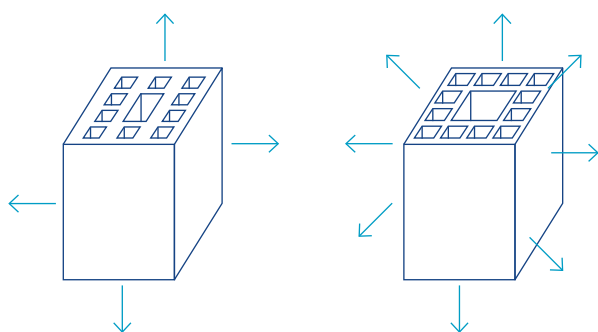


## Full cast iron

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.

- Soraluze 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

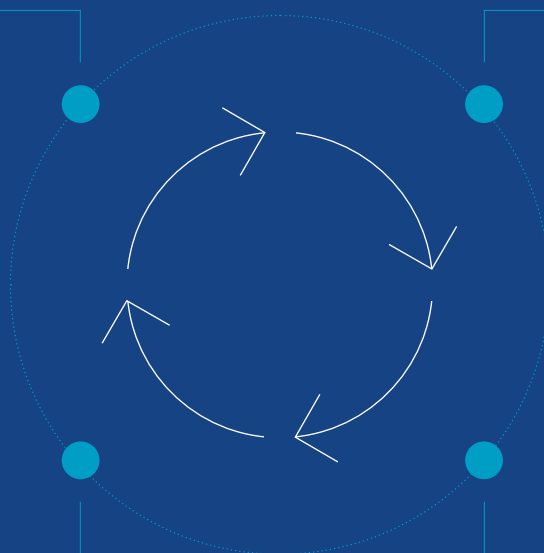
- Best precision
- High dynamics

## DAS<sup>+</sup>

- 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<sup>+</sup>

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<sup>+</sup> work?

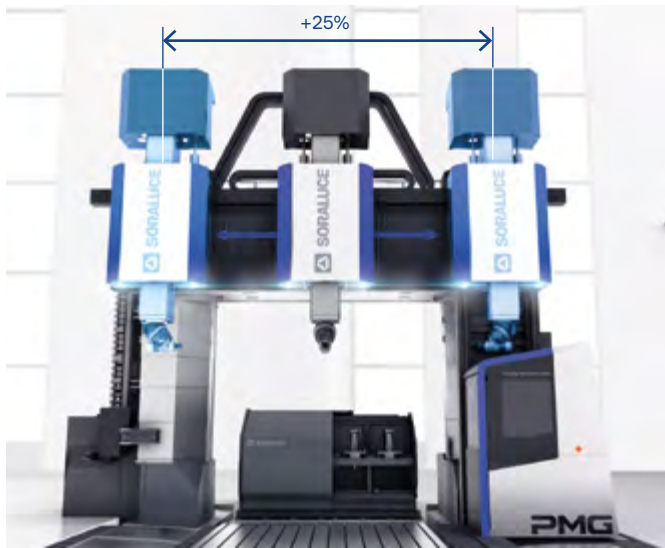
DAS<sup>+</sup> is a smart system which oversees the machining process and selects the best technological alternative to eliminate chatter:

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

02.

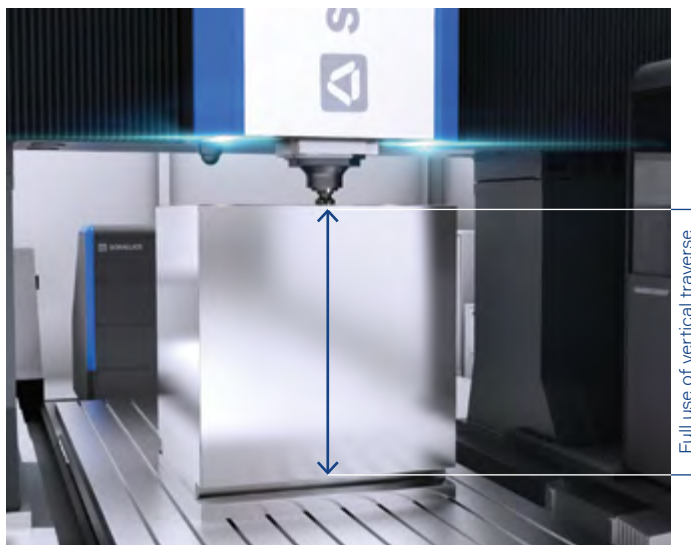
# Next level technologies

## 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.

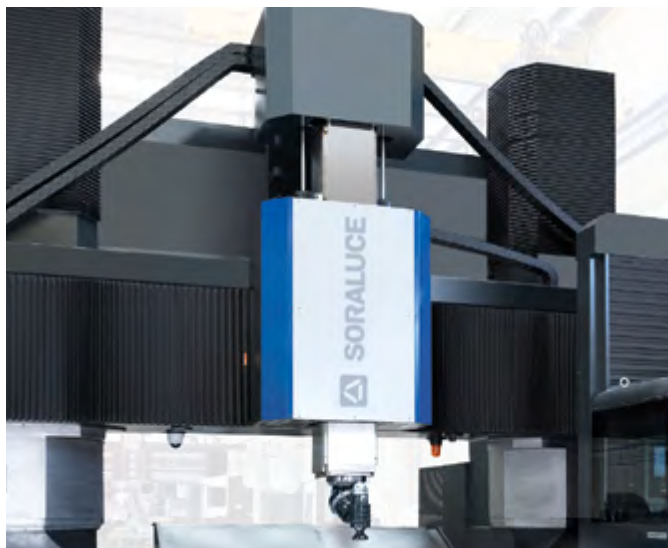
## Compact ram



- 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 | 1378 in/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 | 6.8"

Stable working conditions, material DIN CK45.

Ø 160 mm | 6" milling  
tool, 8 teeth

Ap: 6 mm | 0.23"  
Ae: 120 mm | 4.8"  
F: 1075 mm/min | 42 in/min  
Q: 774 cm<sup>3</sup>/min | 47 in<sup>3</sup>/min  
Power consumption: 92%

Ø 70 mm | 2.75" drilling  
tool

F: 91 mm/min | 3.58 in/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.

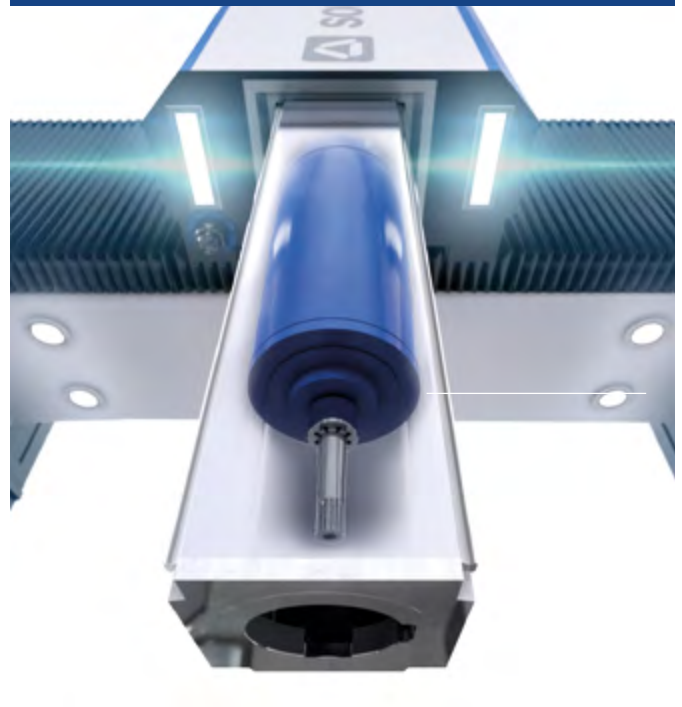
- Up to 60 kW | 80 HP / 2000 Nm | 1475 ft-lbs.
- High efficiency.
- Minimum noise level.
- High performance thanks to optimized power-torque curve.
- Full power at low rpm.
- Short distance between main motor and head transmission.

Compact-design transmission shaft.

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

Up to

60 kW | 80 HP



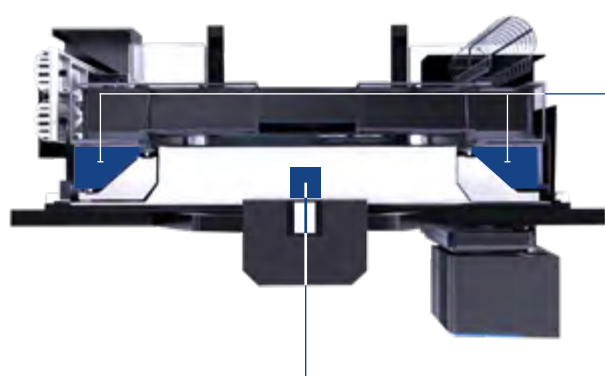
## Parallel transmission

- High power and torque range: up to 100 kW | 134 HP (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.



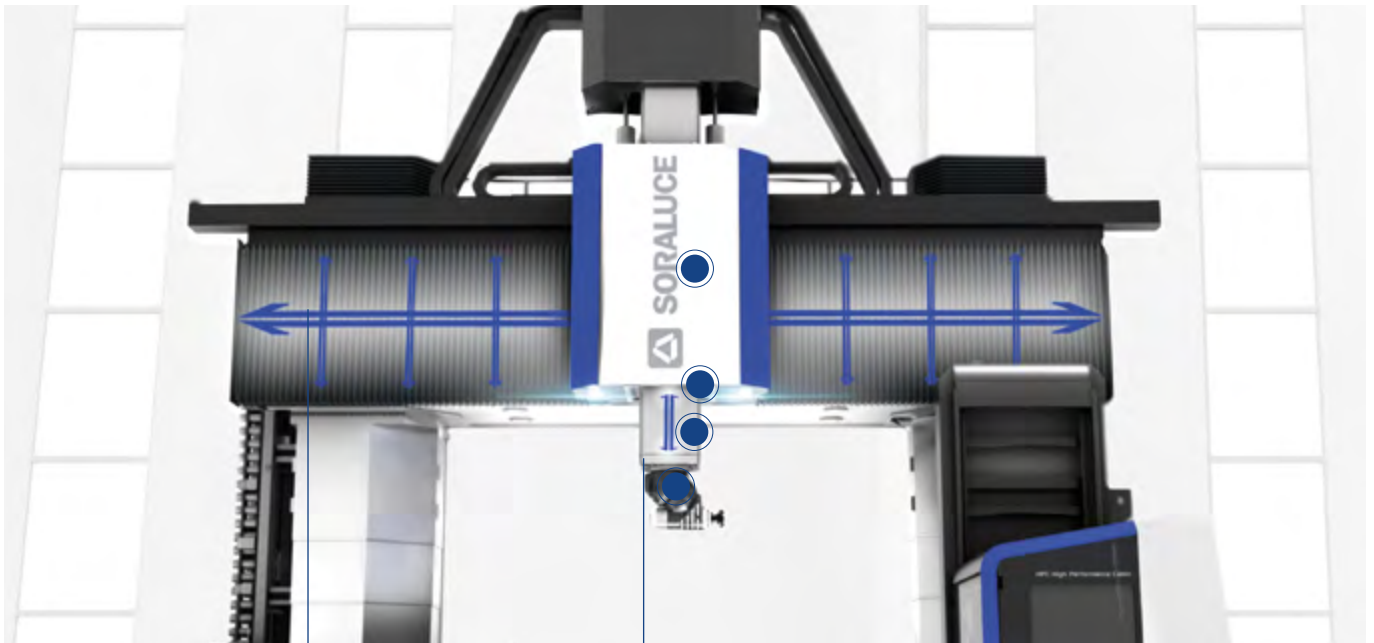
Center of gravity

- 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 | 0.00039” to 0.0019” range”.

Hans Jürgen Hinzmann  
Production manager  
SMS group GmbH

“We get up to 0.015 mm | 0.00059” precision in Ø 600 | 23” mm circular interpolation (IT3) in our components”.

Aitor Txurruka  
Managing Director  
GOIMEK

## Superb precision in positioning

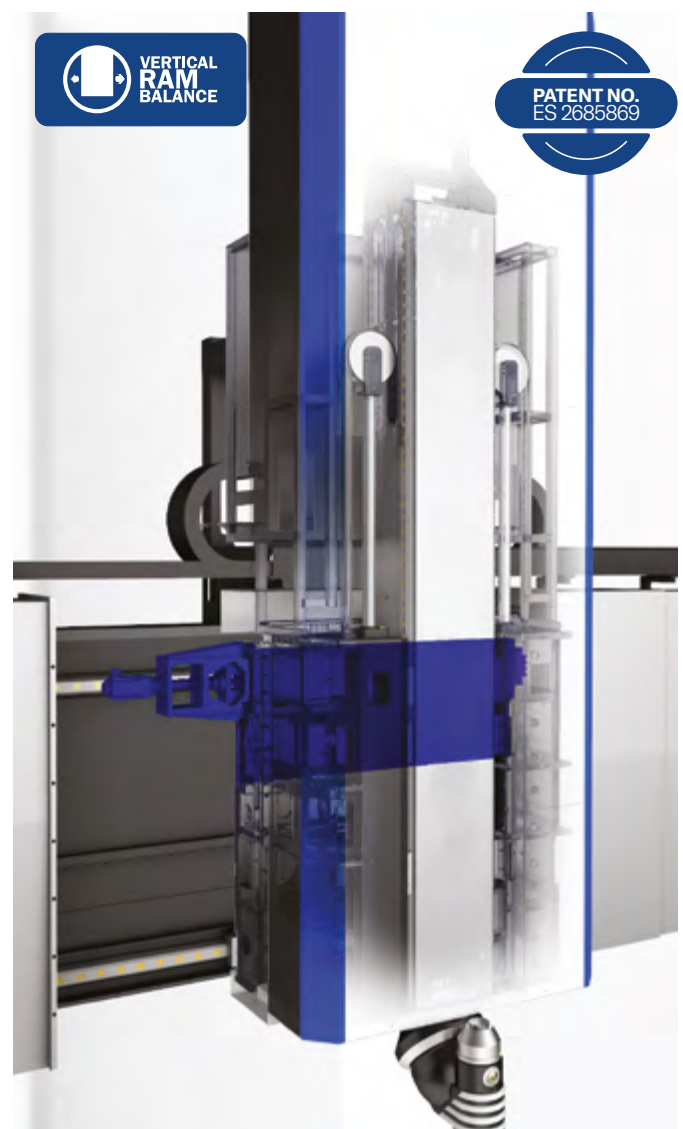
The system compensates the angular deflection of the cross beam of large portal machines caused by the moving weight of the saddle, ram and heads along the cross beam.

### 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



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

+ ACCURACY



Eliminates any chatter that may arise during the machining process.

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

+ PRODUCTIVITY

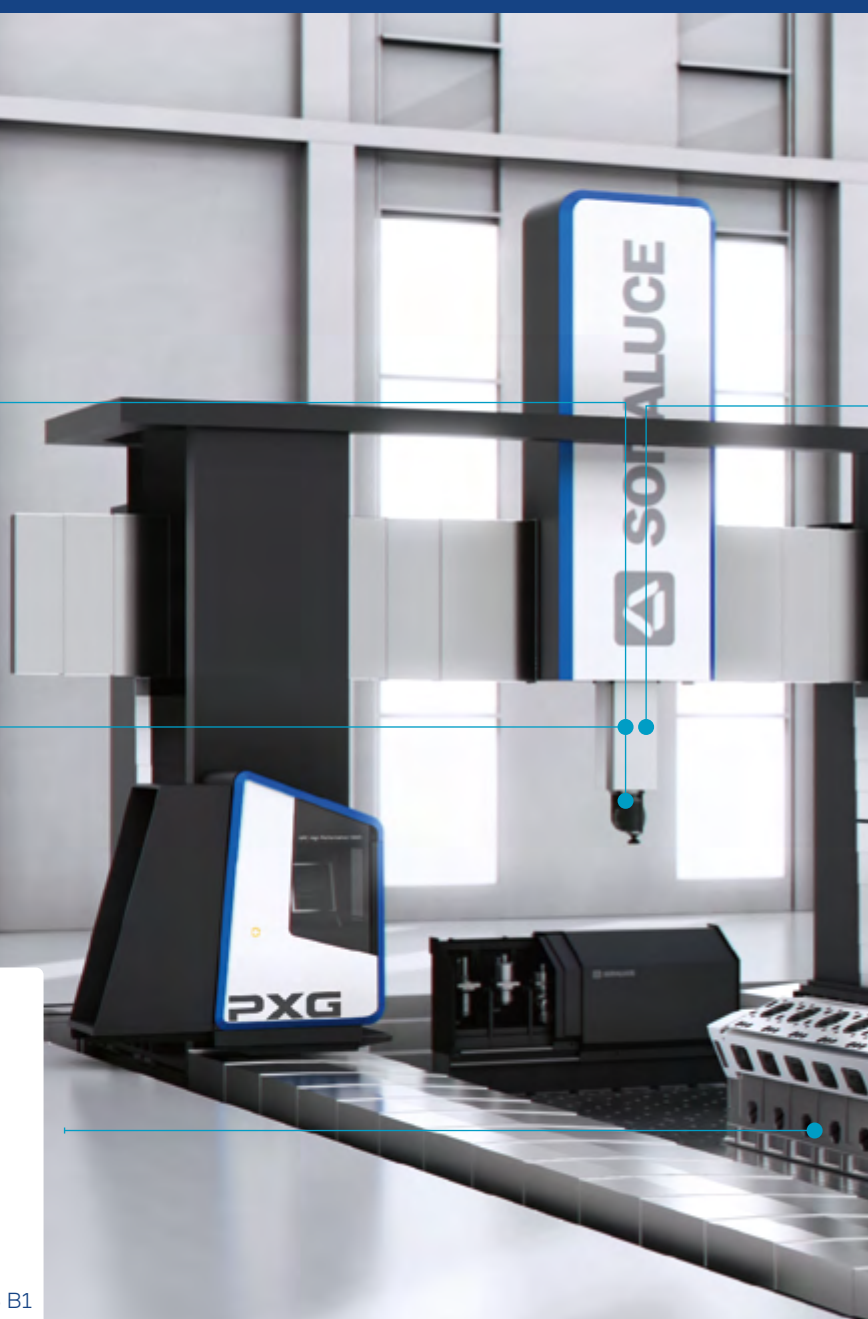
Patent no. EP 3017911



Eliminates chatter originated on either fixtures or workpieces.

+ PRODUCTIVITY  
+ QUALITY

Patent no. EP 2517823 B1





## 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



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

**+ ACCURACY**  
Patent no. ES 2685869



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

**30% time saved**  
in roughing process!

**+ PRODUCTIVITY**



Hydrostatic table balancing system to correct distribution of asymmetric loads.

**+ ACCURACY**



Fast and simplified component set-up.

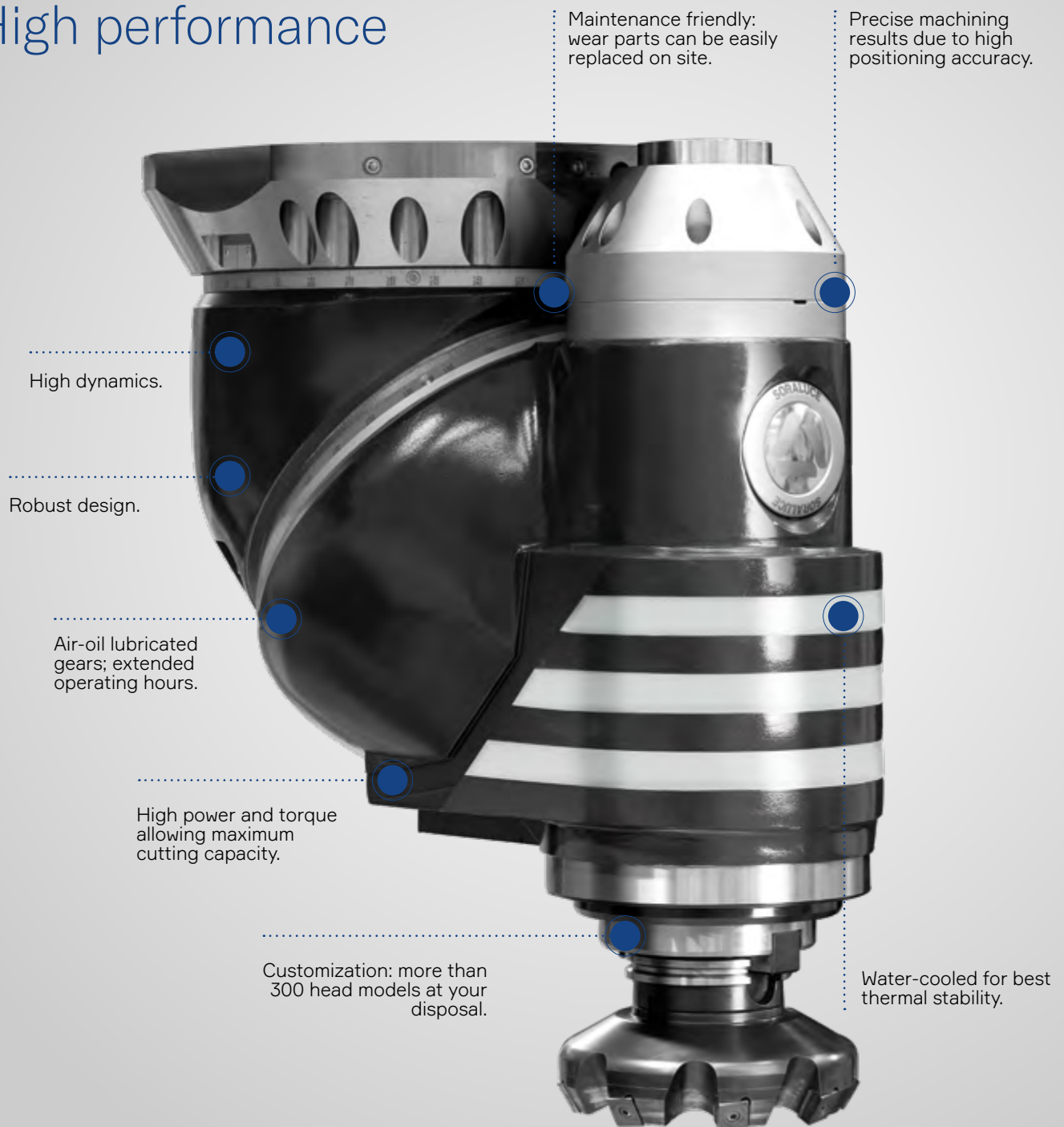
**+ PRODUCTIVITY**  
Patent no. EP 2570236

05.

# Soraluce heads

More than  
**300**  
head models

Precision &  
High performance



## The most advanced head manufacturing center



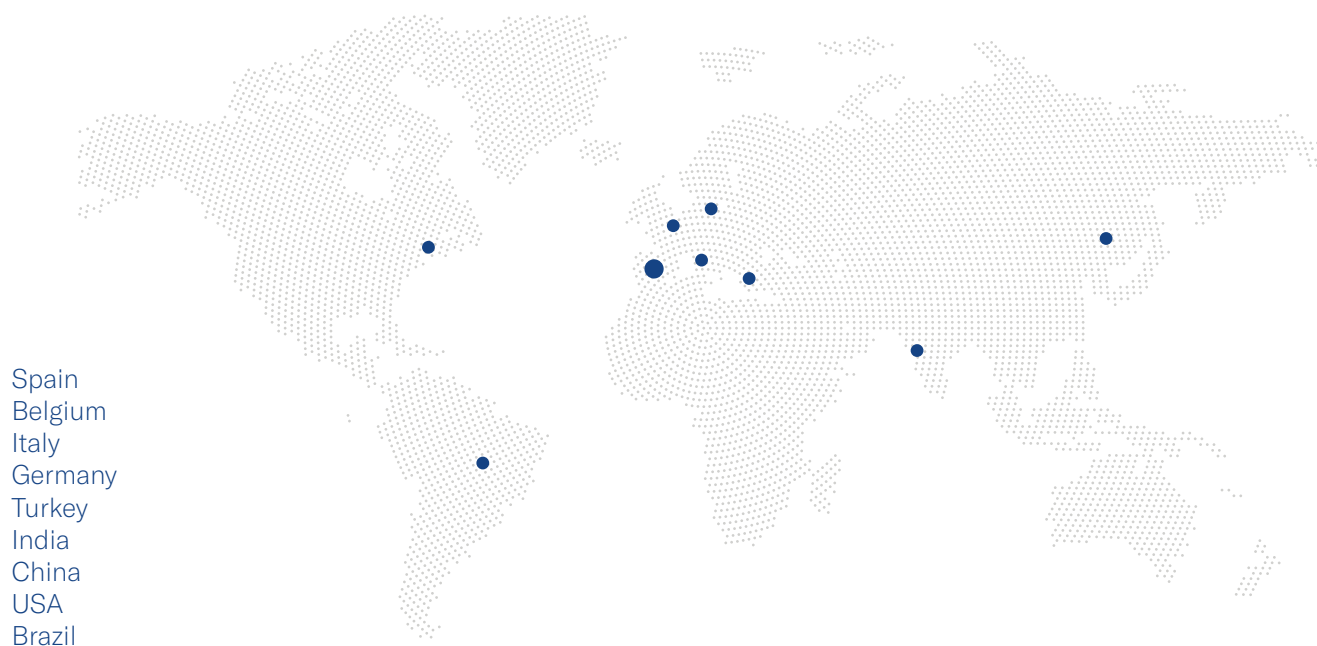
### In-house made



### Head service hubs

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

150  
Spare heads available







## Heavy-duty heads

### Cooled oil lubrication

- Up to 60 kW | 80 HP (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 | 49 HP (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 | 49 / 80 HP  
 0.001° x 0.001°  
 Up to 7000 min<sup>-1</sup> (mechanical) /  
 Up to 30000 min<sup>-1</sup> (electrospindle)

### Multitasking head

Up to 37 Kw | 49 HP  
 2.5° x 2.5° / 0.001° x 0.001°  
 Up to 7000 min<sup>-1</sup>

### Orthogonal head

37 / 46 kW | 49 / 61 HP  
 1° x 1°  
 Up to 7000 min<sup>-1</sup>

### Universal head

37 / 60 kW | 49 / 80 HP  
 2.5° x 1° / 0.001° x 0.001°  
 Up to 7000 min<sup>-1</sup>

### Fixed Boring head

30 / 46 / 60 / 81 / 101 kW |  
 40 / 61 / 80 / 108 / 135 HP  
 2000 / 3000 / 4000 / 5000 min<sup>-1</sup>  
 Different lengths and diameters

### Power Angular Rotary Head

60 / 81 / 101 kW | 80 / 108 / 135 HP  
 2.5° x 1°  
 3000 min<sup>-1</sup>

### Automatic Angular Rotary Head

15 / 30 kW | 20 / 40 HP  
 2.5° / 1° / 0.001°  
 2000 min<sup>-1</sup>

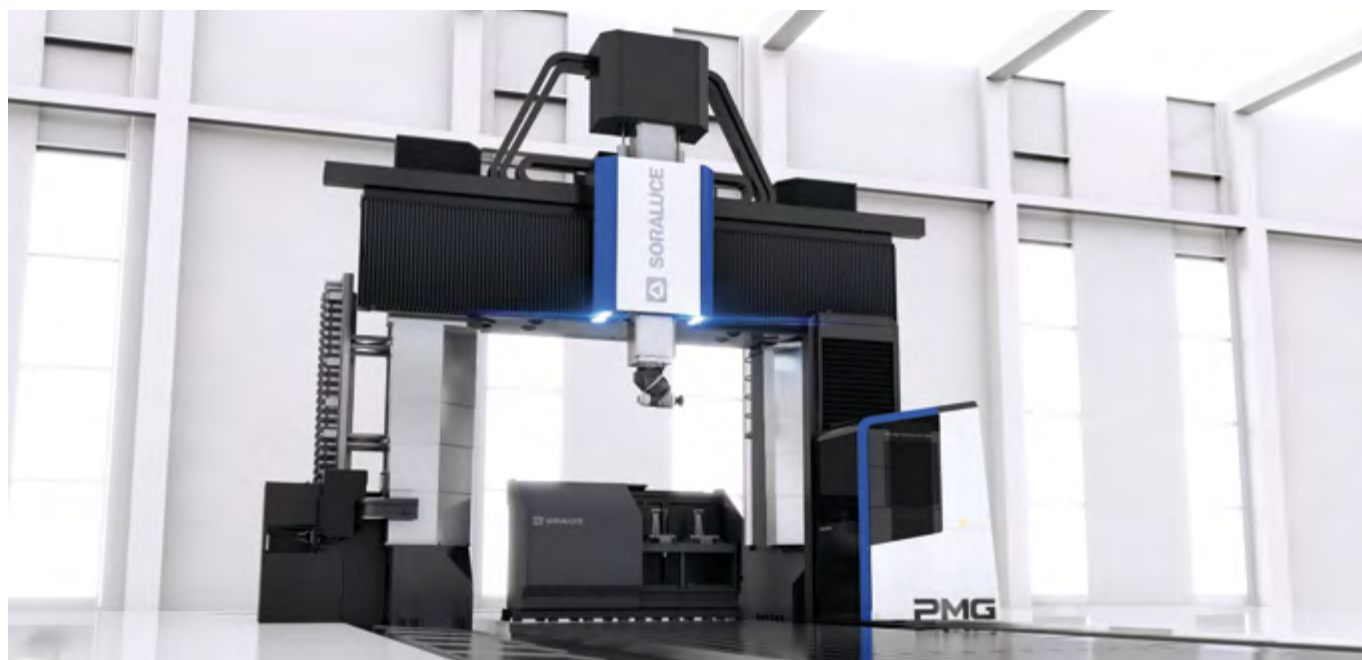
### Radial & Axial Turning Tool Holder

### Manual 40 x 40 Turning Tool Holder

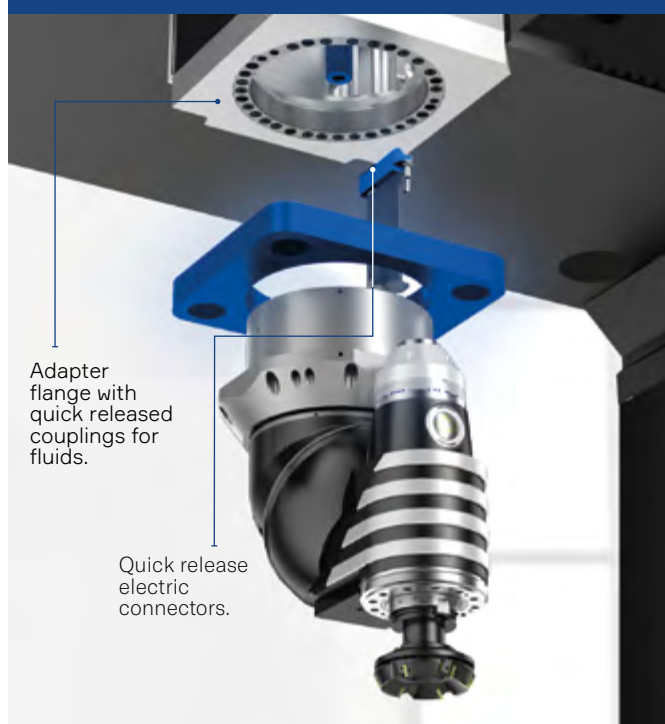


# Head changing system

- 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.

<div> <div> <math>\varnothing</math> 2000 ÷ 3500 mm   78" ÷ 137" </div> <div> <math>&gt; \varnothing</math> 3500 mm   137" </div> </div>	
up to 40 Tn   88184 lb	up to 200 Tn   440924 lb
up to 150 min <sup>-1</sup>	up to 60 - 100 min <sup>-1</sup>
Roller bearing	Hydrostatic bearing
Double pinion and crown system, high precision, no backlash	
	TBS available

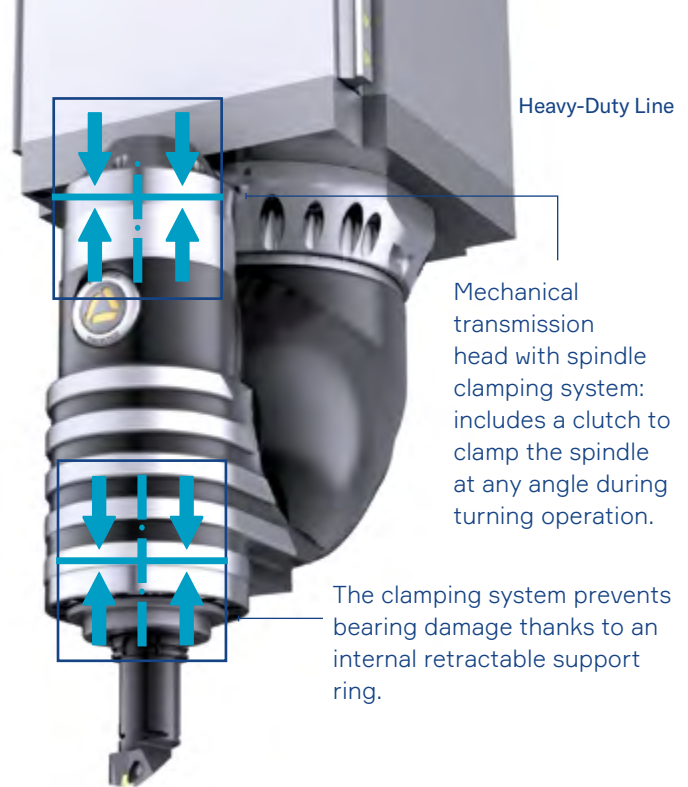
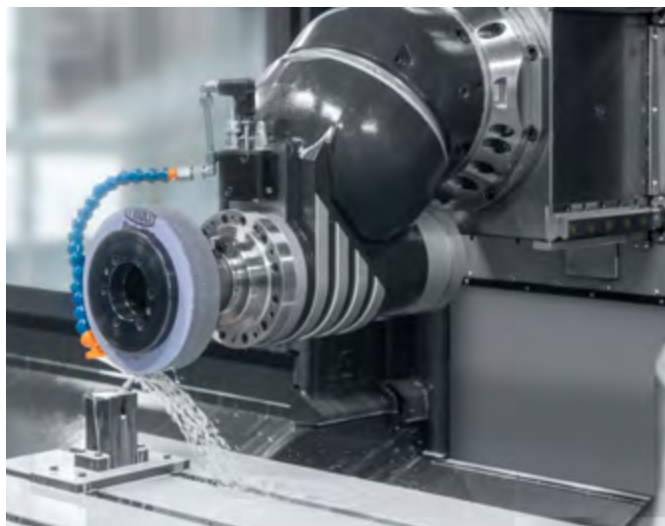
Home Made

# 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.

## 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

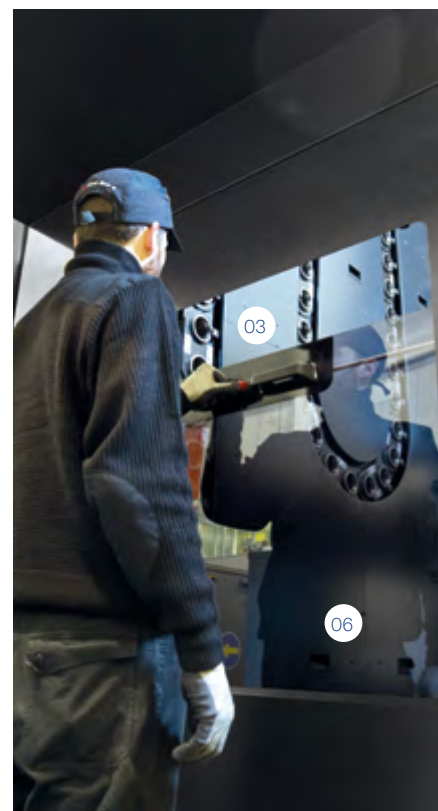
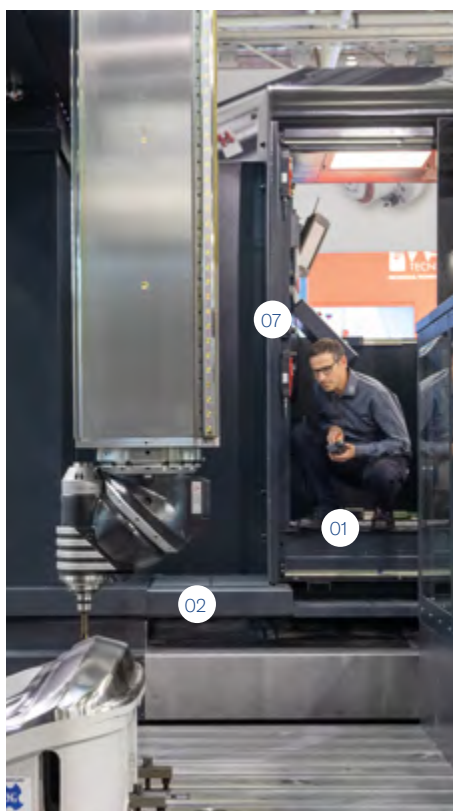
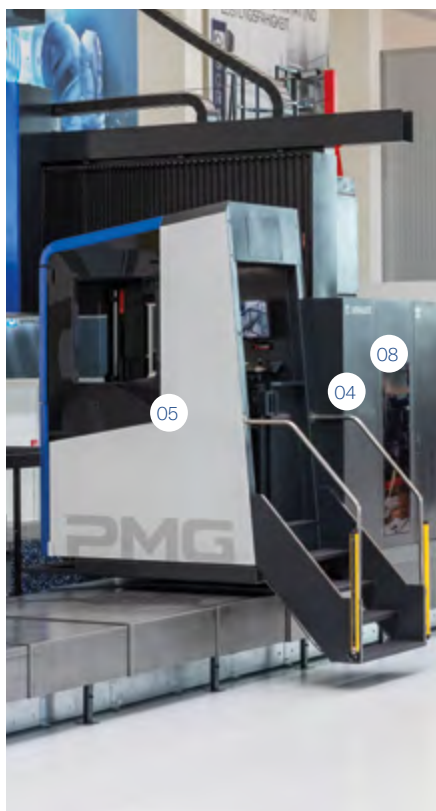
- NC controlled.
- No impacts with head.
- Tool control.

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

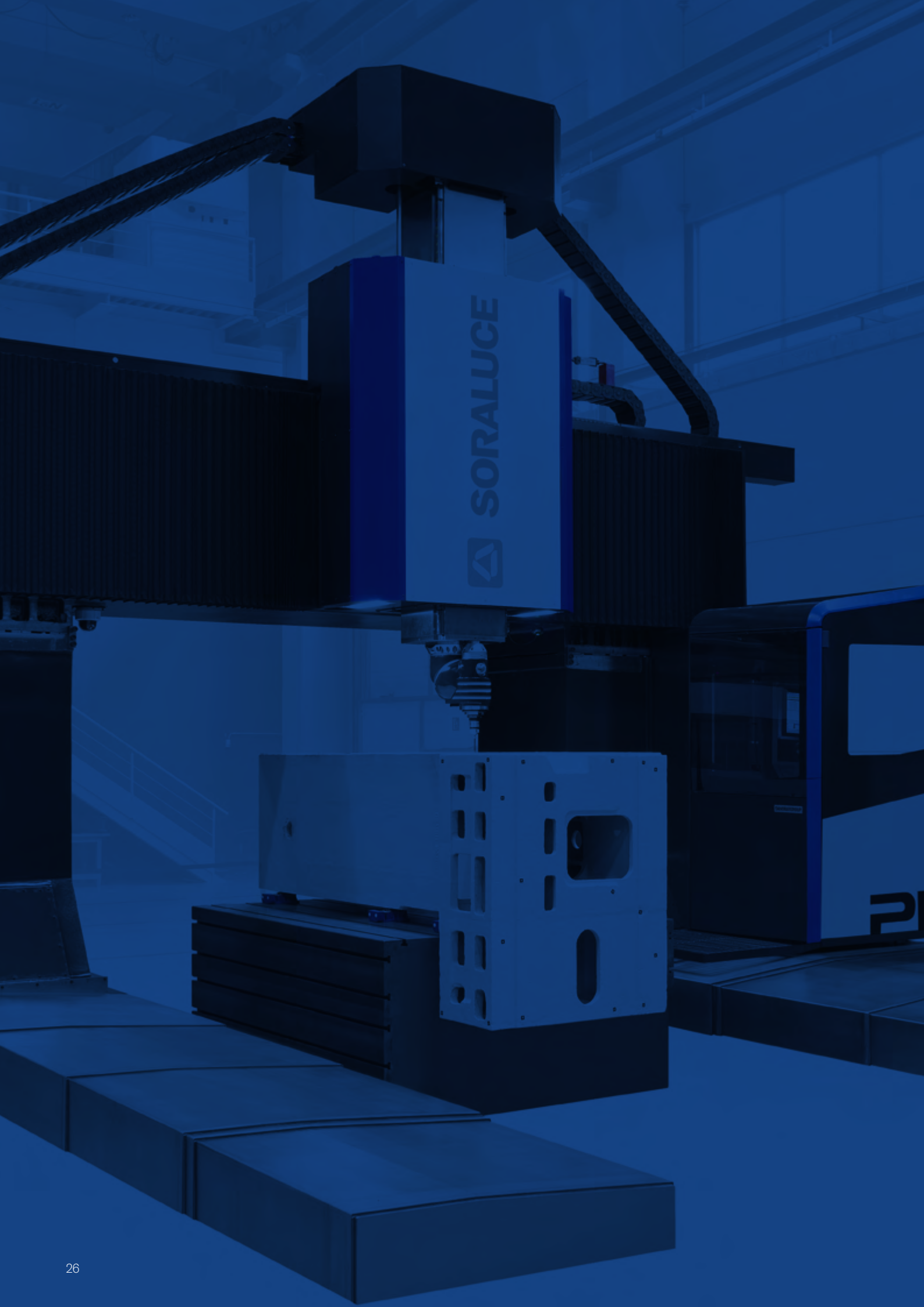
Machine grease lubrication; consumption is kept to the minimum necessary.

## 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).





Meet  
the machines



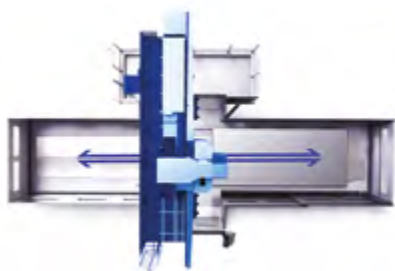


PM |  
PR |  
PX

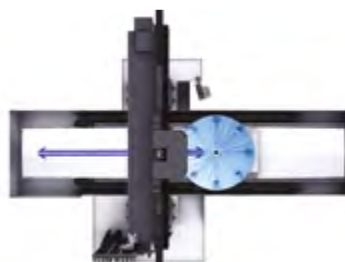
Moving table portal  
milling machine

Choose the configuration of your moving table portal machine

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Moving table



Multitasking



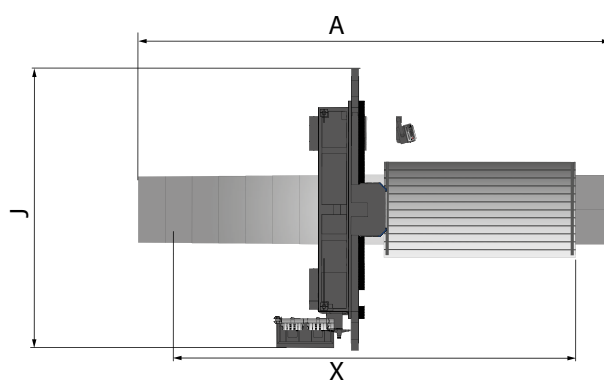
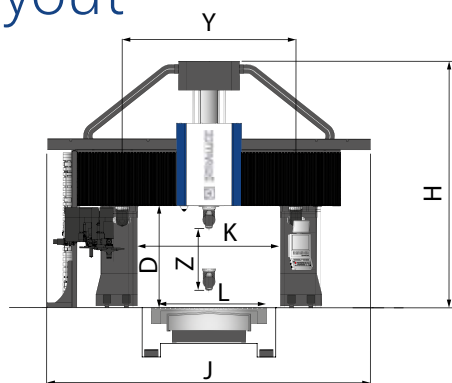
Mobile cross beam



# Technical characteristics

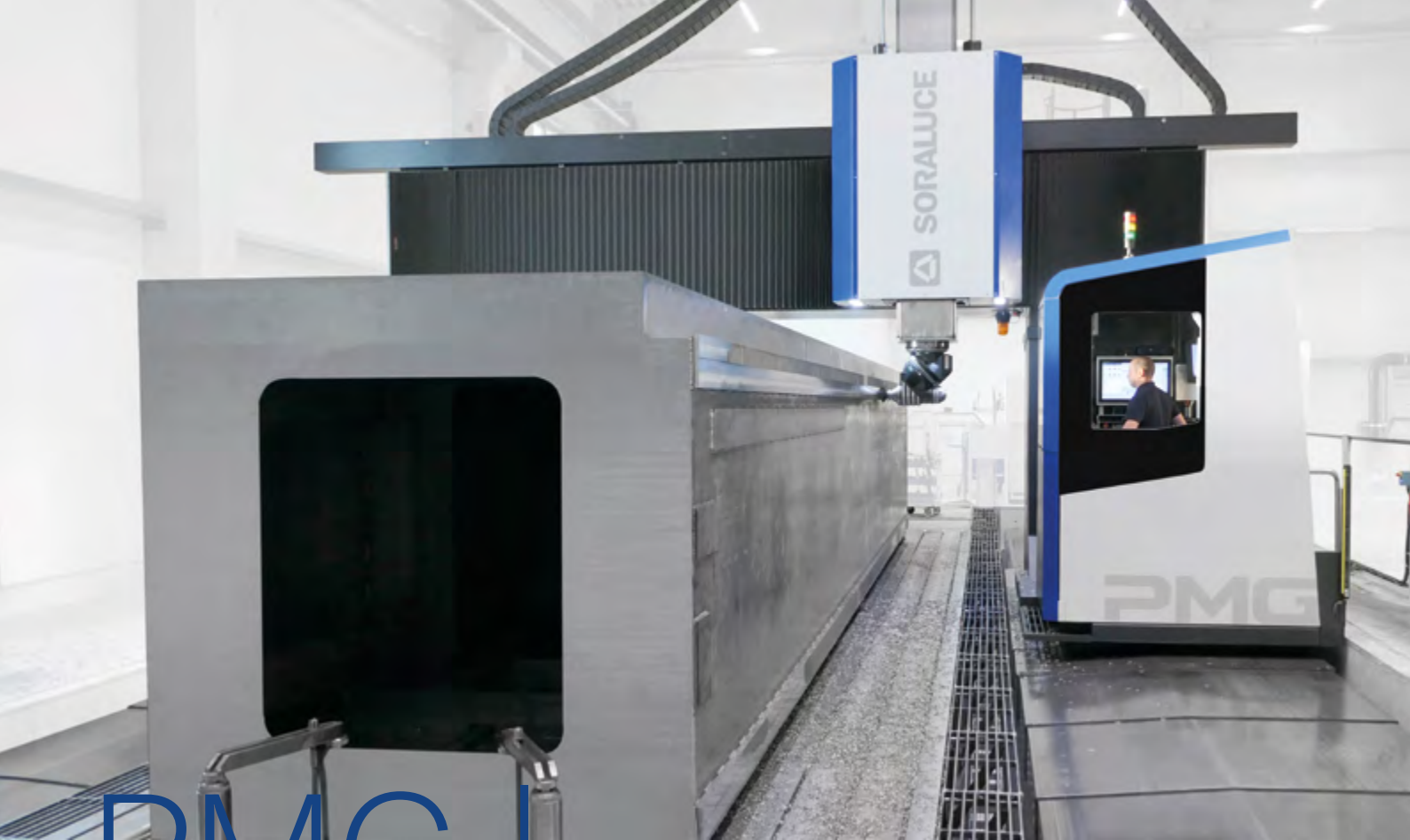
		PM	PR	PX
Table length	mm   in	5000 / 6000 / 7000   196" / 236" / 275"	5000   196" ÷ As per request	
Table width	mm   in	2500 / 3000   98" / 118"	3500 / 4000 / 4500   137" / 157" / 177"	5000 / 5500 / 6000   196" / 216" / 236"
Longitudinal traverse "X" axis	mm   in	5600 / 6600 / 7600   220" / 259" / 299"	5600   220" ÷ As per request	
Cross traverse "Y" axis	mm   in	4000 / 4500   157" / 177"	5500 / 6000 / 6500 / 7000   216" / 236" / 255" / 275"	7500 / 8500 / 9500 / 10500   295" / 334" / 374" / 413"
Vertical traverse Ram "Z" axis	mm   in	1500 / 2000   59" / 78"	2000 / 2500   78" / 98"	2500 / 3000   98" / 118"
Vertical traverse cross beam "W" axis	mm   in	1000 / 1500 / 2000   39" / 59" / 78"	1000 / 1500 / 2000   39" / 59" / 78"	2000 / 3000 / 4000   78" / 118" / 157"
Spindle power	kW   HP	43 / 60   57 / 80	43 / 60 / 81   57 / 80 / 108	60 / 81 / 101   80 / 108 / 135
Spindle speed range	min <sup>-1</sup>	Up to 7000		
Rapid traverse	mm/min   in/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   220"	4000 / 4500   157" / 177"	1500 / 2000   59" / 78"	-	12800   503"	2100 / 2600   82" / 102"	6180 / 7480   243" / 294"	8000 / 8500   314" / 334"	3540 / 4040   139" / 159"	2500 / 3000   98" / 118"
PM60	6600   259"				14800   582"					
PM70	7600   299"				16800   661"					
PMW50	5600   220"			1000 / 1500 / 2000   39" / 59" / 78"	12800   503"	2750 / 3250 / 3750   108" / 128" / 147" (Z: 1500   59") 3750 / 4250   147" / 167" (Z: 2000   78")	6805 / 7305 / 7805   267" / 287" / 307" (Z: 1500   59") 8105 / 8605 / 9105   319" / 338" / 358" (Z: 2000   78")			
PMW60	6600   259"				14800   582"					
PMW70	14000   551"				16800   661"					
PR60	6600   259"	5500 / 6000 / 6500 / 7000   216" / 236" / 255" / 275"	2000   78"	1000 / 1500 / 2000   39" / 59" / 78"	15200   598"	3250 / 3750 / 4250   128" / 147" / 167"	8100 / 8600 / 9100   318" / 338" / 358"	10000 / 10500 / 11000 / 11500   393" / 413" / 433" / 452"	4780 / 5280 / 5780 / 6280   188" / 207" / 227" / 247"	3500 / 4000 / 4500   137" / 157" / 177"
PRW60										
PX60		7500 / 8500 / 9500 / 10500   295" / 334" / 374" / 413"	2500   98"	2000 / 3000 / 4000   78" / 118" 157"		4750 / 5750 / 6750   187" / 226" / 265"	10700 / 11700 / 12700   421" / 460" / 500"	13350 / 14350 / 15350 / 16350	6100 / 7100 / 8100 / 9100   240" / 279" / 318"	5000 / 5500 / 6000   196" / 216" / 236"
PXW60						5250 / 6250 / 7250   206" / 246" / 285"	11200 / 12200 / 13200   440" / 480" / 419"	525" / 564" / 604" / 643"	525" / 564" / 604" / 643"	

Dimensions in mm | in.



PMG |  
PRG |  
PXG

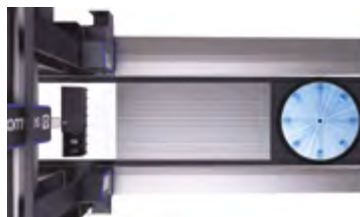
Gantry milling  
machine

Choose the configuration of your gantry milling machine

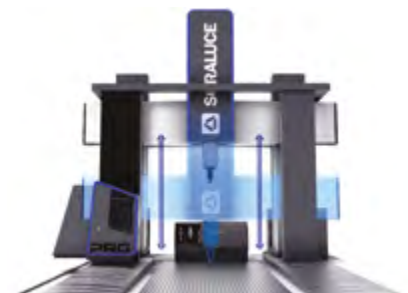
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Gantry



Multitasking

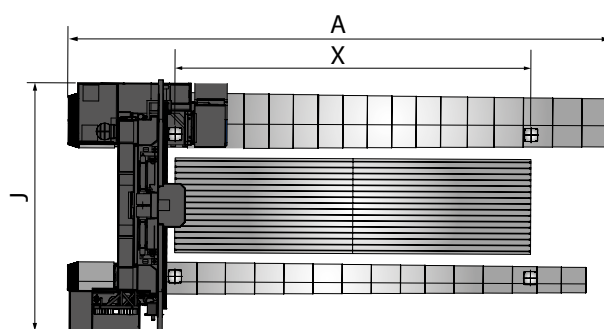
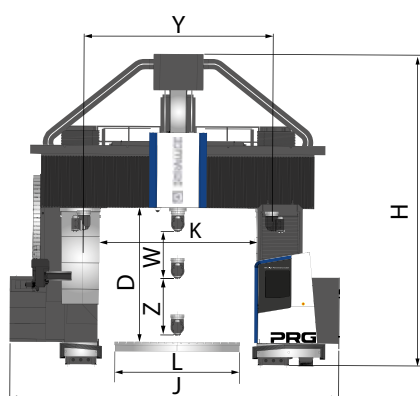


Mobile cross beam

# Technical characteristics

		PMG	PRG	PXG
Longitudinal traverse "X" axis	mm   in	6000 / 8000 / 10000 / n x 2000   236" / 314" / 393" / n x 78"		
Cross traverse "Y" axis	mm   in	4000 / 4500 / 5000 / 5500   157" / 177" / 196" / 216"	5500 / 6000 / 6500 / 7000   216" / 236" / 255" / 275"	7500 / 8500 / 9500 / 10500   295" / 334" / 374" / 413"
Vertical traverse ram "Z" axis	mm   in	1500 / 2000   59" / 78"	2000 / 2500   78" / 98"	2500 / 3000   98" / 118"
Vertical traverse cross beam "W" axis	mm   in	1000 / 1500 / 2000   39" / 59" / 78"	1000 / 1500 / 2000   39" / 59" / 78"	2000 / 3000 / 4000   78" / 118" / 157"
Floor plate width	mm   in	2000 / 2500 / 3000 / 3500   78" / 98" / 118" / 137"	3500 / 4000 / 4500 / 5000   137" / 157" / 177" / 196"	5000 / 6000 / 7000 / 8000   196" / 236" / 275" / 314"
Spindle power	kW   HP	43 / 60   57 / 80	43 / 60 / 81   57 / 80 / 108	60 / 81 / 101   80 / 108 / 135
Spindle speed range	min <sup>-1</sup>	Up to 7000		
Rapid traverse	mm/min   in/min	X = 30000   1181 (without W) Y/Z = 35000   1378	X = 20000   787 Y/Z = 25000   984	X = 12000   472 Y/Z = 20000   787
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   236"	4000 / 4500 / 5000 / 5500   157" / 177" / 196" / 216"	1500 / 2000   59" / 78"	-	11100   437"	2100 / 2600   82" / 102"	6725 / 8025   264" / 315"	8000 / 8500 / 9000 / 9500   314" / 334" / 354" / 374"	3520 / 4020 / 4520   138" / 158" / 178" / 197"	2000 / 2500 / 3000 / 3500   78" / 98" / 118" / 137"
PMG140	14000   551"				19670   774"					
PMGW60	6000   236"				12500   492"					
PMGW140	14000   551"				21070   829"					
PRGW60	6000   236"	5500 / 6000 / 6500 / 7000   216" / 236" / 255" / 275"	2000 / 2500   78" / 98"	1000 / 1500 / 2000   39" / 59" / 78"	12500   492"	3250 / 3750 / 4250   128" / 147" / 167"	8900 / 9400 / 9900   350" / 370" / 389"	10000 / 10500 / 11000   393" / 413" / 433" / 452"	4780 / 5280 / 5780   188" / 207" / 227" / 247"	3500 / 4000 / 4500 / 5000 / 6000   137" / 157" / 177" / 196" / 236"
PRGW140	14000   551"				21070   829"					
PXGW60	6000   236"	7500 / 8500 / 9500 / 10500   295" / 334" / 374" / 413"	2500 / 3000   98" / 118"	2000 / 3000 / 4000   78" / 118" / 157"	15145   596"	4750 / 5750 / 6750   187" / 226" / 265" (Z: 2500) 5250 / 6250 / 7250   206" / 246" / 285" (Z: 3000)	11500 / 12500 / 13500   452" / 492" / 531" (Z: 2500) 12000 / 13000 / 14000   472" / 511" / 551" (Z: 3000)	13350 / 14350 / 15350   525" / 564" / 604" / 643"	6100 / 7100 / 8100   240" / 279" / 318" / 358"	5000 / 6000 / 7000 / 8000   196" / 236" / 275" / 314"
PXGW140	14000   551"				23440   922"					

# 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.

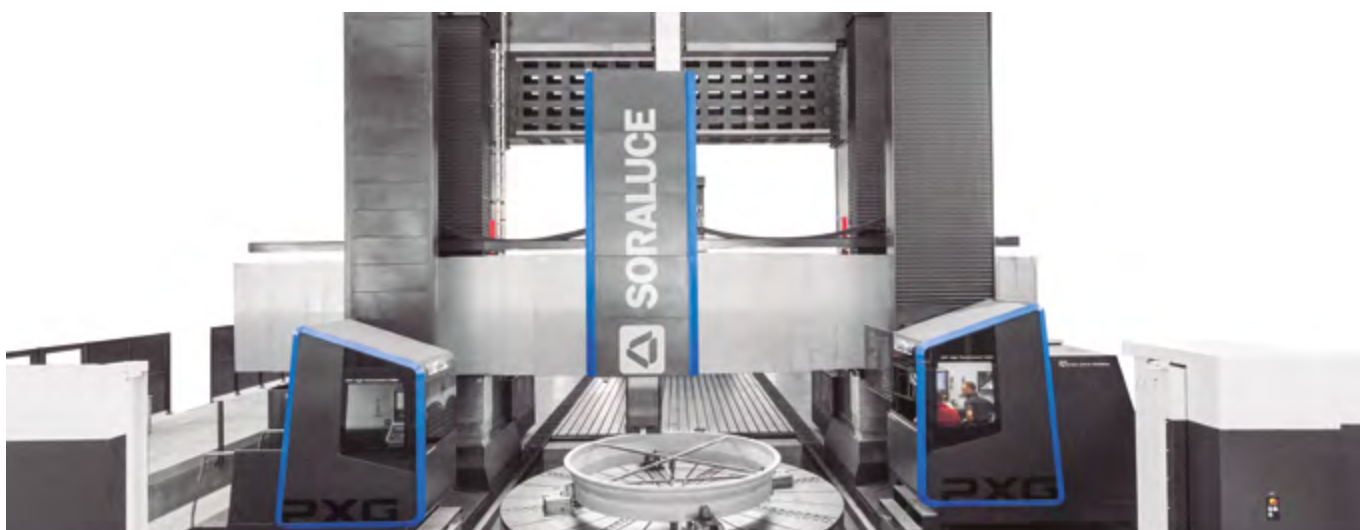




# Applications



PMG  
Molds & Dies

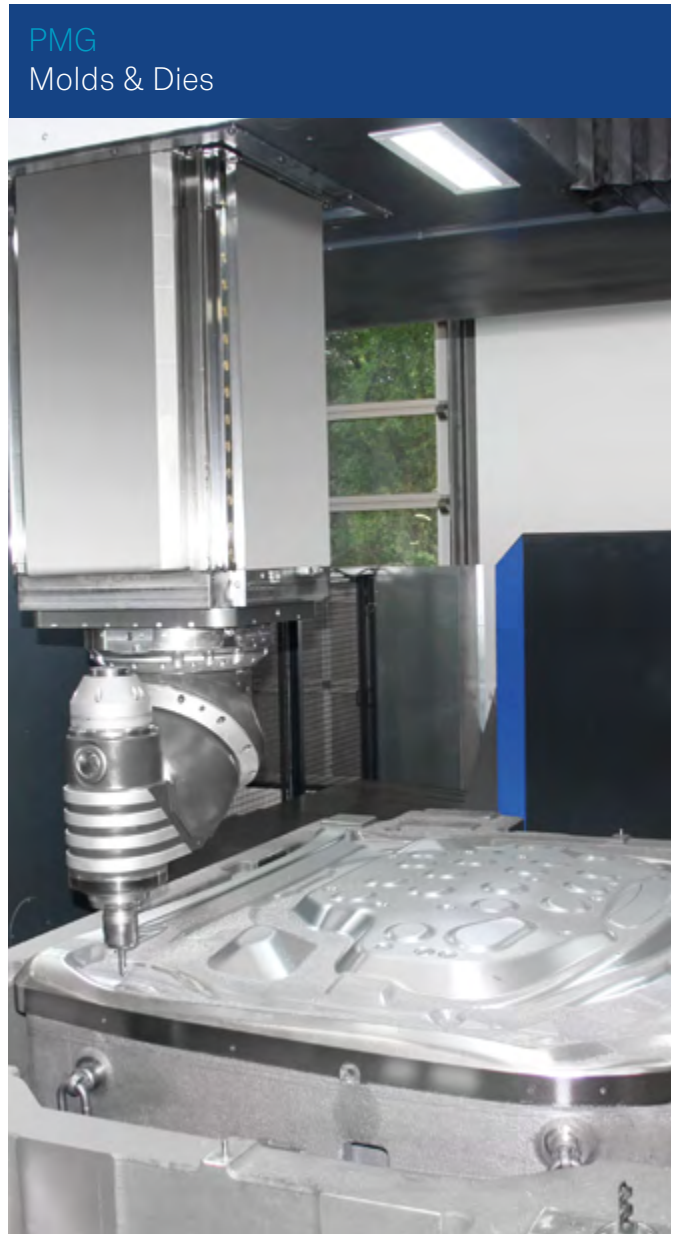


PXGW  
Energy





PMG  
Railways / Bogie



PMG  
Molds & Dies



PXG  
Shipyard / Energy



PMG  
General Engineering



PM  
Oil & Gas



PM  
Capital Goods / Beverage Industry



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