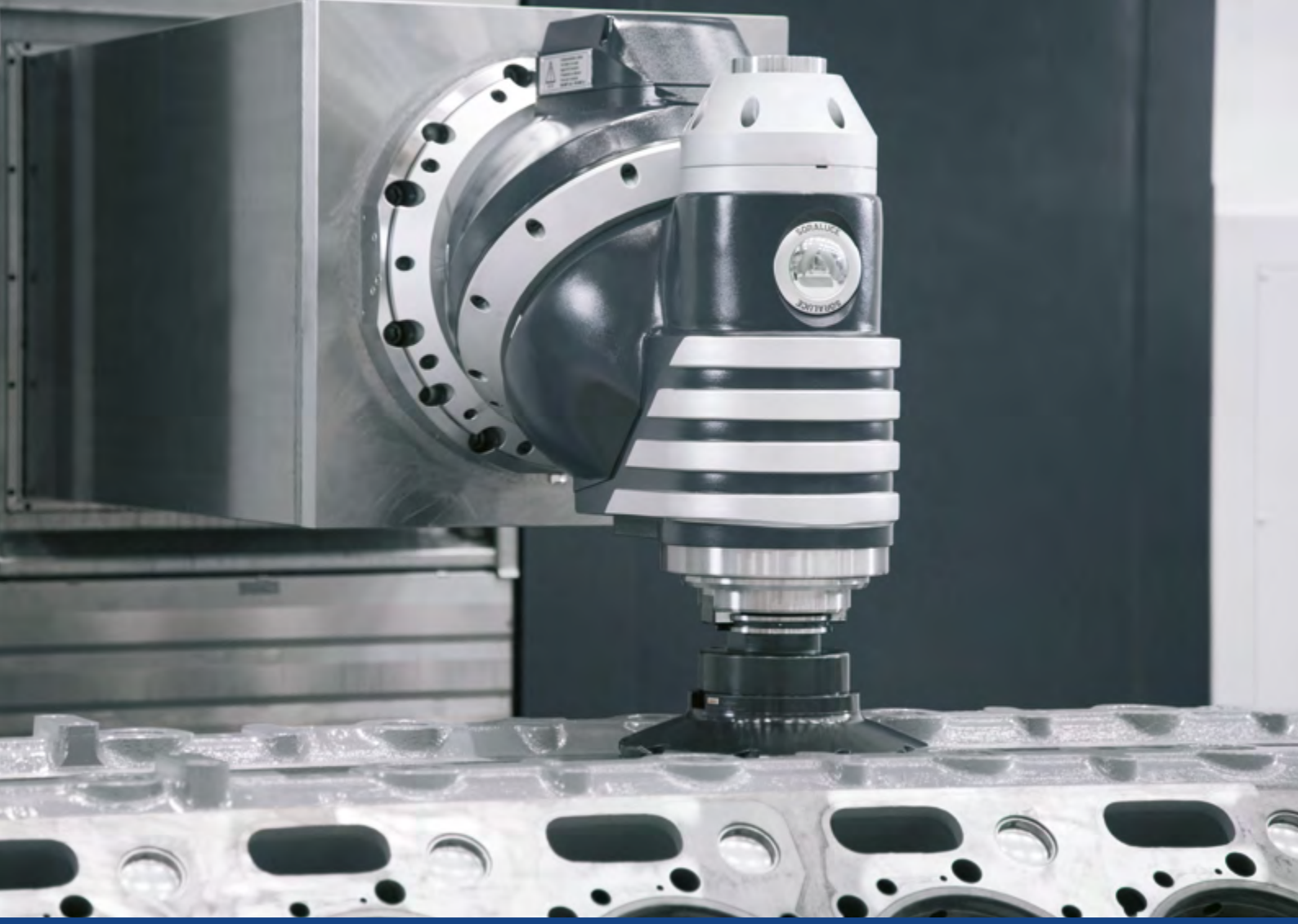


TR | TRD | TRM

Productivity Line

Productive. Dynamic.

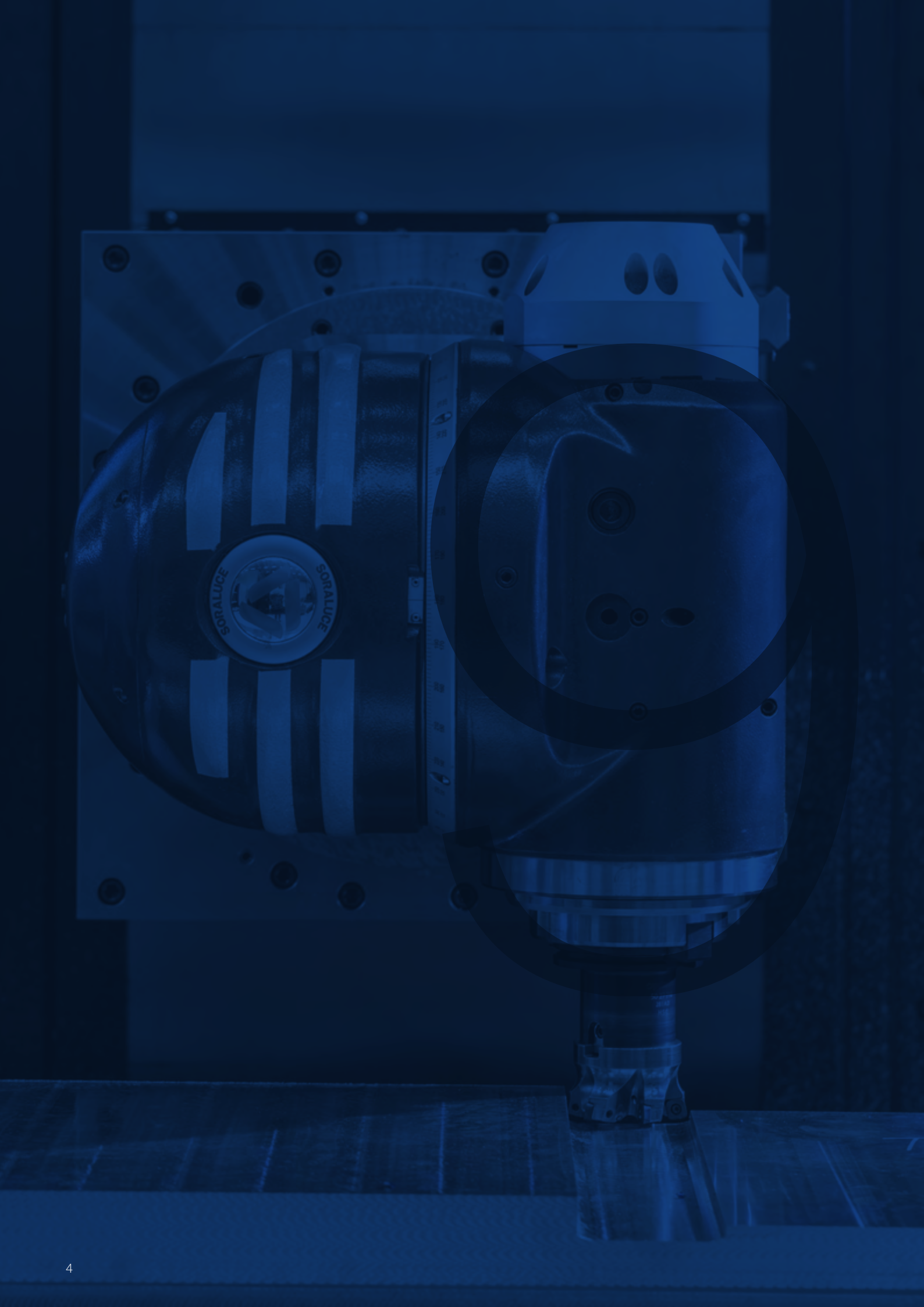
SORALUCE

As part of our premium solutions, the **Productivity Line bed type milling** machines of Soraluce allows productivity to be taken to the next level, providing optimum rigidity and mechanical stability, high dynamics and the maximum stock removal capacity on the market.

Productive Dynamic Heavy-Duty

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

TR: Bed type milling machine
TRD: Bed type milling machine with rotary table
TRM: Multitasking bed type milling machine

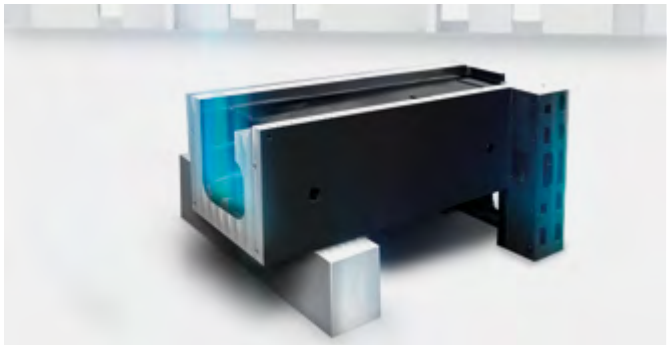

SORALUCE
SORALUCE

Nine reasons to choose Productivity Line

01.

A winning combination

The most rigid and dynamic solution on the market

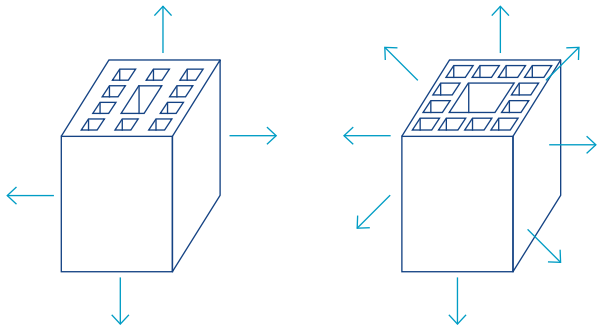


Full cast iron

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

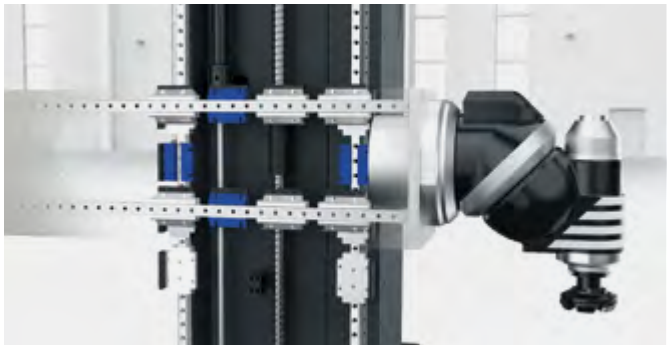
— Best precision
— High dynamics

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

Best stock removal

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

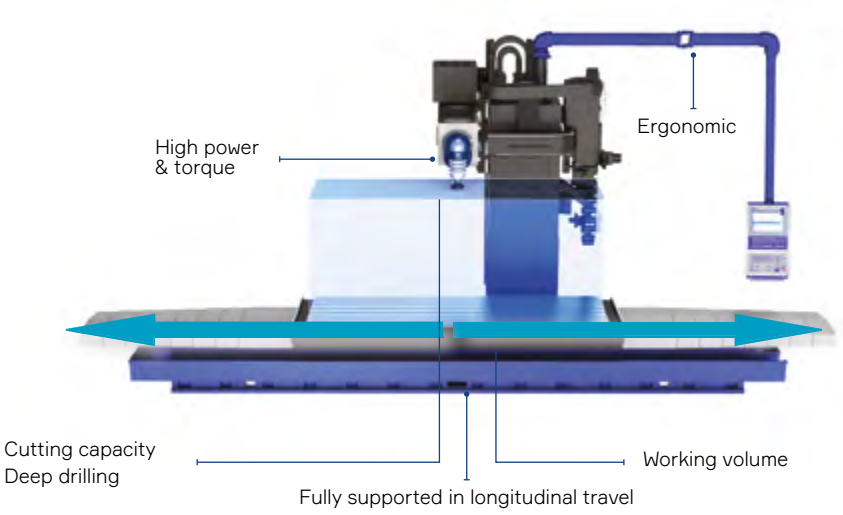
Results TR Z: 1300 mm | 51”

Stable working conditions, material DIN CK45.
DAS+ OFF.

Ø 125 mm | 5” face milling tool	Ap= 5 mm | 0.2” Ae= 100 mm | 4” F= 2020 mm/min | 79 in/min Q= 1010 cm³/min | 62 in³/min Power consumption: 100% (37 kW | 49 HP)

Much more than a machining center

	Soraluce milling machine	Machining center
Working volume	↑	↓
High power	↑	↓
High torque	↑	↓
Cutting capacity	↑	↓
Deep drilling	↑	↓
Ergonomic	↑	↓
Compact	↑	↓



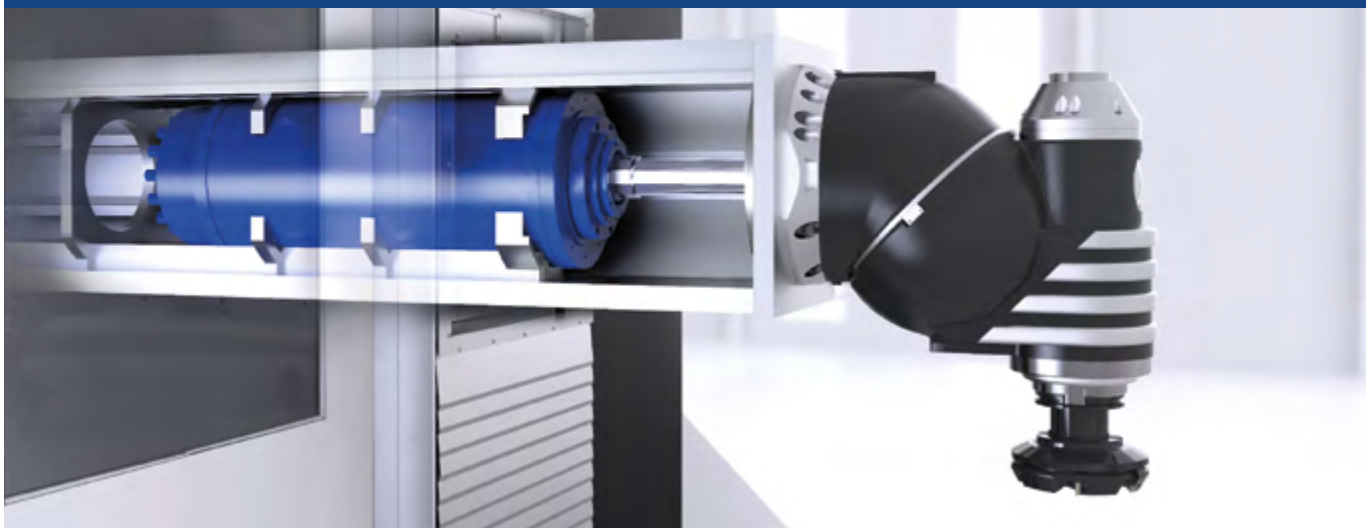
Inline spindle motor

— 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
43 kW | 57 HP



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.

03.

Accuracy in the DNA

Increased effective stiffness

Design is conceived to obtain the best precision and rigidity. We keep maximum quality control of manufacturing and assembly until its final verification, using Smart 3D thermal compensation of the machine.

01

Stiffness forces triangle

— Compact saddle for best rigidity.

— The cutting forces are transferred directly from the cross axis roller bearings to the column, minimizing the deformation of the saddle.

— Special Soraluce saddle design with minimum distance between the ram and the column, providing excellent stability, precision and maximum cutting capacity.

— Ram saddle fully guided.

02

Torsion and deformation under control

— Provided by the best guiding system in the market.

— Straightness ensured through a perfect parallelism between guides supporting surfaces.

— Lateral ram torsion constrained by special ribbed design cast iron ram, all sides being solid.

— Full control over ram drop and flexion.

Torsion movement

03

Minimum distance

— Short distance from the column to the tool, thanks to the arrangement of the ballscrew and counterweight system.

— Minimum machine overhang.

04

No compensation

— Ram drop under control without electronic compensation.

04.

Best working environment

Compact & shielded

Standard peripherical guarding:

— Easy front & rear access to work area.
— 2 sliding frontal doors.
— Extra back door.
— Sides opening for long workpiece loading / unloading tasks.
— Extra thickness for long-term resistance.
— Glass windows for long-term clear vision.

Roofed guarding (as option):

— Total protection for coolant and chips.
— Fumes extraction systems (as option).
— Automatic door opening (as option).
— CCTV camera (as option).
— Extra LED lighting (as option).

Workpiece access from the rear

05.

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

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

SORALUCE DIGITAL by SORALUCE

Cloud based software suite that enables seamless production information flow and maximizes machine performance.

+ PRODUCTIVITY

ADAPTIVE CONTROL

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

30% time saved
in roughing process!

+ PRODUCTIVITY

DWS

Eliminates chatter originated on either fixtures or workpieces.

+ PRODUCTIVITY
+ QUALITY

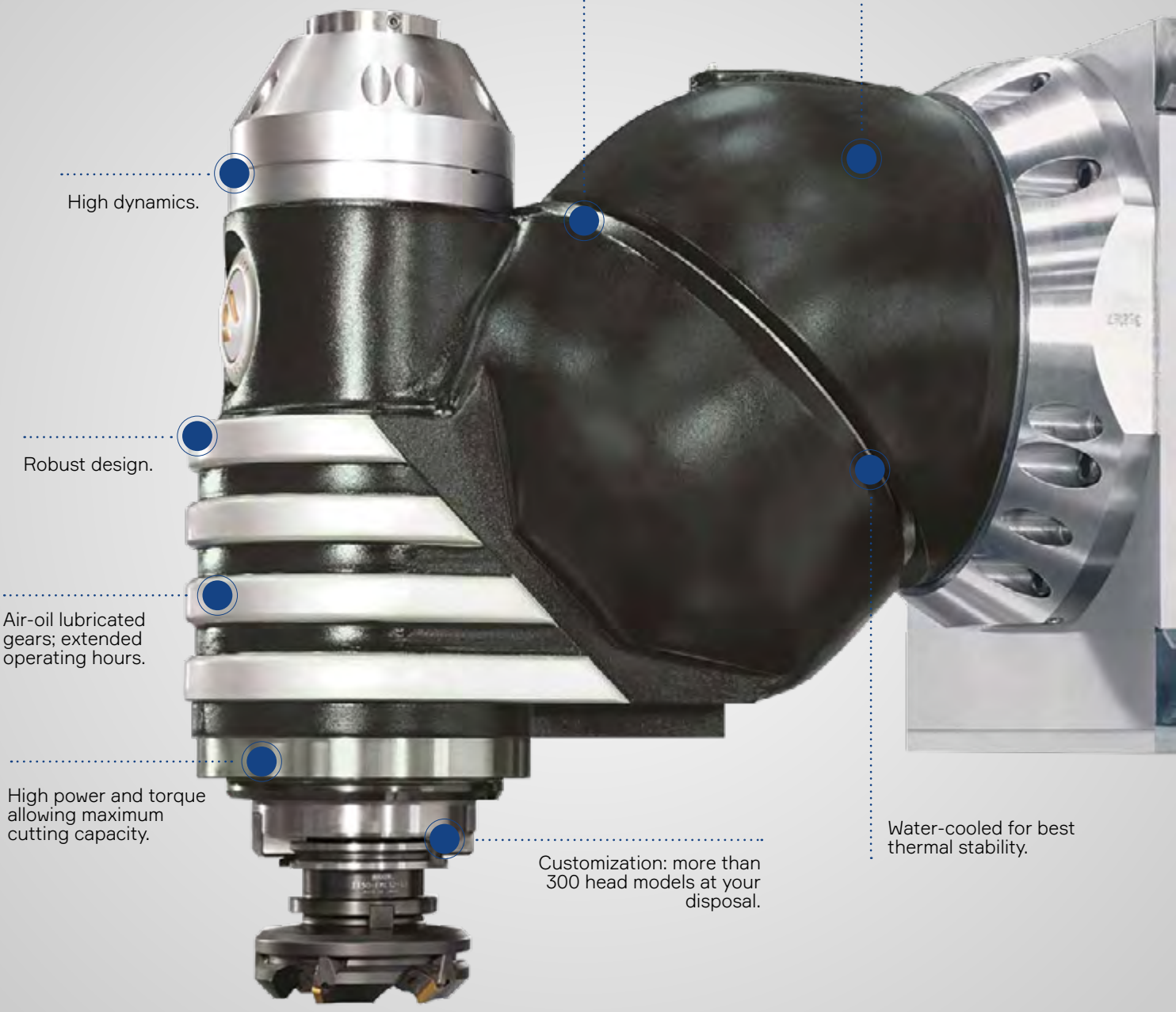
Patent no. EP 3226089 B1

06.

Soraluce heads

More than 300 head models

Precision & High performance



The most advanced head manufacturing center

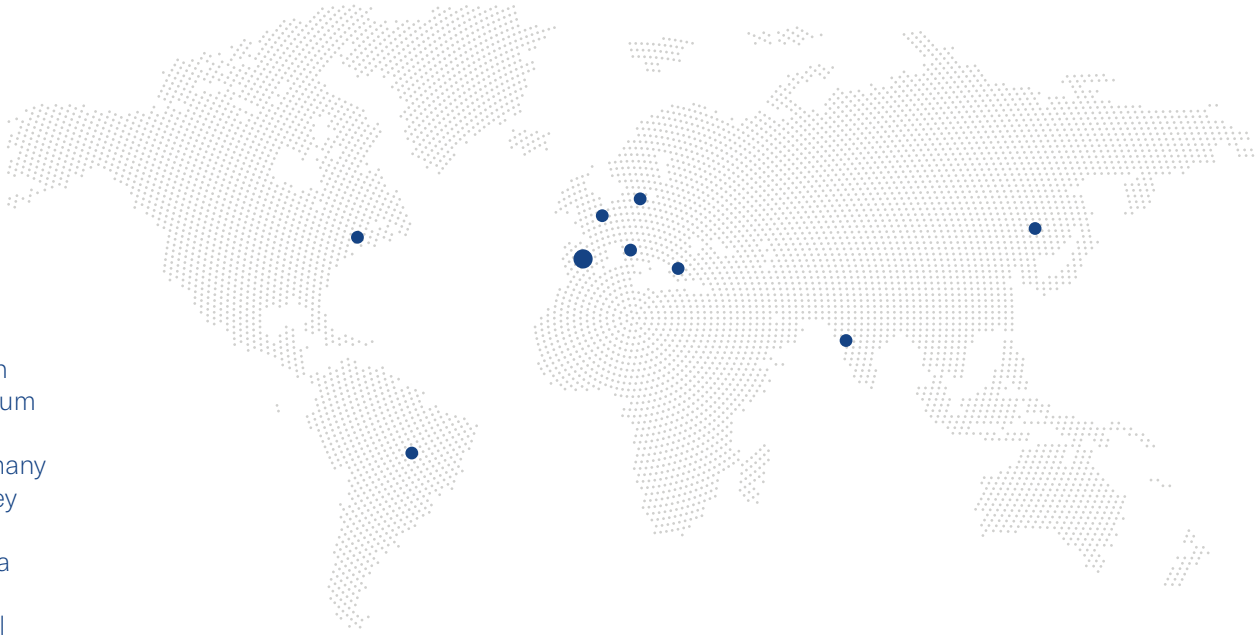
In-house made

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.

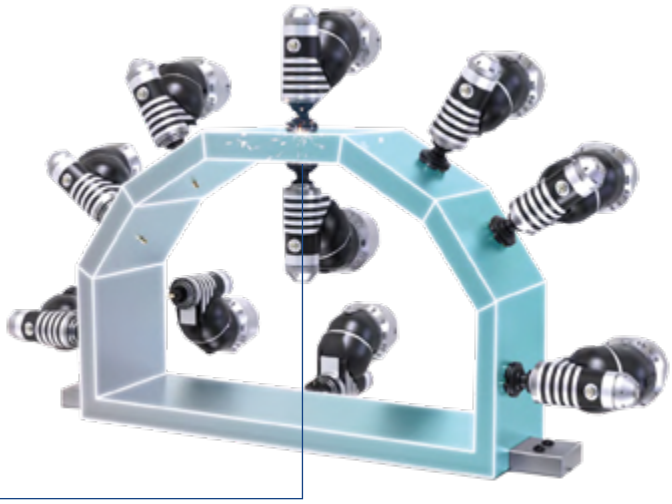
150
Spare heads available



Spain
Belgium
Italy
Germany
Turkey
India
China
USA
Brazil

High Performance Heads

— Up to 43 kW | 57 HP (S1-100%).
— High speed up to 7000 min^{-1}.
— Automatic mechanical heads.
— Optimum accessibility thanks to reduced size.
— Robust performance.
— Highest reliability.
— Fast positioning.
— Maximum thermal stability.
— Quick change for maintenance purposes.



The power
of indexing

High-Frequency Spindles

— Up to 74 kW | 99 HP.
— Up to 300 Nm | 221 ft-lbs.
— Vertical high-speed head.
— C-axis torque motor, continuous positioning (as option).
— Robust performance.
— Highest reliability.
— Maximum thermal stability.

Thousands of possibilities

Universal head

37 kW | 49 HP (S1)
2.5º x 2.5º / 0.001º x 0.001º
6000 / 7000 min^{-1}

Multitasking head

37 kW | 49 HP (S1)
2.5º X 2.5º / 0.001º X 0.001º
5000 / 6000 / 7000 min^{-1}

Orthogonal head

37 kW | 49 HP (S1)
1º x 1º
6000 / 7000 min^{-1}

5-axis continuous head

Up to 37 kW | 49 HP (S1) mechanical / up to 74 kW | 99 HP (S1) electrospindle
0.001º x 0.001º
Up to 7000 min^{-1} mechanical / Up to 30000 min^{-1} electrospindle

Orthogonal Head

Compact design, conceived for machines with inline motor.

— Inverse machining capacity: up to -45º.
— No additional set-ups.
— Improved cycle time.
— Better finishing quality.
— Minimum manipulation.
— Full advantage of machine travel.
— Same distance from spindle to table during lateral and front milling.

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.

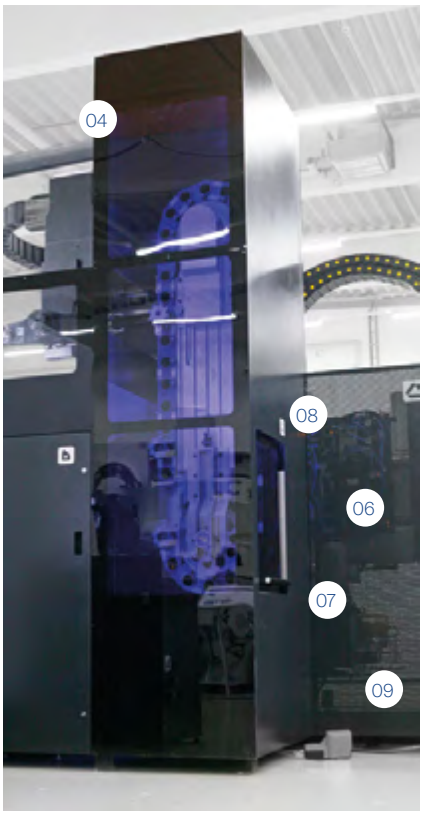
Totally reliable

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

Non-stop machining

Robotized tool changer available

Ergonomics & Easy maintenance



01

Accessible and spacious work area.

02

Working area perfectly lightened.

03

Flexible control panel arm: CNC control at the front or rear-side of the machine.

04

Protection of the critical areas of the equipment.

05

Wide glass surfaces.

06

Visible gauges and levels.

07

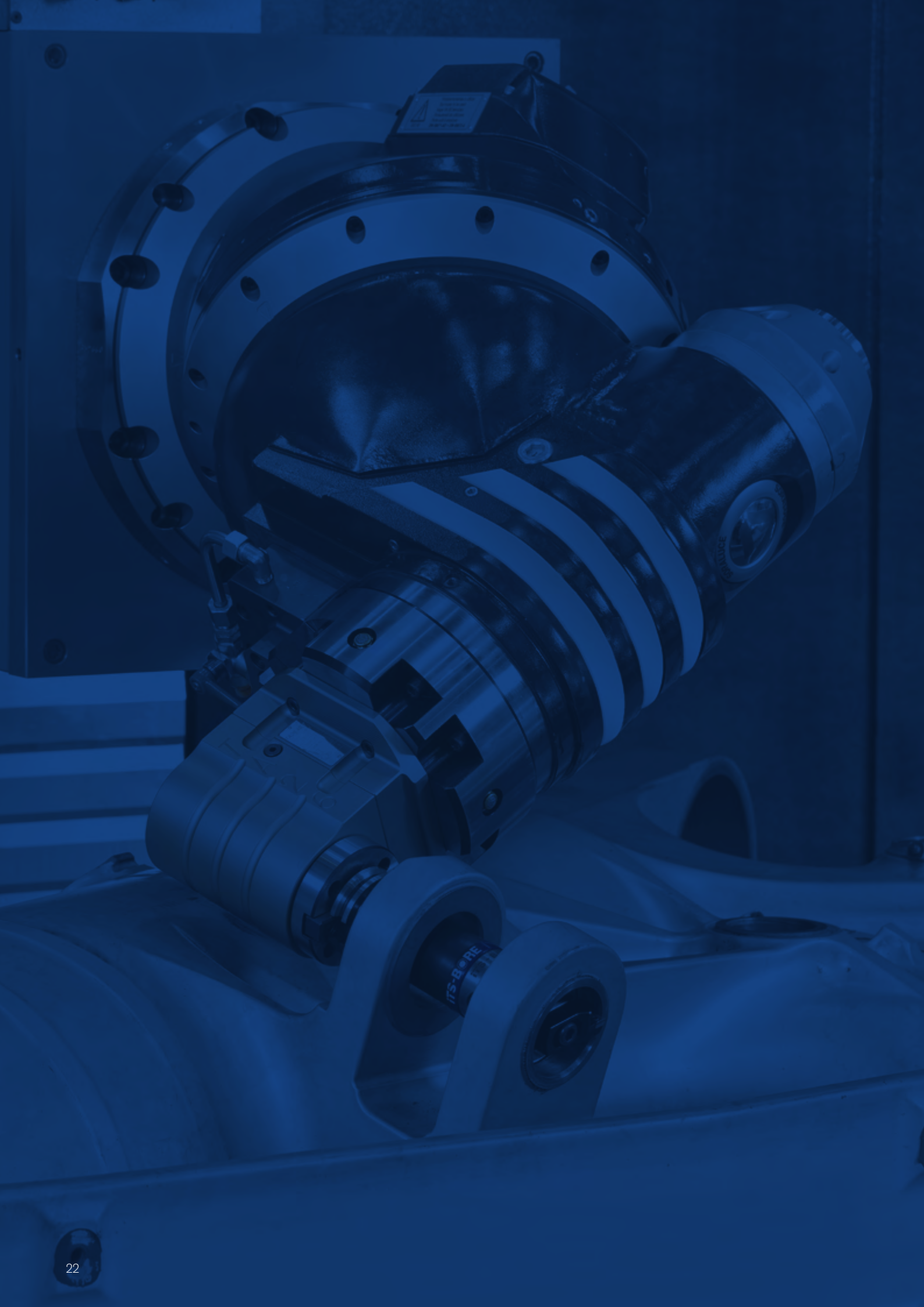
Accessible intervention areas to ease maintenance tasks.

08

Sliding doors and windows to prevent dismantling of panels.

09

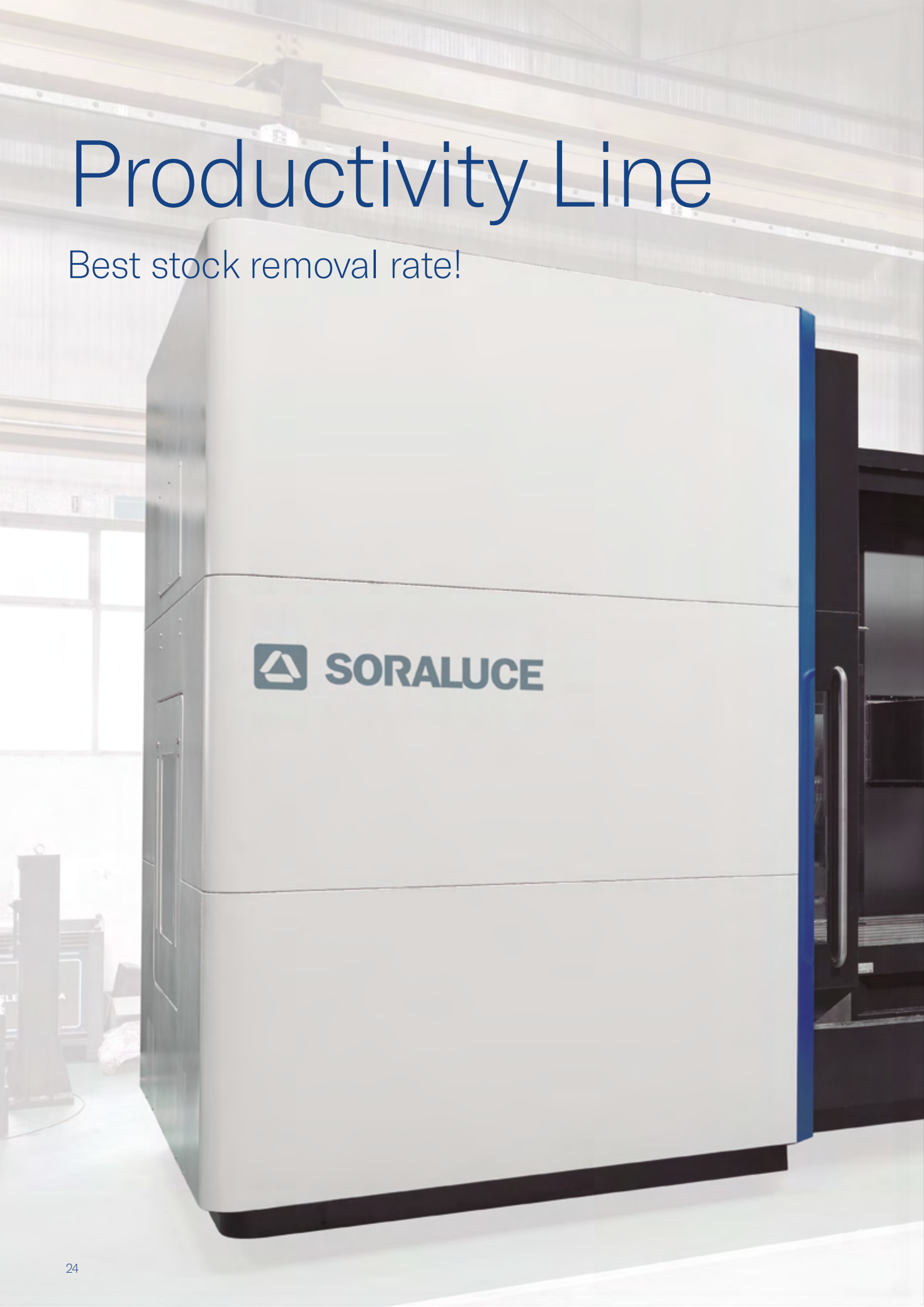
Machine grease lubrication; consumption is kept to the minimum necessary.



Meet the machines

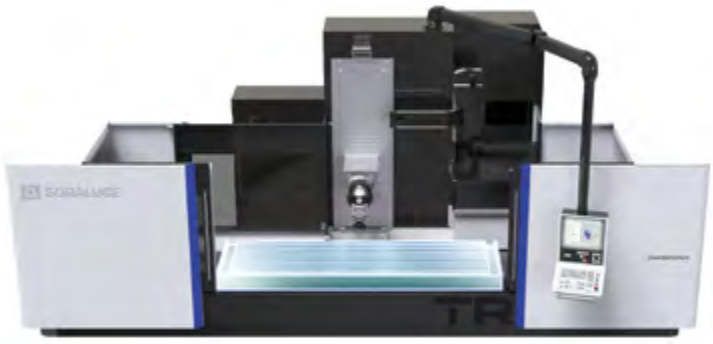
Productivity Line

Best stock removal rate!



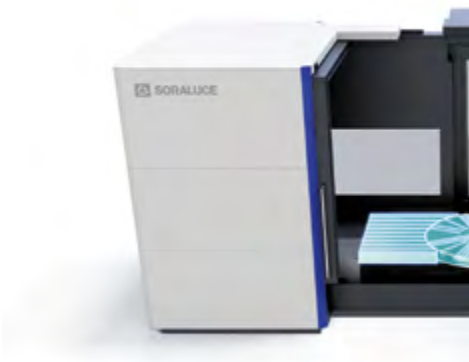
Choose the configuration of your machine

A versatile range



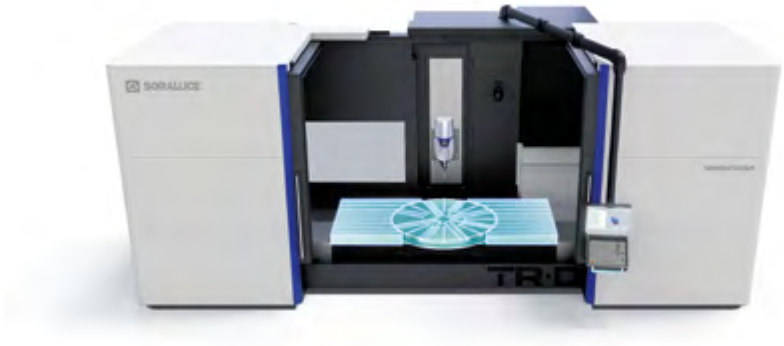
TR

Standard table



TRD | TRM

Integrated rotary milling | turning table

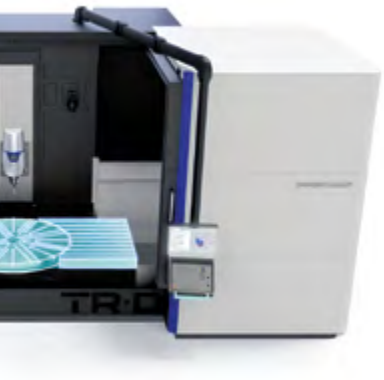


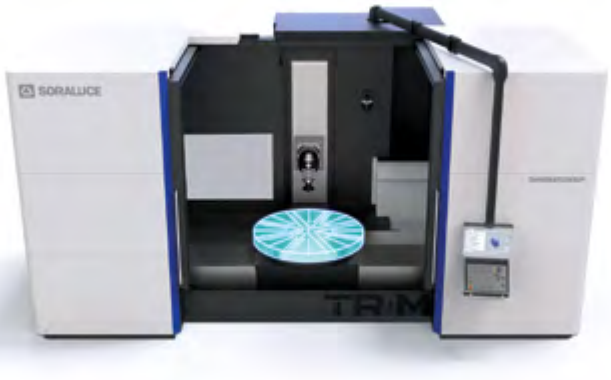
TRD

5-axis TRD with electrospindle

TR

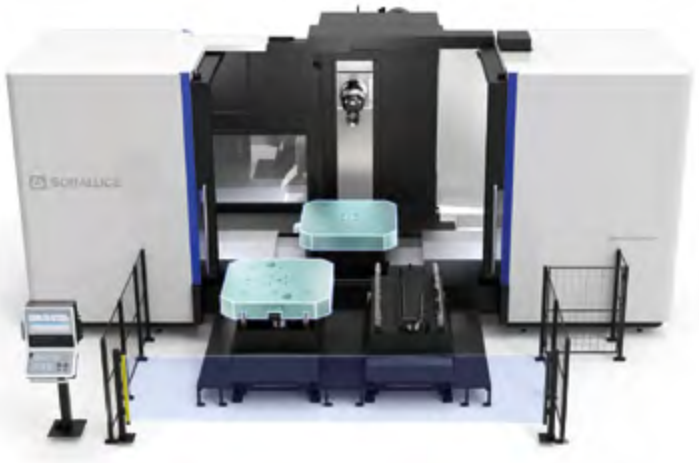
Pendulum machining





TRD | TRM

Rotary milling | turning table



TR

Palletized and flexible manufacturing systems

TR

Bed type milling machine

SORALUCE TR is much more than a machining center providing higher working volume, power, torque and cutting capacity.

Designed to offer optimum rigidity and mechanical stability, with the best ergonomic, accessibility and safety to operators.

Choose the configuration of your table TRD | TRM

Swing (max.) Ø 2300 mm | 90”

Rotary table for milling (squared)

Rotary milling | turning table (round)

Integrated rotary milling | turning table (located in the center of the table)

Integrated rotary milling | turning table (located in the right lateral side of the table)

TRD

Integrated B-axis rotary table

4 or 5 axes continuous machining

— Universal automatic indexing head, 4 axes (standard).
— Vertical high-speed head, 4 axes.
— Vertical high speed continuous positioning head (torque motor, C-axis), 5 axes.
— Universal automatic indexing head with electrospindle attachment, 4 + 2 axes.

— Five-sided machining.
— Ease of use with specific rotary table cycles.
— High accuracy thanks to the table center measuring and correction.
— Permanent table rotation compensation.

TRM

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.

Milling & Turning tables

— Table area Ø 1600 mm | 63".

— Table capacity: 8000 kg | 17637 lb by milling / 2000 kg | 4410 lb by turning.

— Turning spindle speed: 6 ÷ 400 min^{-1}.

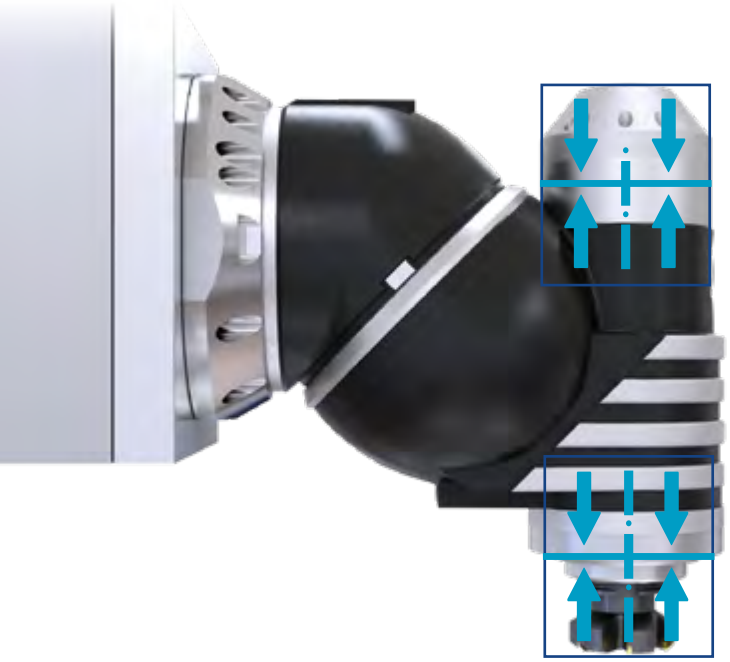
— Turning spindle power: 90 kW | 120 HP.

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.

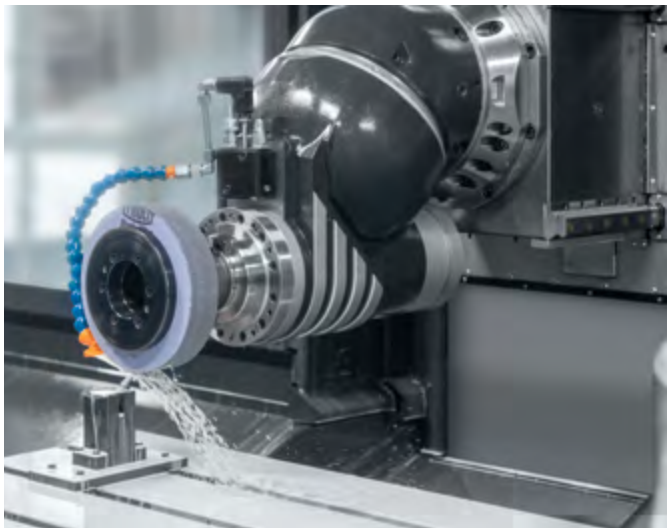
— 37 kW | 49 HP
— Up to 900 Nm | 663 ft-lbs
— 5000 / 6000 / 7000 min^{-1}
— 2.5º x 2.5º / 0.001º x 0.001º



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.
— Full splash guarding.
— Fume extraction.
— Specific cooling system.
— Double protection for guideways and telescopics.
— Grinding cycles and functionalities by Soraluce Software Factory.

Features TR

Technical characteristics

Common features TR | TRD | TRM				
Vertical traverse “Z” axis	mm | in	1600 | 63”		
Cross traverse “Y” axis	mm | in	1300 / 1500 | 51” / 59”		
Spindle power	kW | HP	43 | 57		
Spindle speed range	min^{-1}	6000 / 7000		
Rapid traverse	mm/min | in/min	35000 I 1378		
Tool magazine	No. Tools	40 / 60 / 80		
		TR25	**TR35**	**TR45**
Longitudinal traverse “X” axis	mm | in	2500 | 98”	3500 | 137”	4500 | 177”
Table area	mm | in	2860 x 1200 | 112” x 47”	3860 x 1200 | 152” x 47”	4860 x 1200 | 191” x 47”
Table capacity	kg | lb	7500 | 16534	10500 | 23148	13500 | 29762
		TRD30	**TRD35**	
Longitudinal traverse “X” axis	mm | in	3000 | 118”	3500 | 137”	
Table area	mm | in	1600 x 1600 | 63” x 63”	3500 x 1200 (Ø 1600) | 137” x 47”(Ø 63”)	
Swing (max)	mm | in	2300 | 90”		
Table capacity	kg | lb	12000 | 26455	12000 | 26455	
		TRM30	**TRM35**	
Longitudinal traverse “X” axis	mm | in	3000 | 118”	3500 | 137”	
Table area	mm | in	Ø 1600 | 63”	3500 x 1200 (Ø 1600) | 137” x 47”(Ø 63”)	
Swing (max)	mm | in	2300 | 90”		
Table capacity	kg | lb	8000 Kg | 17637 lb by milling | 2000 Kg | 4410 lb by turning		
Turning spindle speed	min^{-1}	400		
Turning spindle power	kW | HP	90 | 120		

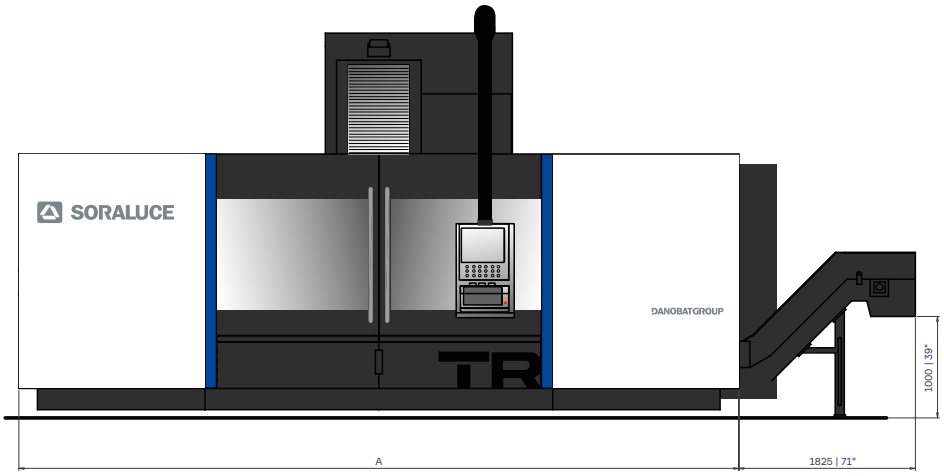
Technology at your disposal

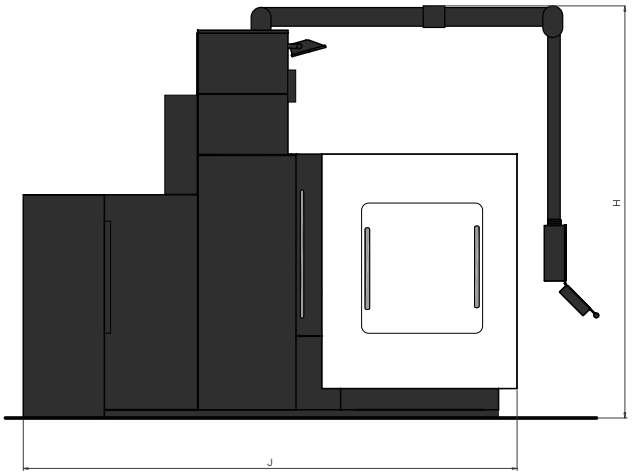
■ Basic machine ■ Optional

	TR	TRD	TRM
Full cast iron	■	■	■
Linear guiding & damping pads	■	■	■
DAS+	■	■	■
Inline spindle motor	■	■	■
Heads with air oil lubrication	■	■	■
Electrospindle	■	■	■
Multitasking	-	-	■
Complete splash guarding	■	■	■
Soraluce Smart HMI	■	■	■

Set & Go

Less expensive foundation.
Easy transport & installation.





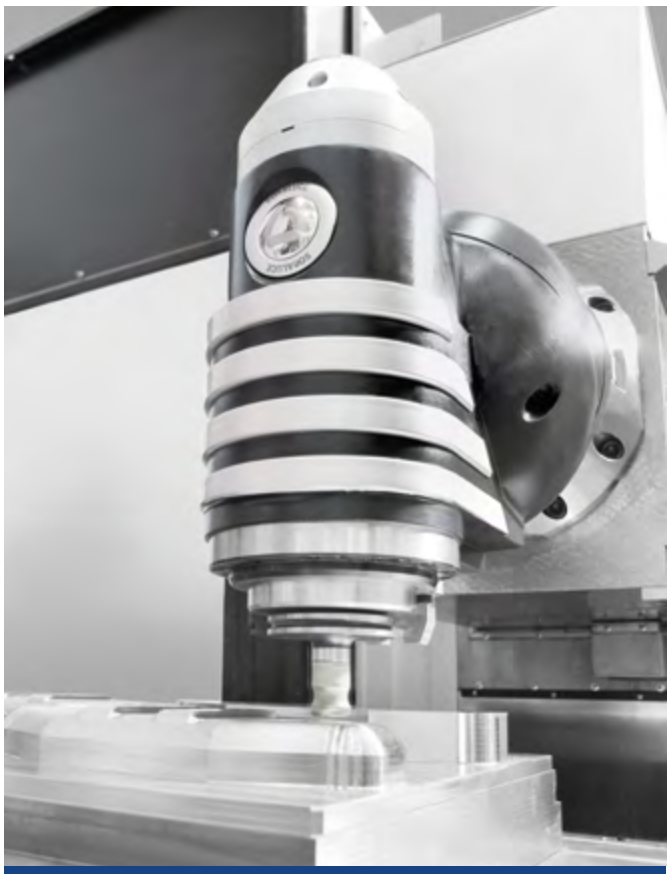
TR Layout	X	Z	Y	A	H	J
TR25	2500 | 98"	1600 | 63"	1300 / 1500 | 51" / 59"	7100 | 279"	4100 | 161"	4870 / 5480 | 191" / 215"
TR35	3500 | 137"			9100 | 358"		
TR45	4500 | 177"			11100 | 437"		
TRD30	3000 | 118"			7500 | 295"	4060 | 159"	5630 / 5970 | 221" / 235"
TRD35	3500 | 137"			9100 | 358"		
TRM30	3000 | 118"			7100 | 279"	4060 | 159"	
TRM35	3500 | 137"			9100 | 358"		

Dimensions in mm | in.

Applications

TR
Boring

TRD
Mould & Die / Mould



TR
Mould & Die / Mould

TRM
Mechanical Workshops

TRD
Aerospace / Landing gear

TR
General Engineering

SORALUCE

There is only one first

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DANOBATGROUP

HUMANITY AT WORK | MONDRAGON