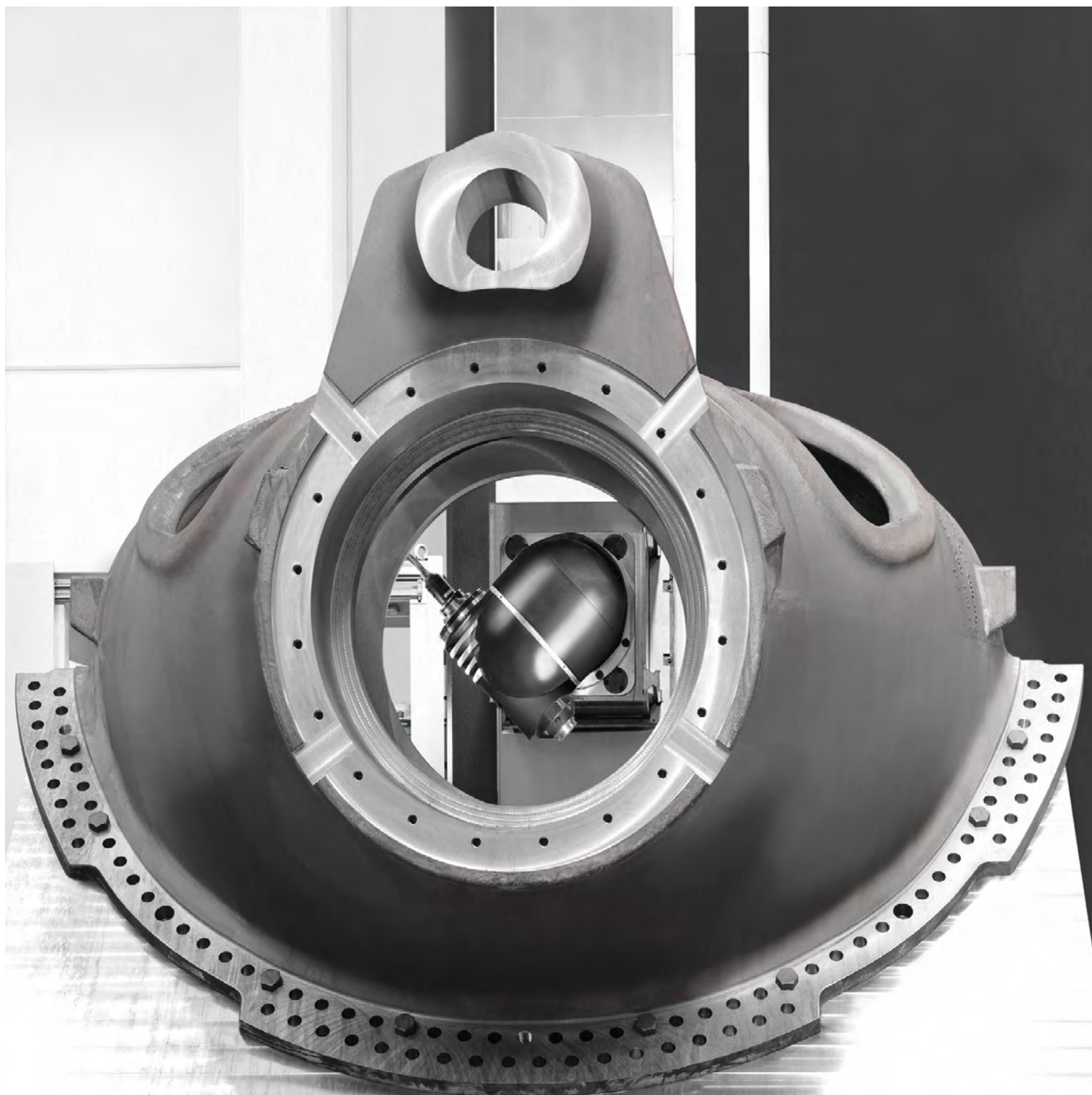


IMPROVED FLEXIBILITY AND DYNAMICS

**FLOOR TYPE MILLING-BORING
CENTRES › FP**



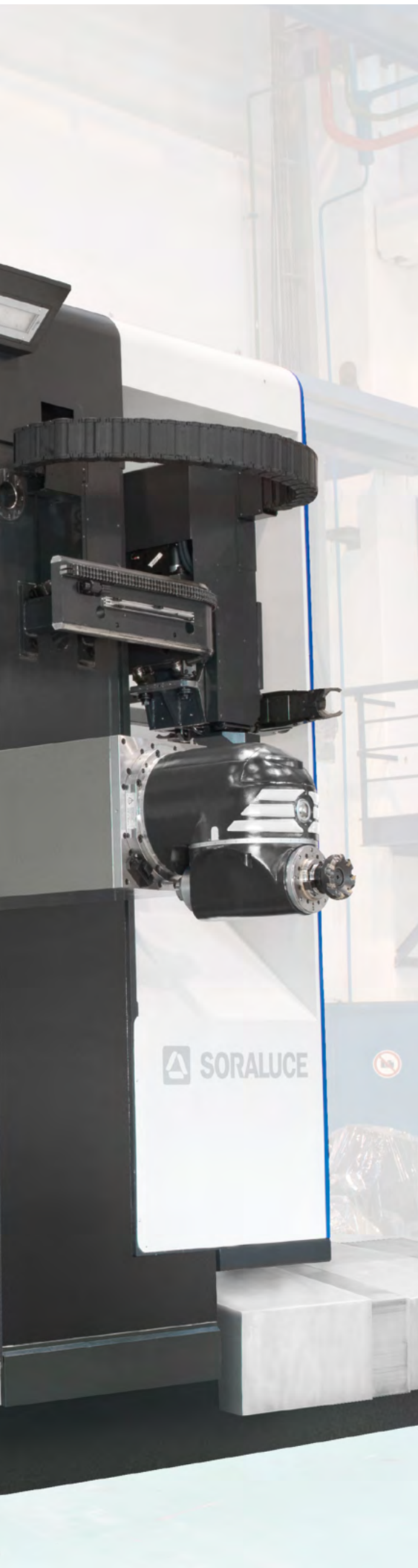


ERGONOMIC AND USER FRIENDLY

The new generation of SORALUCE FP is the expression of SORALUCE's values: reliability, precision and competitiveness. Within these concepts, customers find high improvements in maintenance, ergonomics, high dynamics and safety in the work environment.

The SORALUCE FP floor type milling boring centres are multi-purpose milling boring machines, offering high versatility and productivity. The machine modular design offers remarkable versatility, enabling the machine to be adapted to customer's needs.

The SORALUCE FP is the ideal machine for several applications in different sectors such as industrial vehicles, moulds and dies, capital goods and medium sized precision engineering components, ensuring highest precisions and efficiency results.



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:

- › Stiffness
- › Antivibration
- › Stress absorption
- › Complete mechanical stability

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

LONG LASTING PRECISION

Full cast iron, enabling:

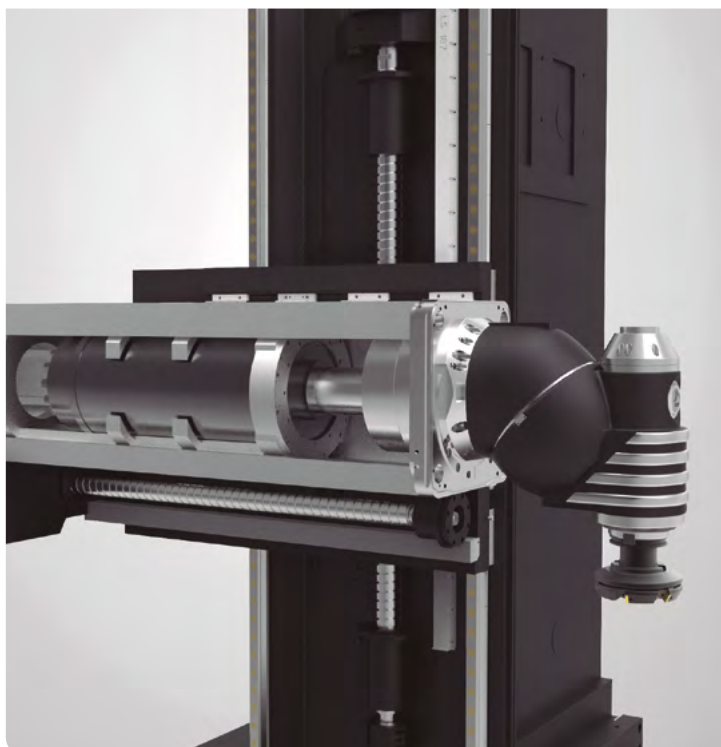
- › Accuracy: long lasting precision
- › Stiffness: proven physic stability
- › Productivity: high cutting capacity

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 LOW FOUNDATION

Thanks to its flat longitudinal axis design and low profile column connection, the machine's centre of gravity is kept very low:

- › Ensures high machine stability
- › Saves on foundation construction costs
- › Improves machine operation
- › Enhanced maintenance ergonomics



COMBINED GUIDING AND DAMPING SYSTEM

SORALUCE is a pioneer in the use of linear guiding systems in high machining capacity equipment and heavy duty applications.

- › The system combines our own specially developed hydrostatic damping elements with INA guiding systems on each axis
- › The system guarantees immense stability eliminating any vibration during machining processes
- › Using 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

**PATENT
PENDING**

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 and time, by means of ram built-in actuators, an oscillation force that opposes the vibration.

- › Allows the use of maximum power 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



DYNAMIC HEAD CALIBRATION

Even more accuracy in the working area

Thanks to specific SORALUCE developments, head articulation positioning deviations have been reduced to a minimum. This system allows the compensation of head's kinematic values on the whole working area.

- › Automatic calibration for any type of head
- › Transparent for the user: Automatic calibration of the head without the need to use specific programming functions
- › Calibration of the head for any working area
- › Offset error compensation due to thermal expansion
- › Easy-to-use interface, 100% integrated with HEIDENHAIN and SIEMENS



TOTAL MACHINE

THE COMPLETE WORKING AREA ANALYSED FOR AN OPTIMAL RESULT

The new SORALUCE FP 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.



MILLING AND TURNING HEADS

IN-HOUSE MANUFACTURED
HIGH RELIABILITY
BROAD RANGE

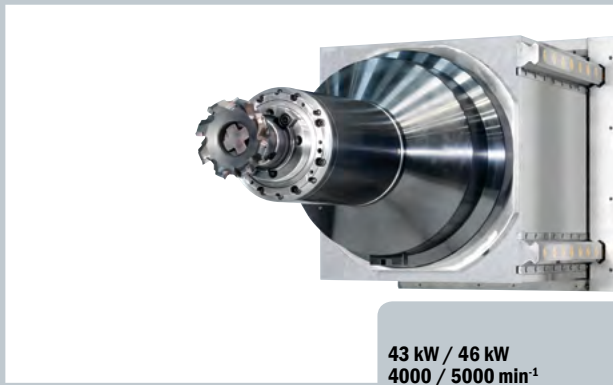
UNIVERSAL HEAD



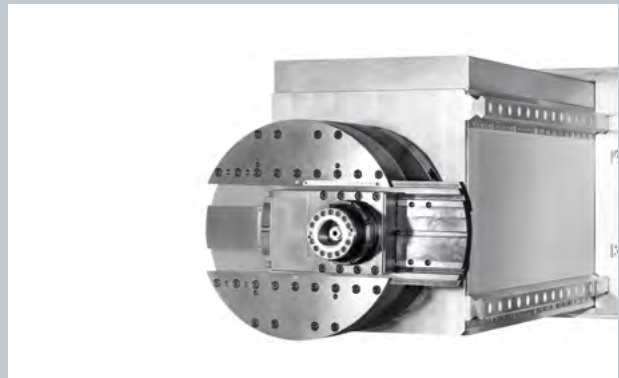
ORTHOGONAL HEAD



FIXED HORIZONTAL BORING HEAD



NC FACING AND BORING HEAD



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 the 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.

A fully enclosed pick-up station is provided to protect heads from pollution from the machining processes and workshop environment when not in use.

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



IMPROVED FLEXIBILITY
AND DYNAMICS › **FP**



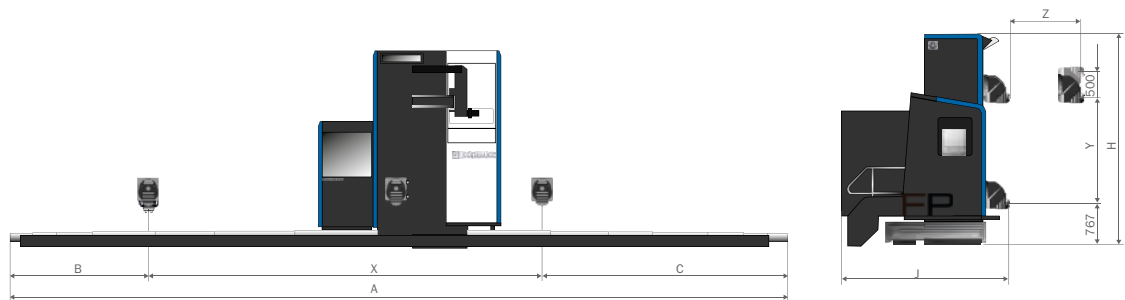


TECHNICAL SPECIFICATIONS FP

CHARACTERISTICS		FP-4000	FP-5000	FP-6000	FP-8000	FP-10000	FP-12000	FP-14000
Longitudinal traverse "X" axis*	mm	4000	5000	6000	8000	1000	14000	14000
Vertical traverse "Y" axis	mm	2600 / 3200 / 3600						
Cross traverse "Z" axis	mm	1000 (with Quill) / 1300 / 1500						
Cross traverse "W" axis	mm	700 / 800						
Heads		ø130 / ø150 / Universal / Orthogonal / Special heads						
Spindle motor	kW	40 / 41 / 43 / 53 / 54						
Spindle nose taper	mm	ISO-50 / HSK-100						
Spindle speed range	min ⁻¹	3500 / 4000 / 5000 / 6000 / 7000						
Rapid traverse	mm/min	35000						
CNC system**	mm	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	40 / 60 / 80 / 100 / 120						
Machine weight	kg	21000	22000	23000	25000	27000	29000	31000

* Other specifications under request | ** Other CNC systems under request

LAYOUT FP



	X	Y	Z	A	B	C	H	J
FP-4000	4000	2600 / 3200 / 3600	1000 (with Quill) / 1300 / 1500	9790	2227	3563	4690 / 5290 / 5700	4260
FP-5000	5000	2600 / 3200 / 3600	1000 (with Quill) / 1300 / 1500	10790	2227	3563	4690 / 5290 / 5700	4260
FP-6000	6000	2600 / 3200 / 3600	1000 (with Quill) / 1300 / 1500	11790	2227	3563	4690 / 5290 / 5700	4260
FP-8000	8000	2600 / 3200 / 3600	1000 (with Quill) / 1300 / 1500	13790	2227	3563	4690 / 5290 / 5700	4260
FP-10000	10000	2600 / 3200 / 3600	1000 (with Quill) / 1300 / 1500	15790	2227	3563	4690 / 5290 / 5700	4260
FP-12000	12000	2600 / 3200 / 3600	1000 (with Quill) / 1300 / 1500	18270	2467	3803	4690 / 5290 / 5700	4260
FP-14000	14000	2600 / 3200 / 3600	1000 (with Quill) / 1300 / 1500	20270	2467	3803	4690 / 5290 / 5700	4260

Dimensions in mm.

VERSATILITY HIGHLY CONFIGURABLE

WORKSTATIONS

As it is a floor type machine, 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.

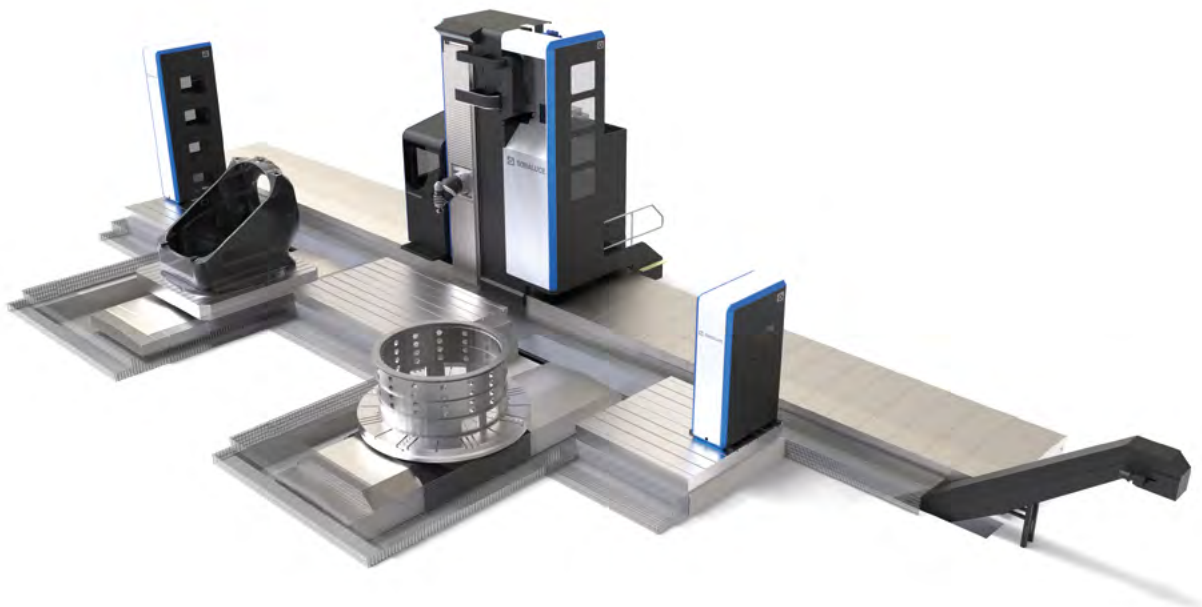
It can integrate floor plates, angle plates, auxiliary tables, rotary or rotary-travelling milling tables and turning tables.

MULTITASKING

SORALUCE FP machines can be converted by a multi-tasking machine that integrates several cutting processes including turning, milling, boring, drilling and tapping in one machine, offering increased capability and functionality.

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

Multitasking option enables complex heavy duty components being machined in a single set-up.



AUTOMATED SOLUTION

SORALUCE FP machine has a suitable architecture for integrating automated systems such as:

- › Automated machining lines
- › Palletised workpiece loading/unloading system
- › Automatic head changing system
- › Automatic tool changing system
- › Centralised tool management system
- › Centralised production management system
- › Robot based tool changer



TOOL MAGAZINE

- › Tool magazine for 40 / 60 / 80 / 100 / 120 tools
- › The storage area is protected from chips and coolant
- › Simple and ergonomic tool loading/unloading system
- › Advanced tool management options available on request



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

- › Enclosed operator's platform
- › Complete workbench with a panel to hang drawings and documents
- › CNC panel with smooth movements
- › Generous interior lighting by led spotlights integrated in the ceiling
- › Sliding door with a window allowing the operator's approach to the head to check the tool or the component
- › Enhanced visibility, ample glass surface
- › Support for special tools in the external platform
- › Floor with special anti-slip paint that minimizes the wear and tear

Enhanced
visibility to
working area



Non-slip floor with
special anti-wear
and anti-slip paint

Open operator
platform with good
lightning



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

Full visibility
of tool magazine

Complete
closure



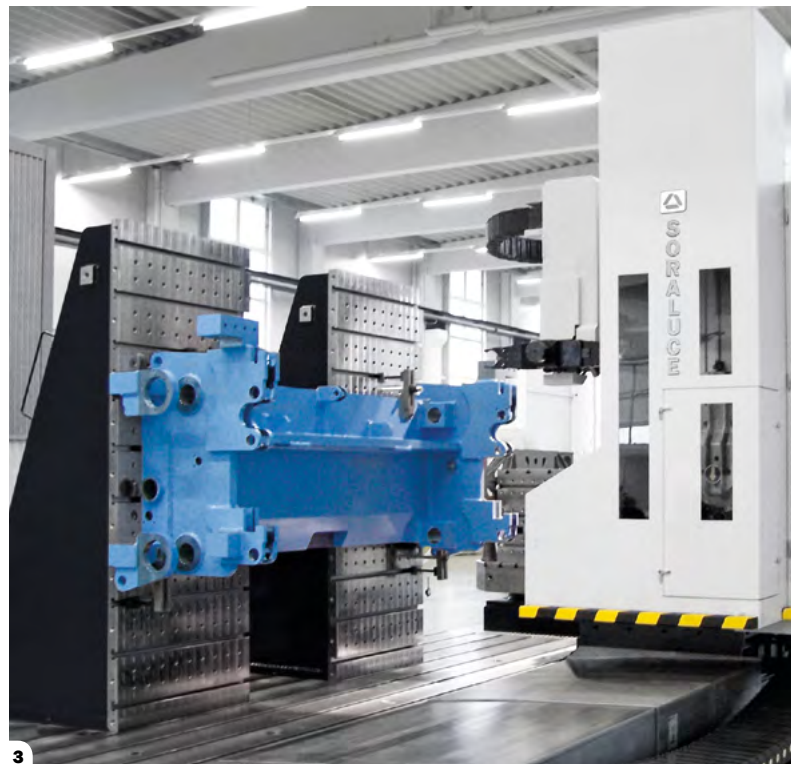
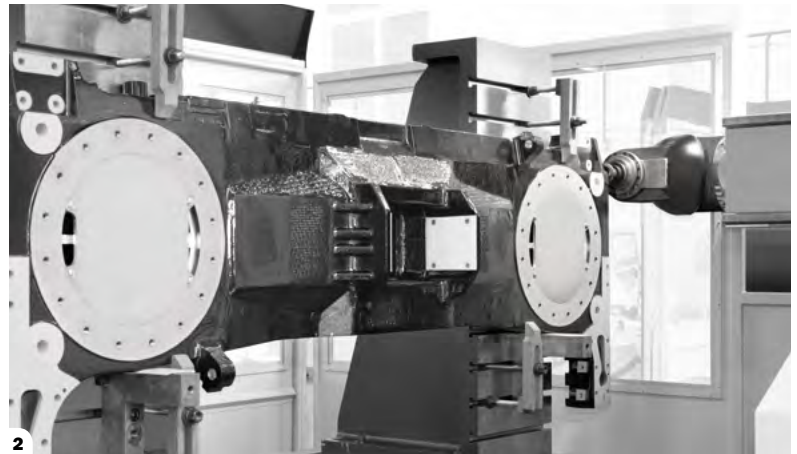
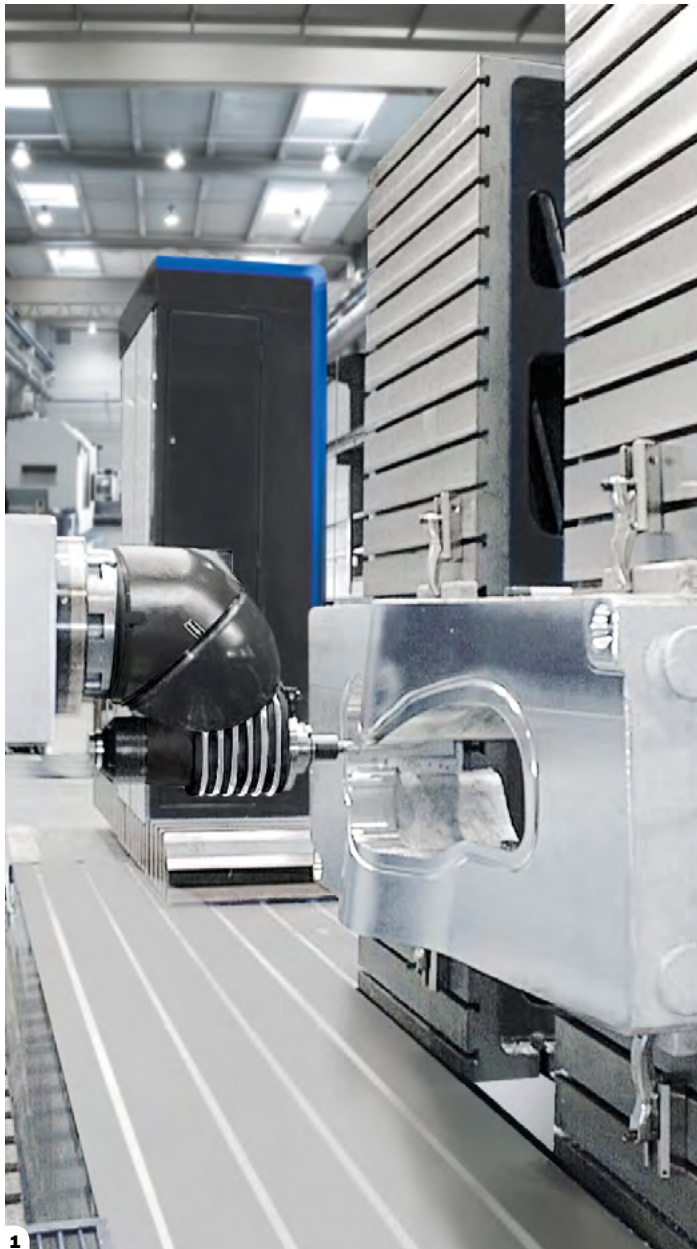
Enhanced
visibility

Critic zones
protection



LEADING THE MOST DEMANDING INDUSTRIES

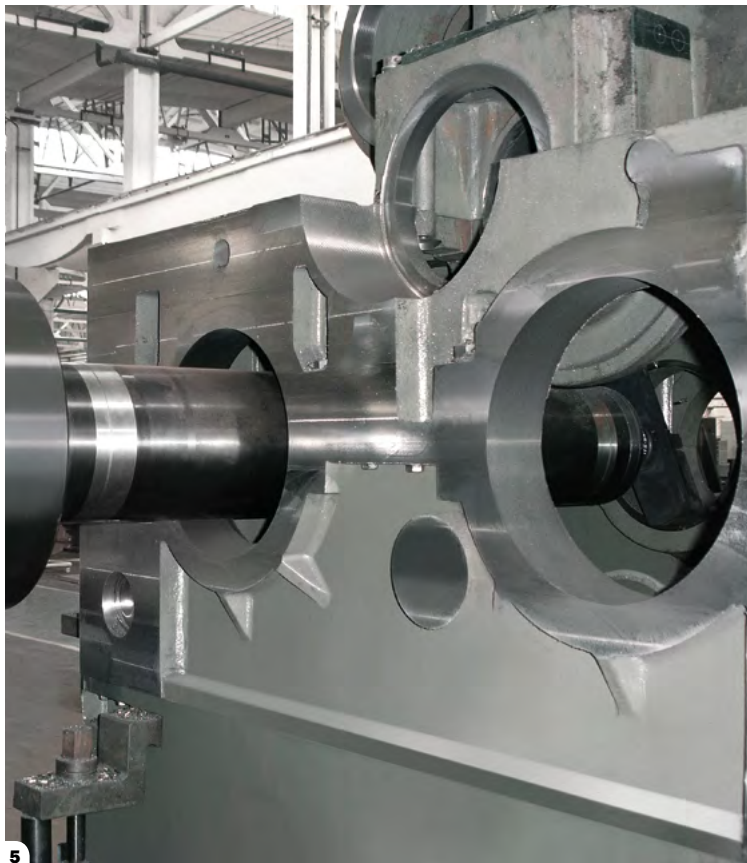
With excellent versatility and precise and efficient customization, SORALUCE FP milling-boring machines meet the specific needs of any customer of medium-large sized components thanks to the wide variety of heads, options and levels of automation available.



- [1] High precision machining of angle plate-mounted moulds, improving chip evacuation, reducing heat and avoiding workpiece deformation
- [2] Face machining of angle plate-mounted components. The right mass production solution for the highest machined component precision
- [3] Floor type milling configuration allows various working stations to be arranged with different clamping systems
- [4] The use of rotary tables and intermediate steady rests enables long cylindrical component machining, along the entire length and ends of the component
- [5] Locomotive gearbox machining; roughing and finishing operations on a single machine using the same setup thanks to the use of long fixed boring heads, and integrate rotary-travelling tables
- [6] Rough and finish vertical die machining for the automotive industry. The vertical position enables improved chip evacuation and extended unmanned working cycles



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