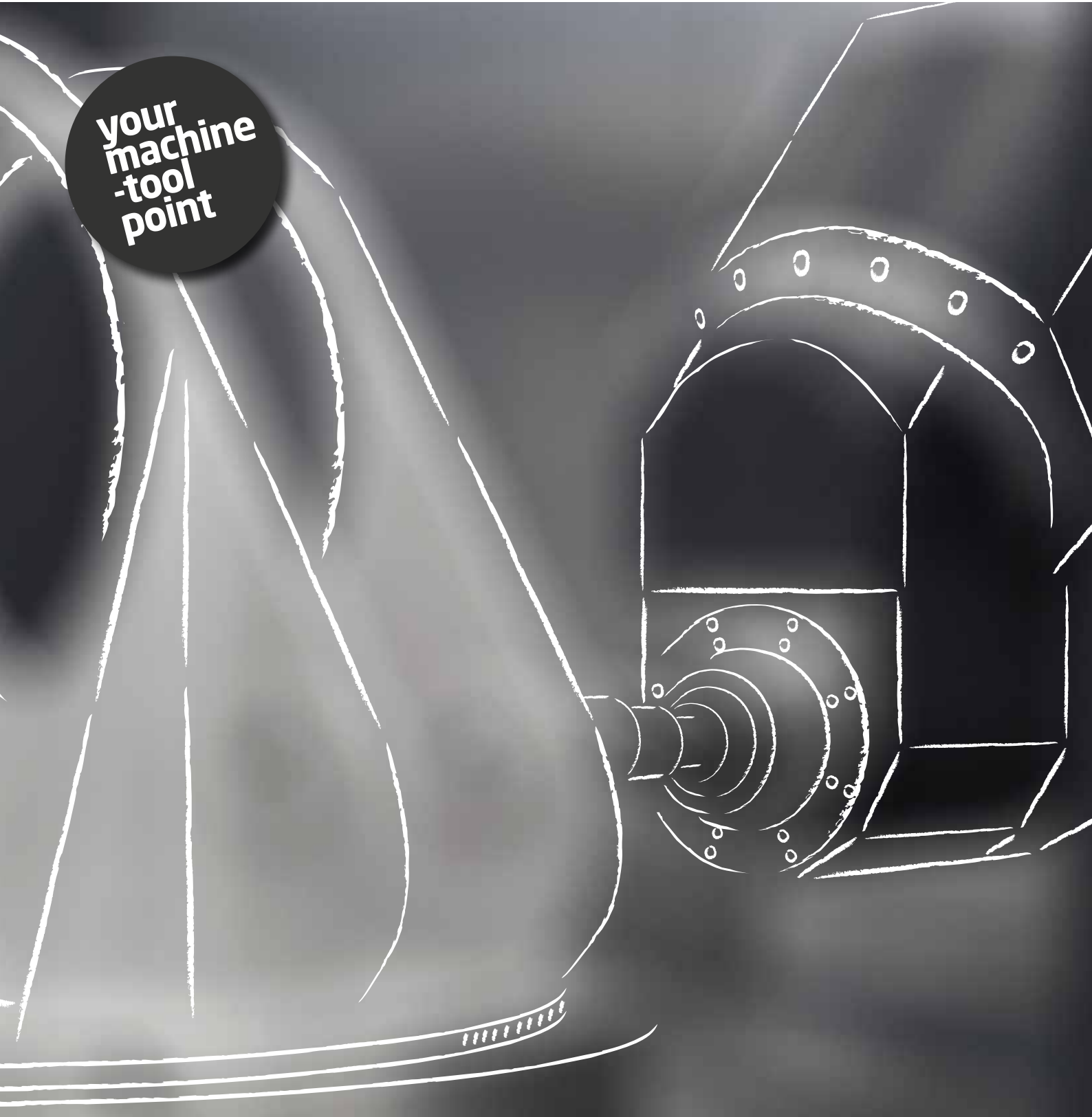


Universal  
**Moving Column 5 Axis  
Machining Centres**

**your  
machine  
-tool  
point**





# ONE STEP AHEAD

# Technical data index

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4

## T Series

---

Concept, ergonomics and construction.



10

## T EXTREME Series

---

Universal 5 axis machining centre.

12 / 16 / 22



16

## T MULTIPROCESS Series

---

Multi-tasking machining centres with universal head for 5 axis works.

12 / 16 / 22

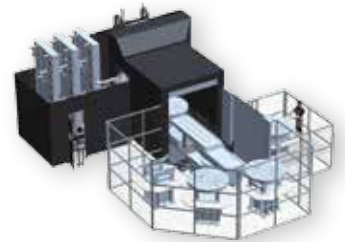


22

## AUTOMATION SYSTEMS

---

High productivity configurations for work piece management.



26

## TOOL MANAGEMENT

---

Flexible tool changing solutions.





# T Series

## Technology and Innovation

For those customers looking for big swing diameters or aiming to machine in one set up **IBARMIA** proposes the T Series models, which serial name refers to the bed shape and the configuration and distribution of X/Y axes, in combination with different head types and rotary tables.

The entire range of machines is available with single table or

pallet changer, and in **EXTREME** version (milling centre) or in **MULTIPROCESS** version (milling and turning centre) to increase the versatility and flexibility of the machine even more.



In addition to high quality, capacity and accuracy, our universal moving table and column machining centres offer optimized ergonomics and versatility

# Ergonomics

Ergonomics, that becomes a full, immediate, near and comfortable access for the operator during the loading/unloading of parts, the machining or the verification and control of the parts.

A work area designed for the

easy evacuation of chips must be added to this, a top access with an overhead crane, moving control panels and with suitable screen and keyboard tilting and a broad view of the work area.



An unrivalled proposal in terms of ergonomics and flexibility

## Control Panel

Ergonomic design.

The distribution of the elements, the inclination, the height and the distances are designed for an optimum interaction with the operator.



### CONTROL, SIGNALS, INFORMATION

Clear and unmistakable messages. Overloads of information are minimised.

Easy to identify and accessible control functions, to minimise mental fatigue of the operator.

### MOBILITY OF THE PANEL

Control panel with double joints. Allows taking the panel to the side of the part with the operator inside it. (\* T22)

Light panel, polyester reinforced with fibre glass.

## Work Area

### DOOR OPENING

Motorised\* opening to avoid physical efforts. (\* Optional)

Wide access thanks to the three leaf door.

### ERGONOMIC WORKING HEIGHT

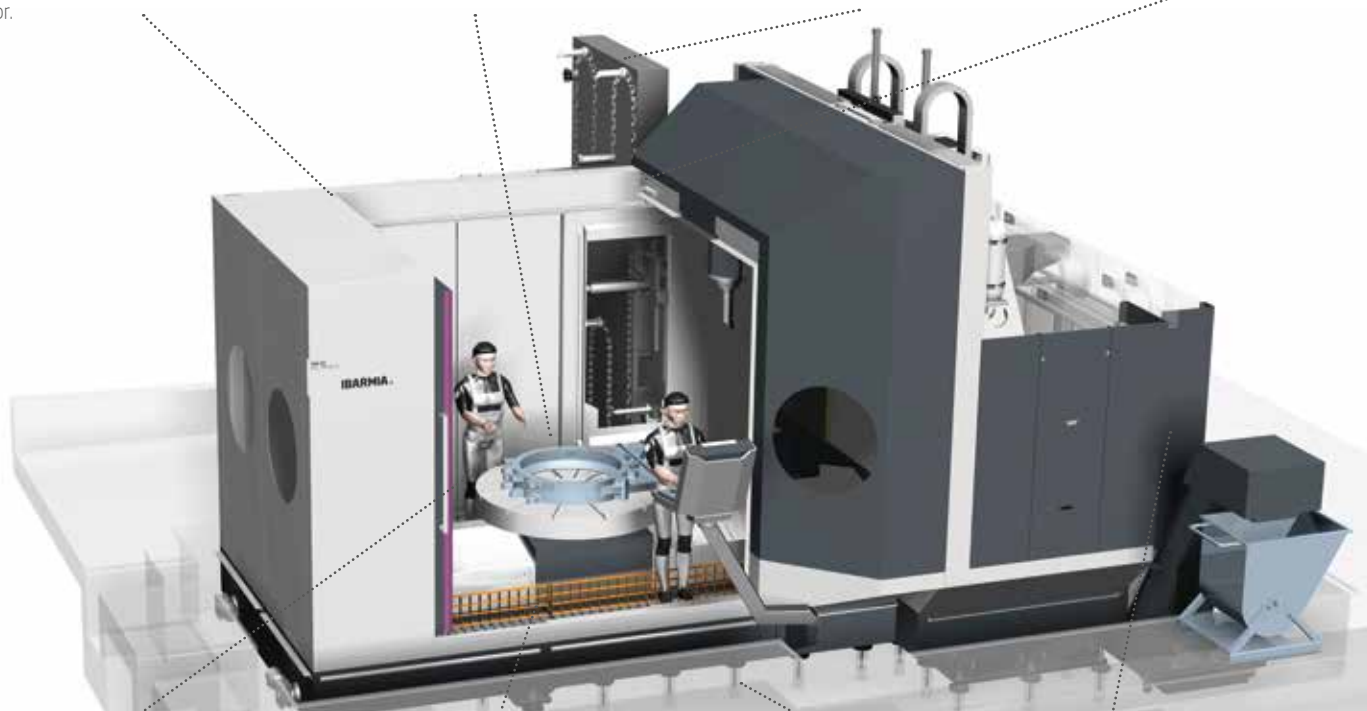
Optimized plate/table height avoiding uncomfortable postures for the operator.

### MANUAL TOOL CHANGE PEDAL

It allows the operator to have 2 free hands in operations in the warehouse.

### TOTAL CLOSING WORK AREA

Reduces the acoustic and environmental contamination.



### SLATTED IN ALL OF THE INSIDE OF THE MACHINE

Easy part loading-unloading and preparation.

The operator can move around the table. (\* T22)

### FOLDING SLATS

It makes access and cleaning the endless screw area easier. (\* T22)

### MACHINE IN A PIT (\*)

Entry to inside the machine on the zero level, preventing the operator having to go up or down steps. (\* Optional T22)

### ERGONOMIC MAINTENANCE

Easy and fast access to maintenance elements, grouped by functions: hydraulic, pneumatic, greasing...



# Headstock



## H Headstock

Horizontal Headstock.  
Very rigid and compact horizontal headstock.  
Perfect solution for multi-side machining.

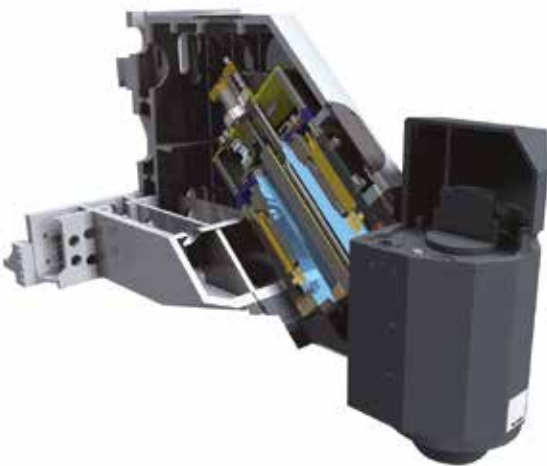
## HC Headstock

Universal Headstock  
Machining in up to 5 simultaneous axes in combination with the table rotary axis.  
Robust design that guarantees optimum rigidity during machining.  
High dynamics of the headstock rotation using direct motor technology.  
High positioning precision using direct measuring systems in the B-axis.  
Optionally available with tool rotation blocking for milling and turning applications.

## HR Headstock

Fork Headstock  
Machining in up to 5 simultaneous axes in combination with the table rotary axis.  
Specific design that allows machining negative angles.  
High dynamics of the headstock rotation using direct motor technology.  
High positioning precision using direct measuring systems in the B-axis.  
Optionally available with tool rotation blocking for milling and turning applications.

1



2



1 2

High dynamics of rotation of the B-axis to minimise positioning and machining times.  
B-axis with large rotation angle (+195°/-15°).  
Innovative design of the headstock:

- Technology and know-how at the service of precision and reliability.
- The piping of all the cables and hoses is inside the headstock, minimising their wear and increasing their conservation.
- Airtight insulation of the inside of the headstock with air pressurisation against moisture and particles.
- Extensive experience (15 years) in the design and manufacture and assistance of this type of headstocks.

# Table

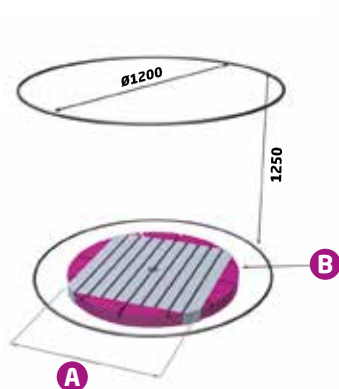
Several table configurations to respond to the needs of each customer: different construction sizes and flexibility in the configuration of geometries, grooves and types of attachments.

High dynamics and positioning precision, with firm position

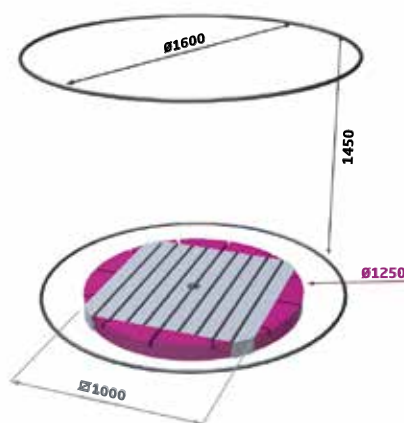
locking and maintenance in high load machining operations. Wide range of rotation speeds, in the **MULTIPROCESS** versions (milling/turning) depending on weights and turning over of parts to be machined.

// Because you know what you need, we leave it up to you to choose: configure your machine

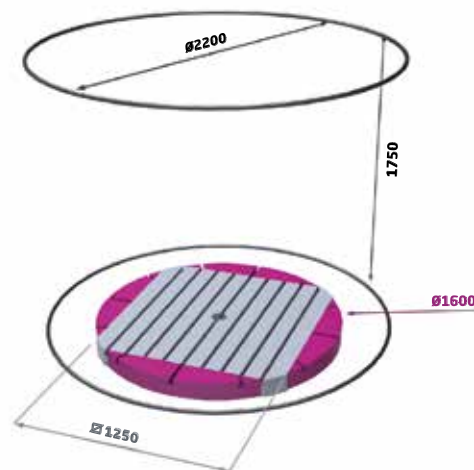
T12



T16



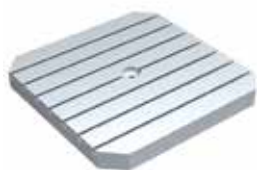
T22



<b>A</b>	∅ 800x800	∅ 1000x1000
<b>B</b>	∅ 1000	∅ 1250

## Types of tables

### T EXTREME



**Standard.** Square table with parallel T grooves.



**Optional.** Square-round table with parallel T grooves.

### T MULTIPROCESS



**Standard.** Round table with radial T grooves.



**Optional.** Round table with radial T grooves + automatic clamping with zero points.



**Optional.** Round table with radial T grooves + special machining for jaw-blocks.

## Construction features

The design of the machine has been optimized based on static and dynamic calculations to ensure its behaviour during the most demanding capacity tests. These calculations have been supported by monitoring the real behaviour of the machine during

static and dynamic trials. This way we have been able to determine the limits of the machine in different cutting conditions and machining operations.



### Solutions incorporating technology and equipments of latest generation

1



1

Machine bed designed to optimize the evacuation of chips.

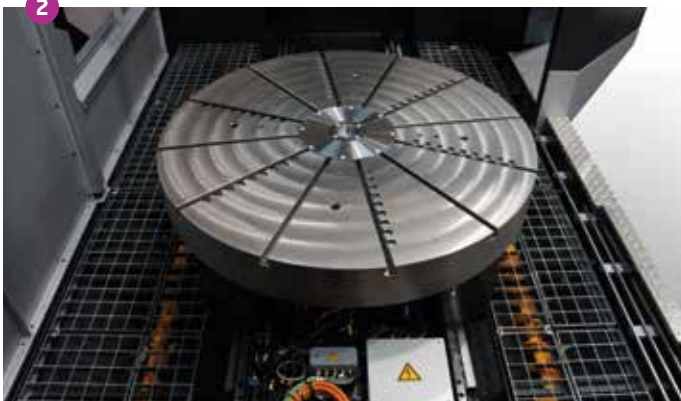
2

Endless screws on both sides of the table for an optimum evacuation of chips.

3

High dynamics B-axis incorporating a spindle up to 10000rpm. Advanced technology for advanced companies.

2

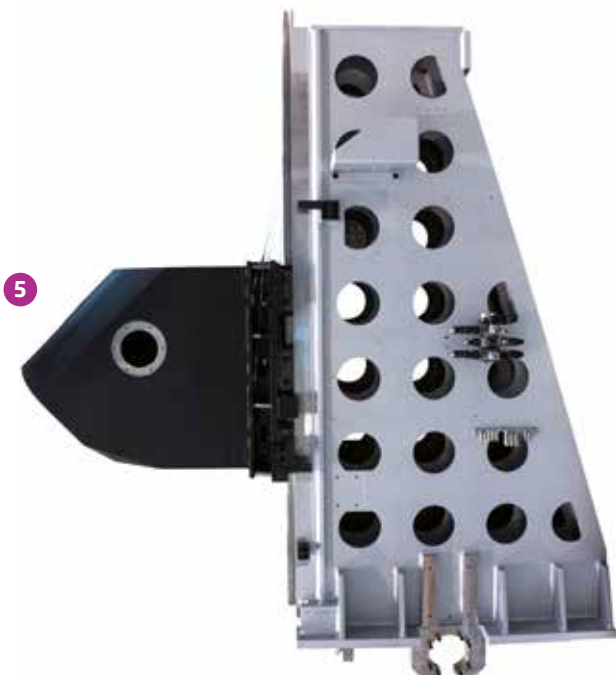


3





Power, rigidity and dynamics to ensure accuracy and productivity



4 Oversized linear guideways with preloaded rollers providing fast, accurate and reliable movements with no maintenance requirements.

5 Maximum stability and rigidity thanks to the wide separation of guideways and the design of the structures.

6 Finite Elements optimization of the structures to ensure the rigidity and performance of the machine during its life cycle.



# T EXTREME

## 12/16/22

### Introduction

T shaped machining centres, with 3 different spindle head styles, (H / HC / HR) for works on rotary table with various levels of automation.

- Spindle head: TH / Horizontal, THC / Universal, THR / Fork.
- High power and torque spindle with high dynamics.
- Maximum swing diameter: 2200 mm.
- Maximum work piece height: 1750 mm.



THC and THR: 5 axis machining centres

# T EXTREME

The THC range is equipped with a continuous tilting spindle head at 45° with high acceleration and positioning dynamics. Ideal for medium to large work pieces that require high performance and versatility. It is the perfect machine for single units and large batch manufacturing as it is possible to machine 5 faces and angled sides in one clamping, improving the accuracy and productivity.

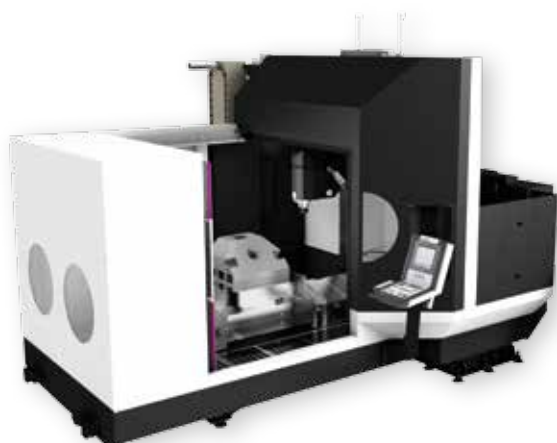
The machine can be customized to specific requirements with many automation solutions such as pallet systems, big tool magazines, etc...



High performance machine for your production requirements

12/16/22

## Structure



### Comfort and safety

Total enclosure of the working area. The operator is protected from noise, chips, coolant and mist generated during the machining process. Mist extractors can be included optionally.

Machine designed with the operator in mind in every situation: Loading of work pieces, maintenance works, machining process etc...

### Dynamics and accuracy

Large preloaded rollers with high dynamics and low friction. This system allows fast and accurate positioning in the most demanding machining operations as well as in low tolerance finishing jobs.

Every axis is provided with direct measuring systems by means of glass scales on linear axes and encoders on rotating axes.

### Control of the process

The use of CAM systems allows machining complex work pieces in high performance conditions and reducing the risk of collisions.

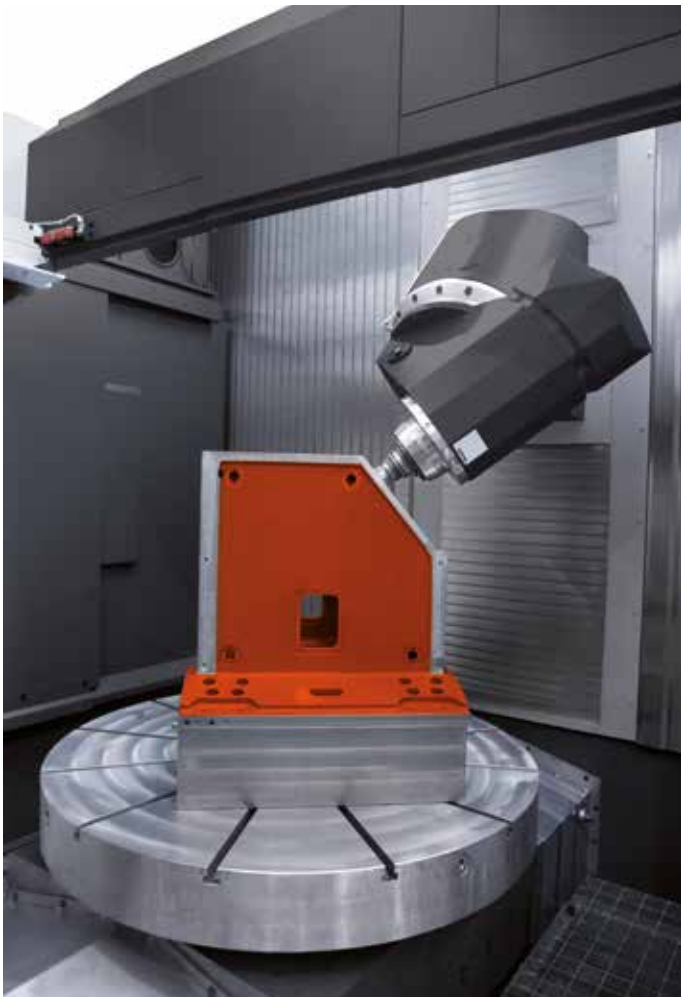
### Guarantee of accuracy

The accuracy is priority from the first stages of design of the machine. The linear axes are verified by laser interferometers and the circularity is checked by ball-bar.

# T EXTREME

## Travels

	12	16	22
<b>x</b>	1200 mm	1600 mm	2200 mm
<b>y</b>	1100 mm	1300 mm	1600 mm
<b>z</b>	1000 mm	1200 mm	1500 mm
	800x800 mm	1000x1000 mm	1250x1250 mm
	Op. 1000x1000 mm		
	ø 1200x1200 mm	ø 1600x1400 mm	ø 2200x1500 mm
	SK-50 (Op. BT-50/ HSK A-100 / CAPTO C8)		



### ENDLESS FLEXIBILITY

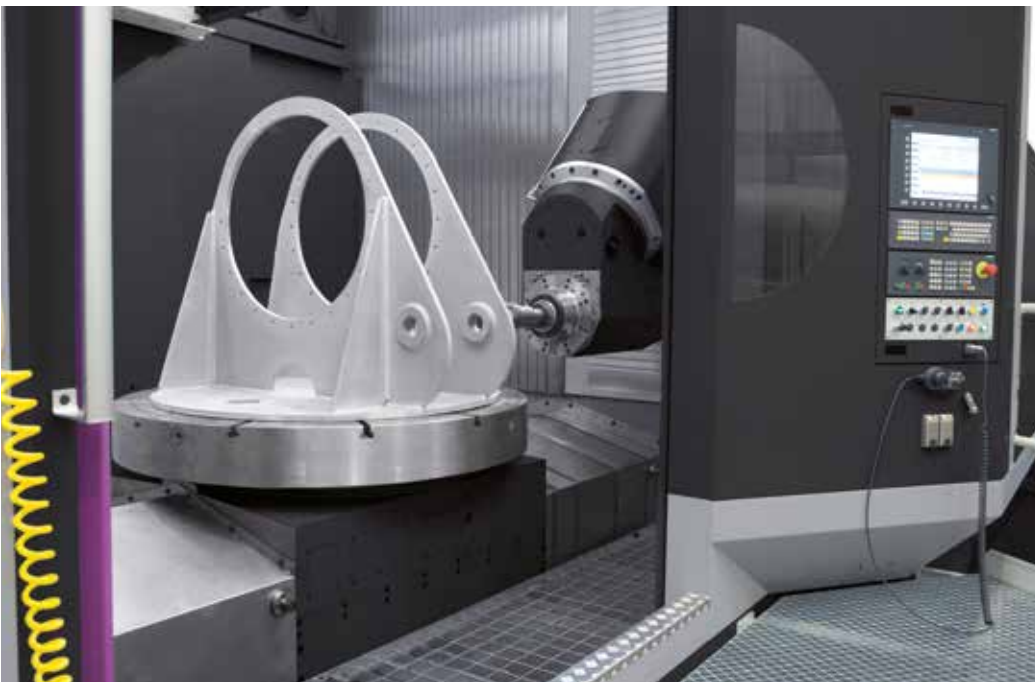
Ideal machine for pieces of complex geometries that require accuracy and fabrication speed.

The automation system options allow machining single units and medium to large batches of pieces.

### POWER AND DYNAMICS

A spindle head that gives you confidence at first sight. The accurate control of power and dynamics is achieved with the THC head.





## MAXIMUM STABILITY AND ACCURACY

A thermo symmetrical structure and the thermal isolation of heat sources during the process guarantee the accuracy and repeatability during the machining operations.

Constant rigidity on every point of the working area.

Great working space to machine voluminous and heavy work pieces with big clamping devices.

Optimized design in order to reduce the forces required in the machining process.

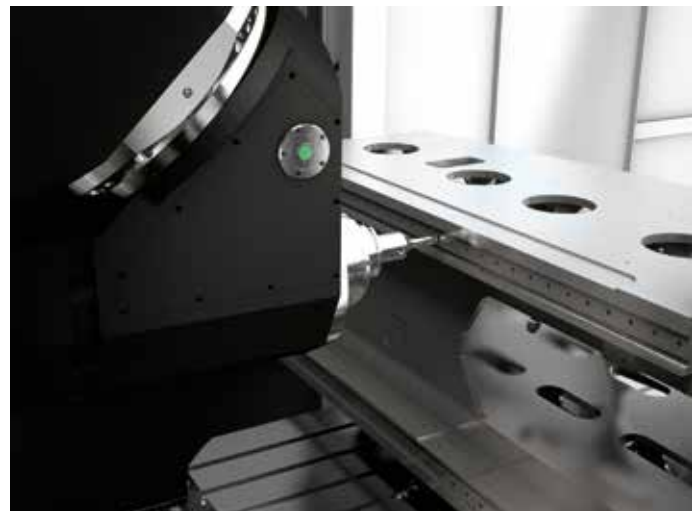
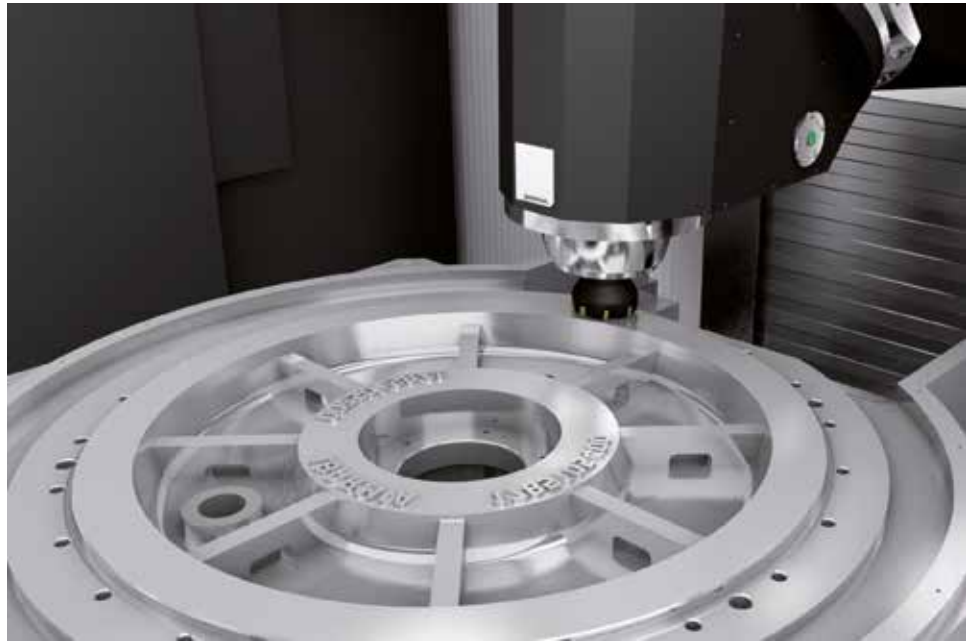




# T EXTREME

## MAKE IT EASY

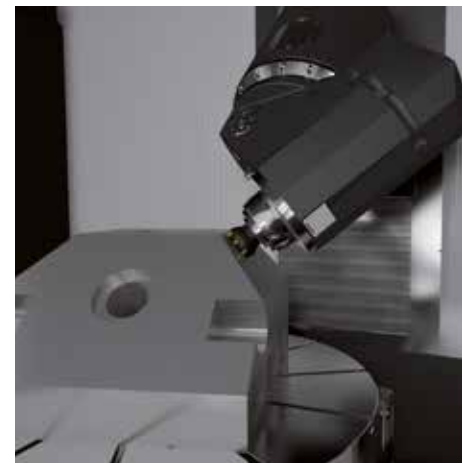
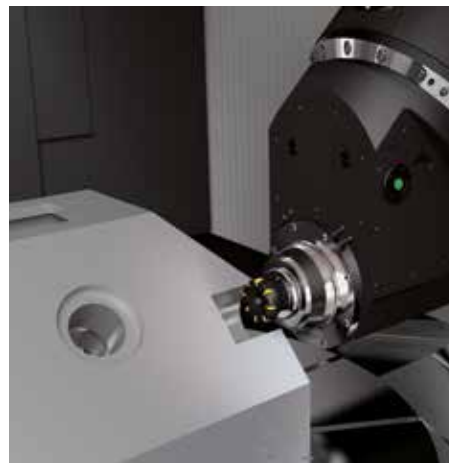
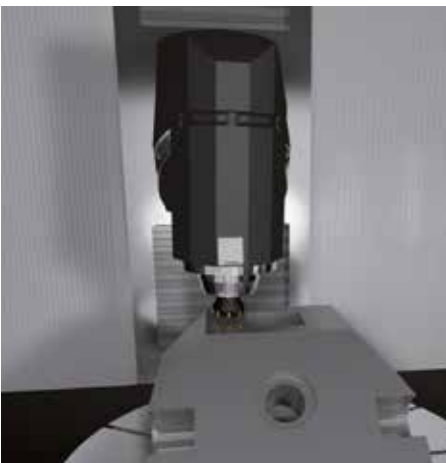
Manipulating and setting up heavy and voluminous work pieces causes long and expensive "non machining" times. These details have been thoroughly considered in the T Series to ensure the ergonomics, comfort and safety of the operators.





## ONE MACHINE: ENDLESS POSSIBILITIES

The **T EXTREME** Series can be easily adapted to a wide range of geometries due to various configurations of heads and tables. Machining on horizontal, vertical and inclined angles, with strokes to maximize the use of the working area. An advanced technology for advanced companies.





# T MULTIPROCESS

## 12/16/22

### Introduction

Multi-tasking (milling/turning) with T shaped structure, available with 2 types of spindle head (HC / HR) for works on rotary tables with various levels of automation.

- Spindle head: THC / Universal, THR / Fork.
- High torque and power spindle with milling and turning capacity.
- Various tool blocking options during the turning process.
- Working table for positioning and turning operations: direct motor of high power and dynamics.
- Working dimensions: swing diameter 2200 mm and height 1750 mm.



**MULTIPROCESS** machining centre:  
5 axis milling + vertical turning

# T MULTIPROCESS

The integration of various processes is key in high performance machines. **IBARMIA** offers this technology minimizing the quantity of machines required and reducing the machining times of complex work pieces.

The efficiency associated to **MULTIPROCESS** machines is even more obvious when we handle big and heavy work pieces of difficult handling and clamping works.

The **MULTIPROCESS** concept becomes key for the competitiveness of the companies: it improves the quality of the pieces as fewer machines and set ups are required, it reduces the cost of the investment, the space required is smaller, it eliminates the transit of pieces in the factory and it simplifies the industrial management.



**MULTIPROCESS: Unstoppable technology**

12/16/22

## Structure



### High performance

In turning mode, the generous dimension of the structural elements and the powerful blocking system of the turning tool in the main spindle provide great rigidity with big material removing capacity.

An intelligent balancing system integrated in the machine, guides the operator detecting and minimizing unbalanced positions ensuring a safe machining process.

### Work set up

Clamping systems designed for milling and turning operations.

Design and manufacture of specific clamping systems for our customers.

### Turning tables

The **T MULTIPROCESS** Series machines incorporate a wide range of tables with high dynamics for turning and accurate positioning for milling operations, with different weight and speed capacities.

These tables have direct motors of high dynamic and torque.

### Tool clamping

Powerful and rigid clamping force for milling and turning tools in the standard configuration: HSK A-100.

Optionally **IBARMIA** can offer various clamping systems for turning and boring operations with long tools.



# T MULTIPROCESS

## Travels

	12	16	22
	1200 mm	1600 mm	2200 mm
	1100 mm	1300 mm	1600 mm
	1000 mm	1200 mm	1500 mm
	ø 1000 mm	ø 1250 mm	ø 1600 mm
	Op. ø 1250 mm		
	ø 1200x1200 mm	ø 1600x1400 mm	ø 2200x1500 mm
	HSK A-100 ( Op. CAPTO C8)		

## SAFETY AND MAINTENANCE

Total enclosure of the working area.

Vertical interior protecting the tool magazine and guideways from chips and coolant, steel protection around the spindle head.

Easy access to service and maintenance elements for an optimized execution of these tasks to extend the life of the machine.







## INTEGRAL SOLUTION: PERFORMANCE GUARANTEED

At **IBARMIA** we cooperate with our customers analysing the optimum machining process of their pieces and the total configuration of the machine. In these cases, **IBARMIA** can offer the machine, clamping systems, tools and the machining programs required. This service ensures the maximum performance of such an advanced technology, especially in **MULTIPROCESS** machines.

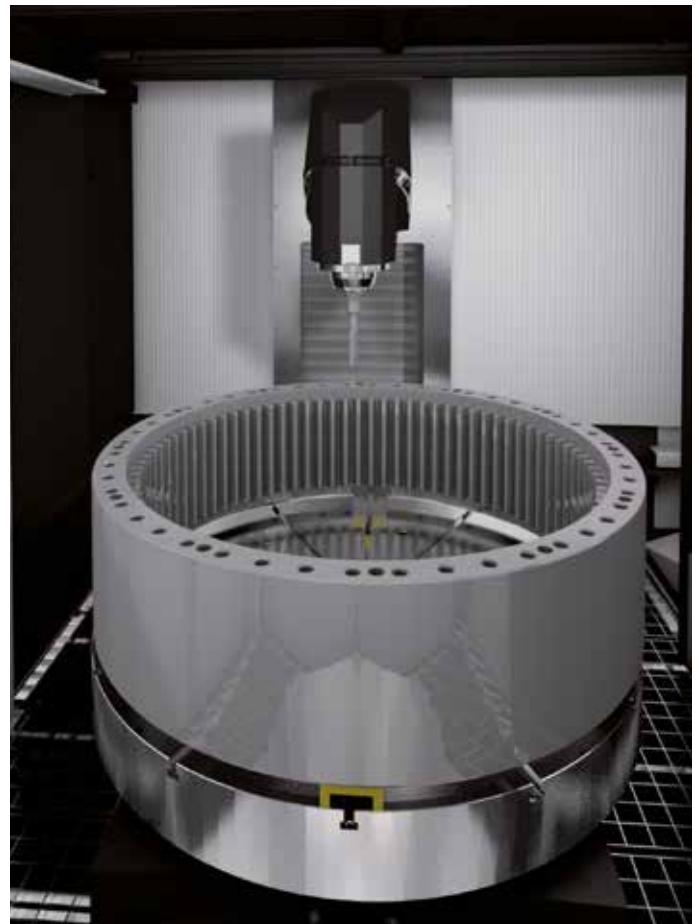
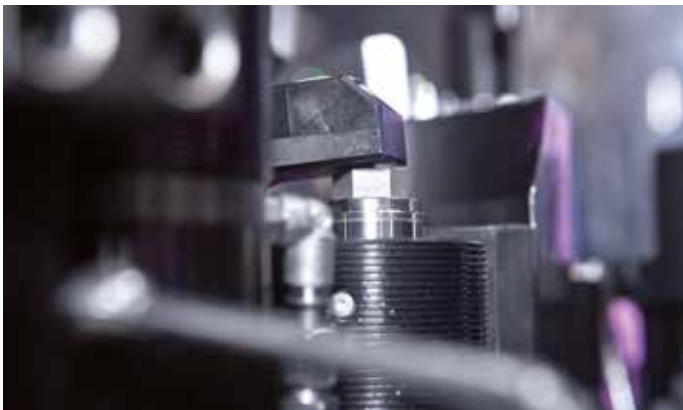


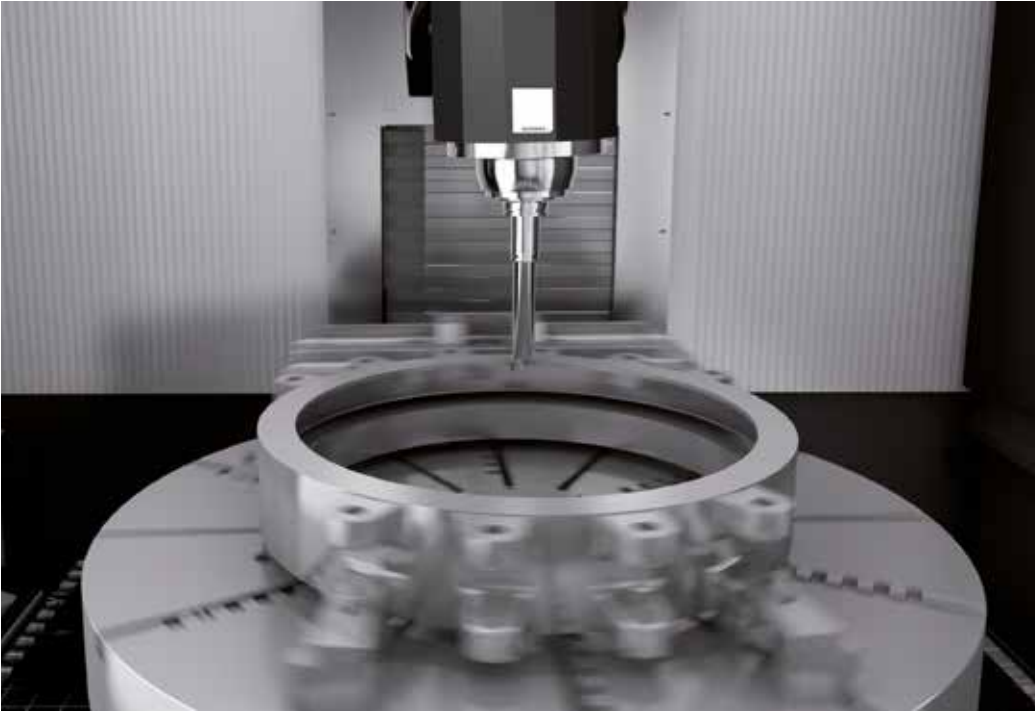
# T MULTIPROCESS

## INNOVATING AND ATTRACTIVE DESIGN

The design of the T Series provides functionality, ergonomics and great stability. The latest technology is combined with an attractive design.

The original round windows, differentiate the machine from others. The combination of colours and the use of stainless and aluminium materials gives elegance and harmony to the overall design. **IBARMIA** has been awarded with many prizes for the quality of the designs.



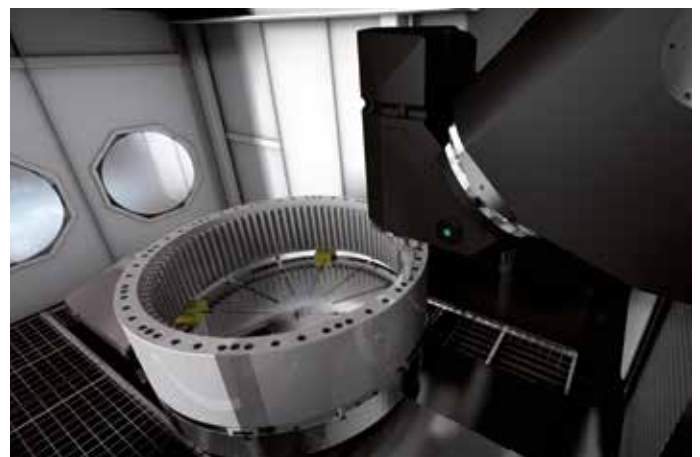
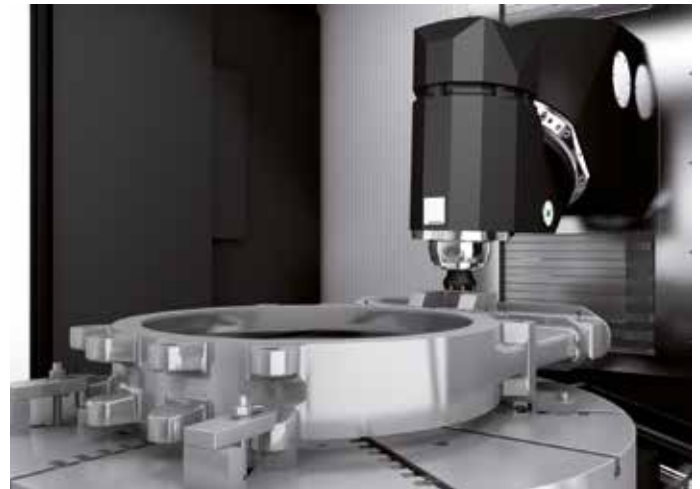
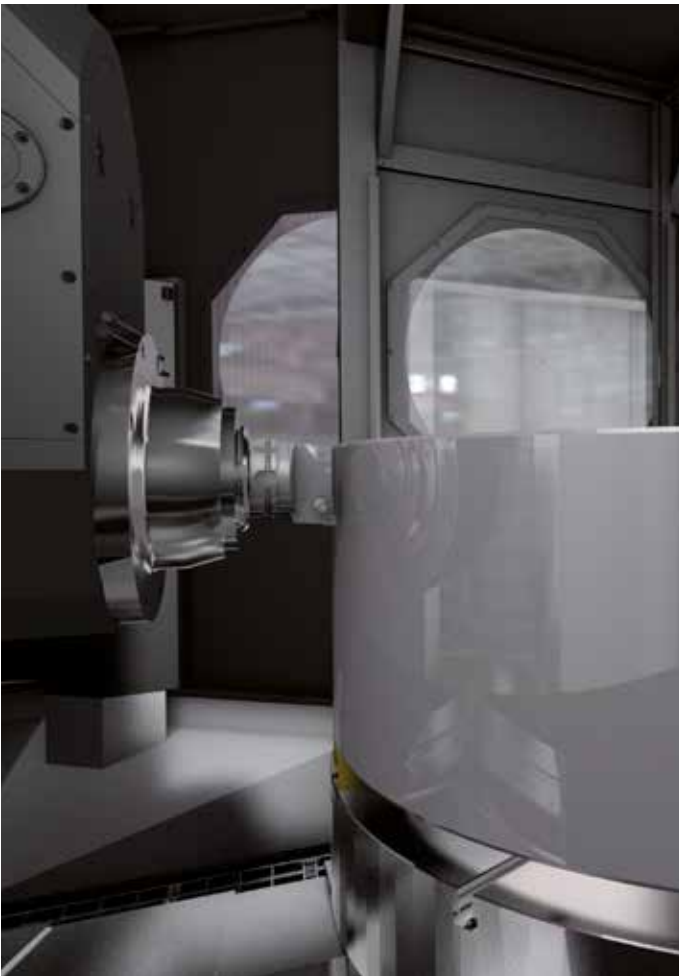


## ADVANCED MANUFACTURING

The constant demand in productivity and accuracy and the technological development of machinery and tools is making old production means become obsolete faster. At **IBARMIA** we offer production equipment of latest generation that incorporates the "state of the art" of technology.

The "multiprocess" system reduces time and errors and increases the productivity and accuracy.

We combine the following processes in one machine: milling, drilling, tapping, gear milling, boring, turn/milling, turning. The CNC includes specific functions to support every process and optimize the performance of the machine.







# AUTOMATION SYSTEMS

## Introduction

One of the big drivers of the current industry is automation given the capacity of answering the challenge of making the machines work for as many hours as possible and, if possible, unattended.

Therefore, the focus on improving productivity is permanent, minimising the production times and response

to the market. Now, more than ever, we are trying to reduce the in process inventory with just in time production techniques.

Facing up to this challenge and to give our customers the best means, **IBARMIA** offers different degrees of automation that allow a perfect adaptation of the specific production requirements of each case.



We cannot be competitive in the 21st century with means and processes from the last century



1

The pallet change is executed by a double fork in the machine front in the T12 and T16 models.

2

Quick pallet change system. It increases the autonomy and production minimizing the floor space.

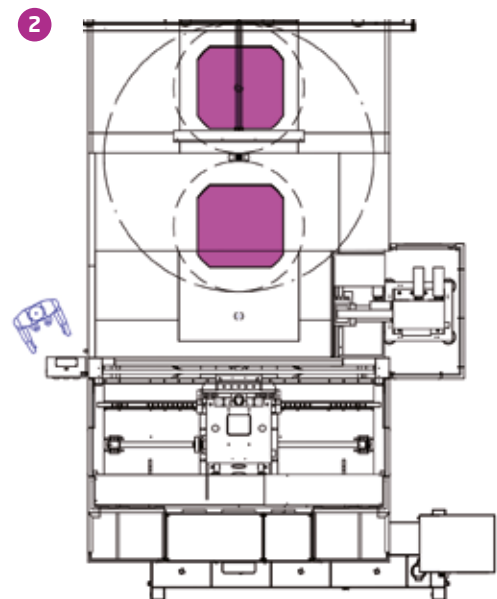
The operator prepares the next job during the machining process.

Optionally the loading position can turn manually 4x90° for a better access to the workpiece.



//

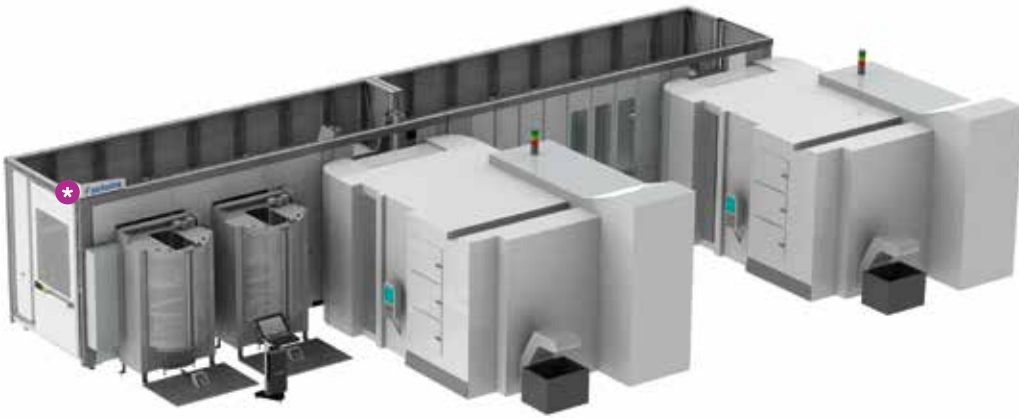
We offer various machine automation solutions cooperating with leaders in the sector





# AUTOMATION SYSTEMS

3



\* Courtesy of Fastems Oy

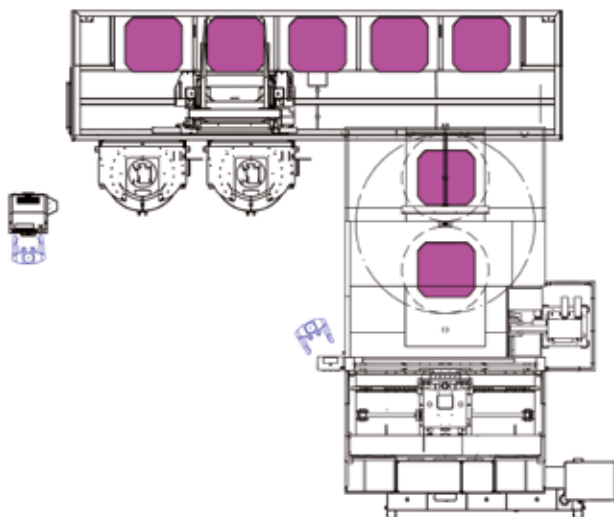
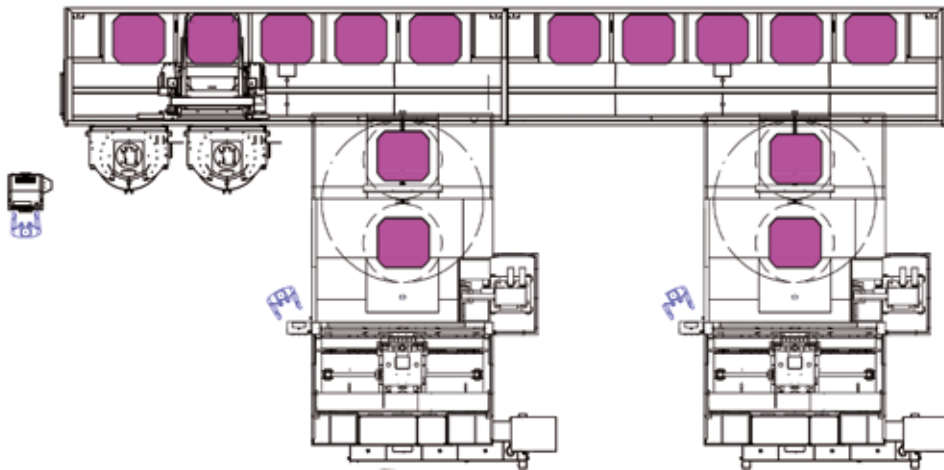
3

**IBARMIA** cooperates with market leaders in automation systems and offers standard and competitive palletizing solutions in combination with one or various T Series machines.

These installations ensure the maximum performance of the equipment, even in unattended shifts, accelerating the return of the investment due to its intense use.

Great storage capacity with minimum floor space. Multi floor solutions subject to weight and dimension of pieces.

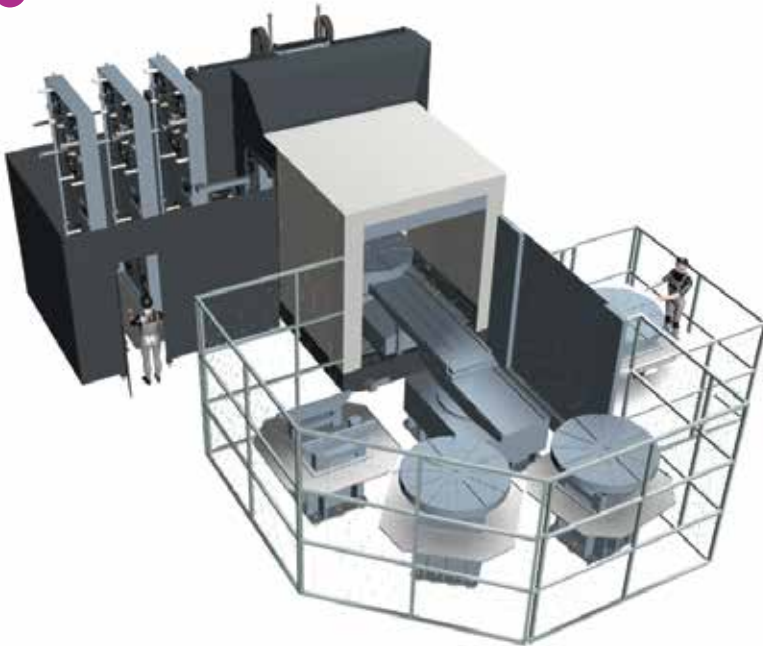
The basic installation can be extended with additional pallets to face a work increase or to feed a second machine.



||

The machine automation is increasingly used by small and medium companies

4

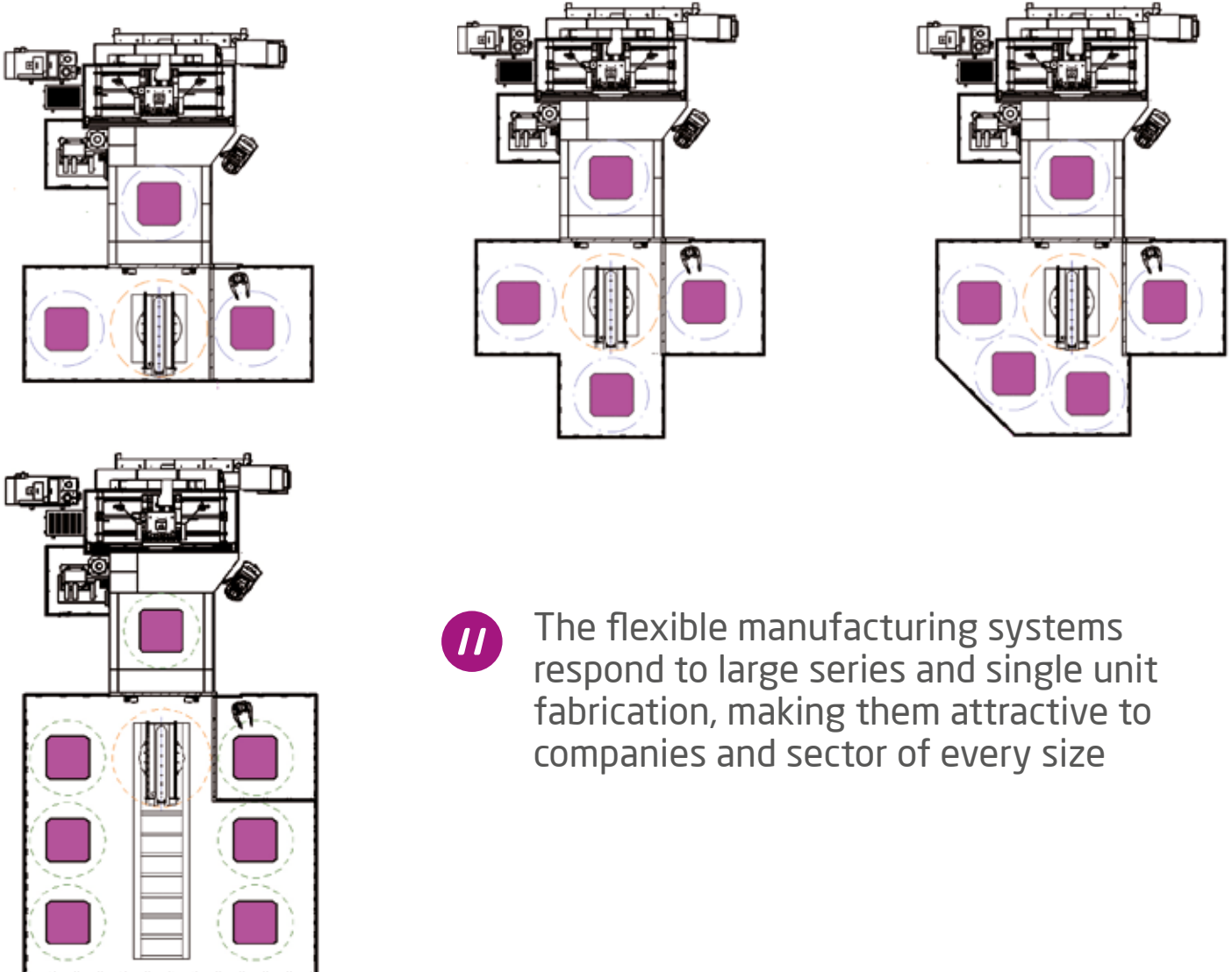


4

The automation system in the T22 models is different due to heavier loads and bigger swing diameters.

The key factors to determine the number of pallets are the average cycle time of the pieces and the length of unattended use of the machine.

**IBARMIA** offers simple modular solutions of 2 and 4 positions for the T22 model.



//

The flexible manufacturing systems respond to large series and single unit fabrication, making them attractive to companies and sector of every size



# TOOL MANAGEMENT

## Introduction

**IBARMIA** offers multiple and modular solutions in the tool management and storage field.

Over 30 years experience in the manufacture and use of machining centres and problems associated to tool management, at the service of our customers.

The magazines are configured and designed according to the application and the customer's requirements.

As an option, we offer:

- Smart management of the tools by means of the reading of a chip in the tool itself, the data is entered automatically in the CNC, reducing the set-up times and mistakes in the entry of manual data.
- Different tool breakage and wear control devices using feeling, laser beam or measuring headstock consumption.



Process monitoring is key to reliability and among these is tool life management

## ATC

Situated outside the working area, separated from the main structure so its movements do not affect the machine.

We offer 60-120-240-360 chain driven tool magazines, with servomotors for a quick and smooth tool selection.

A tool changing arm with double holder ensures a quick tool change.



The right quantity of tools and their correct management are key for a maximum performance of the machine



**ATC 60**



**ATC 360 Trio**



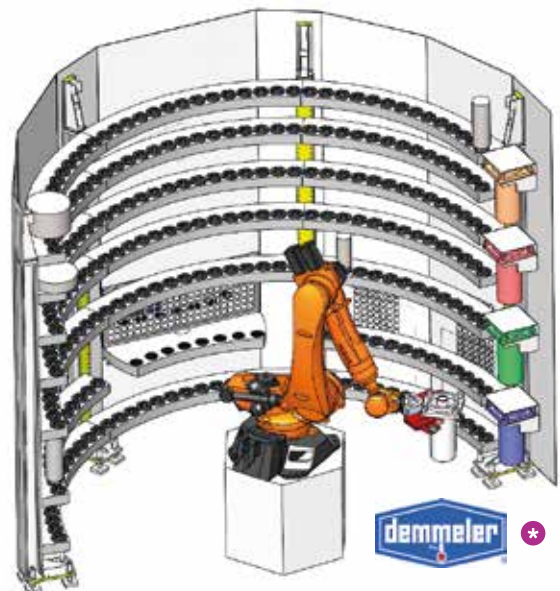
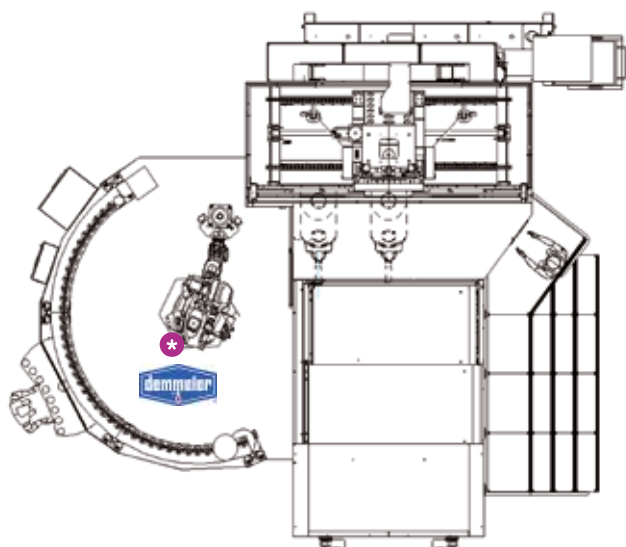
## ATC & AHC

Tool and head magazine, with a maximum of 400 positions managed by an arm robot.

Ideal to combine tool changes with head changes for boring

operations, angular heads, U axis special heads, long turning tools. Two configurations depending on the weight of tool and heads: 40kg and up to 100kg.

An additional control panel for tool loading can be offered as an option.



\* Courtesy of Demmeler Automatisierung und Roboter GmbH  
All rights reserved. Pay attention to the copyright and patent rights for this product.





# SMART FUNCTIONS

## Introduction

Buying an **IBARMIA** machine is choosing between a wide range of configurations to find the best equipment for each customer.

From an electronic and control point of view, we offer the possibility of incorporating

equipment from the leading manufacturers: HEIDENHAIN, FANUC, SIEMENS. We have a team of electronic engineers and in-house software developers, with extensive knowledge of the different platforms.



Our challenge is to integrate the intelligence of our people in the machines and exploitation of that knowledge





## THERMAL COMPENSATION

Automatic compensation of the deformation in the Z axis due to the heating of the spindle bearings. The temperature in the spindle is monitored and its effect is compensated ensuring the accuracy of long machining processes.



## DYNAMIC COLLISION MONITORING

It allows machining without collisions using the 3D models of the different components that take part in the process.



## REMOTE AND ONLINE MONITORING AND DIAGNOSE: TELESERVICE

This function is based on gathering data accumulated by the machine to generate information about its optimum use, life cycle of its components or process information.



## WEIGHT BALANCING SOFTWARE

Analysis of unbalanced set ups by means of accelerometers in the rotary table.

Interactive cycles to define the required balance.

Graphic interface to guide the operator during the balancing process.

Degree of balance as per DIN ISO 1940/1.

A G6.3 degree of balance and even G3 are achievable depending on the size and complexity of the work piece.

## CALIBRATION OF ROTARY AXES

The accuracy requirements are increasing the field of 5 axis machining. The complex work pieces require complex and accurate tool movements.

In order to calibrate the rotary axes, a 3D touch-probing cycle automatically measures the existing rotary axes to minimize the errors caused by tilting movements and ensure a permanent accuracy.



## GEAR MILLING

Special software package to generate and 5 axis machining of straight and helicoidal gears.

- Calculations of the geometry following ISO, DIN...norms.
- Modifications of gear profiles.
- Generation of 3D geometry.
- Generation of rough milling and finishing paths using the control.



## DYNAMIC CORRECTION OF VIBRATIONS DURING THE MACHINING PROCESS

This function reduces the vibrations of the structural elements of the machine improving the productivity (it allows increasing the material removal, prolonging the life of the tool) and the final quality of the machined surface.

## VIBRATION MONITORING

Collision control function that recognises sudden force changes and protects the machine by stopping it when a limit is exceeded.

## CONTROL OF SPINDLE CONSUMPTION

Wearing and backlash detections by measuring the power consumption of the spindle with the objective of preventing errors in work pieces due to spindle faults.

## ECO FUNCTIONS



The 80-90% of the environmental impact of a machine is due to its electric consumption.

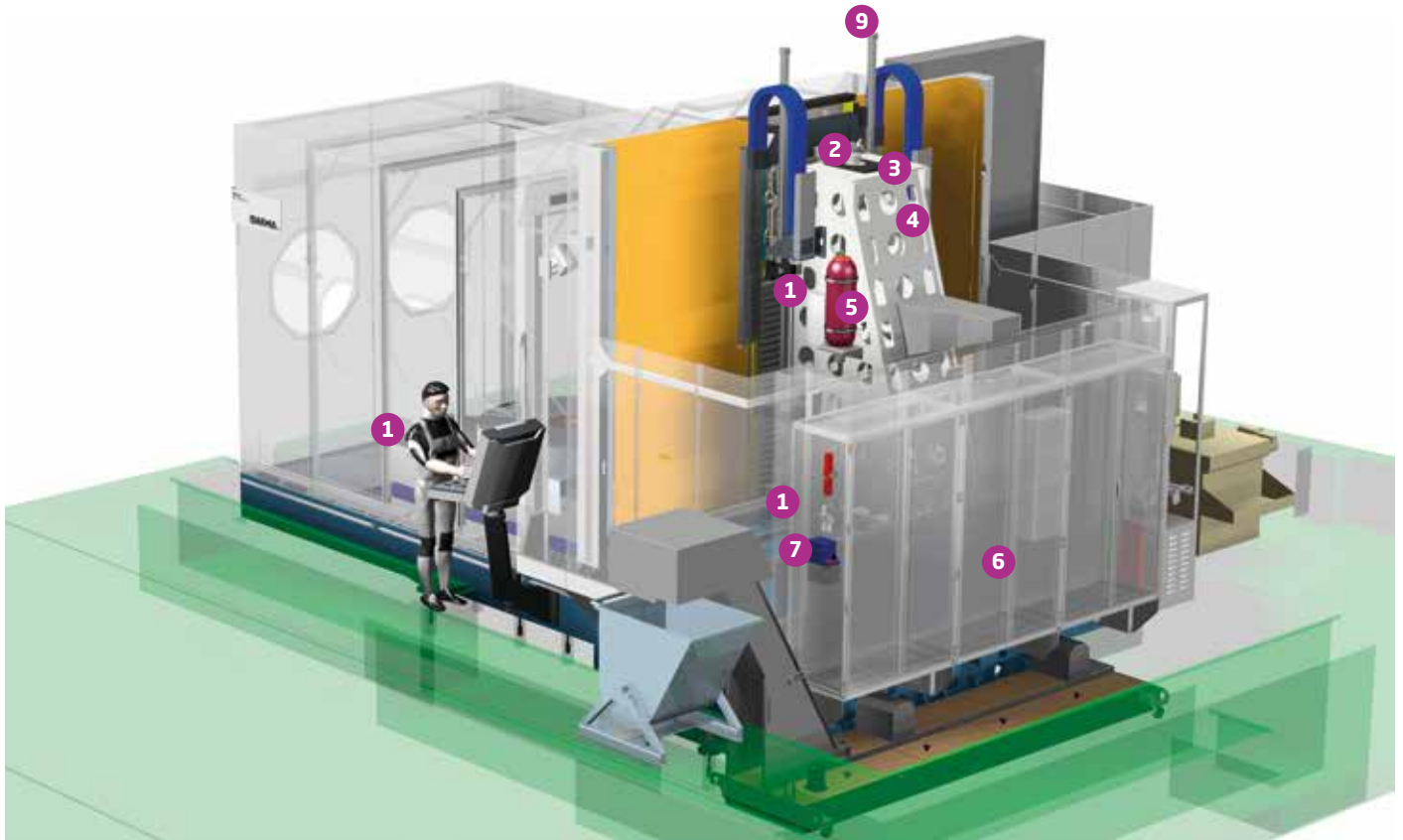
**IBARMIA** takes measures in

the design of the machines to reduce that consumption.

The environmental impact of a machine with ECO Measures is 10-15% lower than a

machine without any measure. This reduction prevents the emission of 50Tn CO<sub>2</sub> to the atmosphere during the life cycle of the machine. We work for the sustainability of the planet plus

saving in electricity bills for our customers.



**1 GREASE LUBRICATION (\*)**  
Grease lubrication in guideways and ballscrews. Important reduction of oil consumption. (\* Optional)

**2 EFFICIENT SERVO MOTORS**  
Ecodyn series from Heidenhain. More efficiency and less consumption.

**3 STEEL STRUCTURES**  
More rigid than cast iron, it reduces the use of raw materials and the consumption of servo motors.

**4 STRUCTURES OPTIMIZED BY FEM**  
It optimizes the use of raw materials and the consumption of servo motors.

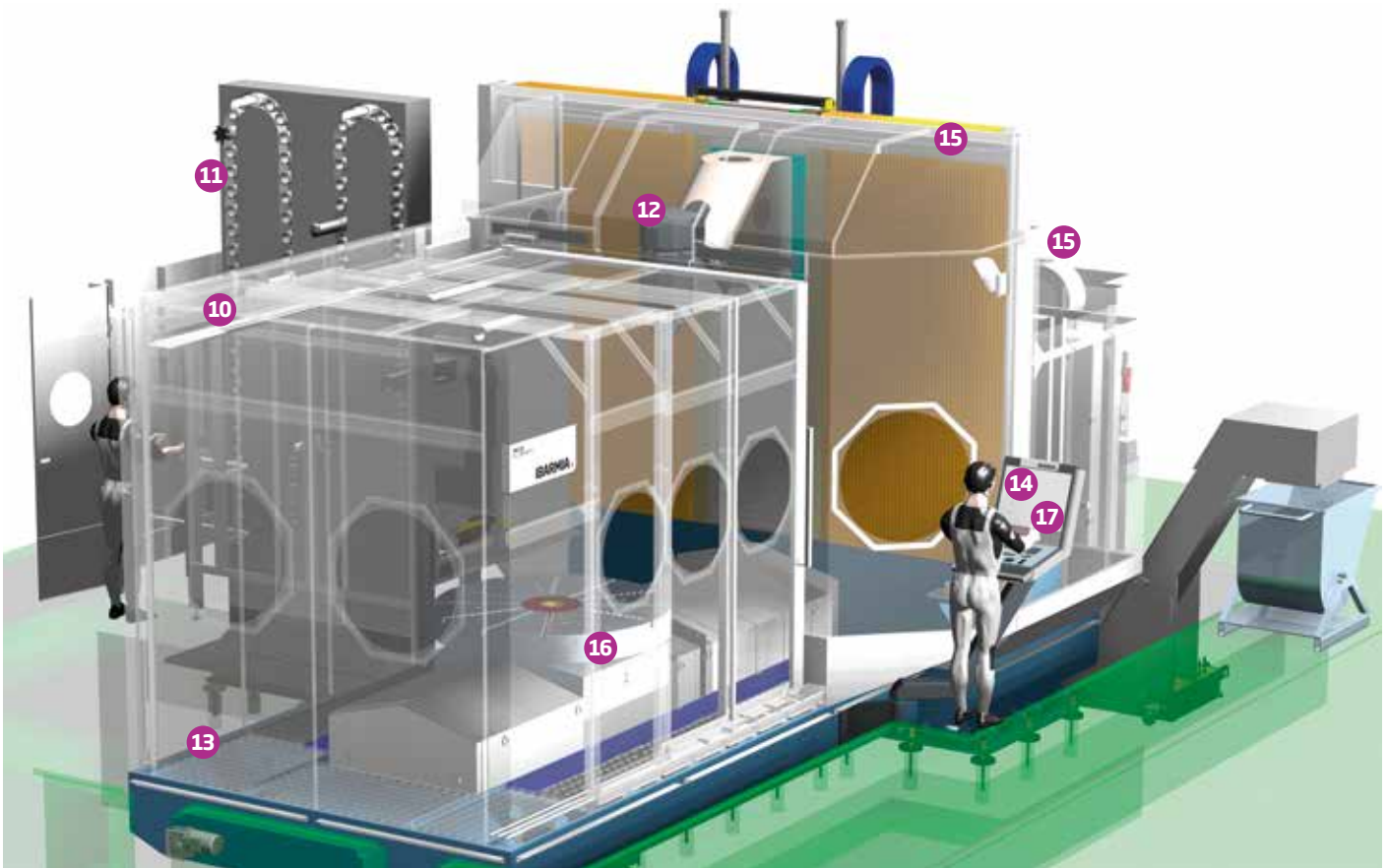
**5 LIGHT AND COMPACT MOVING ELEMENTS**  
Tool magazines, hydraulic groups are light and compact to reduce the consumption of servo motors.

**6 ELECTRIC CABINET**  
Attached to the machine to avoid the use of long cables. Rittal Blue Efficiency air conditioning: less consumption. Use of reversible regulators.

**7 HYDRAULIC INSTALLATION (\*)**  
The motor stops when there is no pressure requirement from the installation. (\* Optional)

**8 PNEUMATIC INSTALLATION**  
Strategies to reduce the air consumption during the use of the machine.

**9 SPINDLE HEAD COMPENSATION**  
Reduction of the consumption of the Z axis servomotor.



**10**  
**MULTIPROCESS (\*)**  
 Integration of milling and turning processes. 1 machines instead of 2.  
 Savings in raw materials, less transport, less installed power, less consumption.  
 (\* Optional).

**11**  
**ELECTRIC MOTORS FOR AUXILIAR MOVEMENTS**  
 Cleaner energy than using hydraulics.

**12**  
**MQL LUBRICATION (\*)**  
 Drastic reduction of coolant plus avoiding the use of pumps.  
 (\* Optional).

**13**  
**TIGHT ENCLOSURE**  
 It avoids losing coolant and lubricant and it improves their re-use.

**14**  
**PREVENTIVE DIAGNOSE**  
 Monitoring of levels, leakage detections, pressure and temperature controls.

**15**  
**WORKING AREA ENCLOSURE**  
 It reduces the material used covering the back side of the machine.

**16**  
**DIRECT DRIVE TRANSMISSION**  
 The rotary tables (\*) and B-axis use torque motors: Maximum efficiency and reduction of consumption.  
 (\* Multiprocess)

**17**  
**STAND BY (\*)**  
 The machine goes into a low consumption mode if there is no activity.  
 (\* Optional)



**Partner of the Engineering Industry Sustainability Initiative**

Because we are proud of our commitment, we want to take active part in this change. Our support to the European Initiative "Blue Competence" which gathers companies sensible about the environment, is good proof of that.

We show our commitment to sustainability in 2 fields:

- Internally, applying ECDesign concepts from the beginning all the way through the process to the scrapping of our machines.
- Externally, focusing our offers and solutions in key sectors in the sustainability of our planet such as renewable energies.



your  
machine  
-tool  
point

# service.

## servicepoint

When a customer becomes part of the **IBARMIA** family, that special link makes us work together throughout the machine's lifetime.

**servicepoint** is the human team and their advanced technical means, endeavoured to meet the customer's requirement since the machine goes into their facilities.

A high performance team, highly qualified and trained to work in complex situations and under pressure, a team that works together with our customers to get the most of our machines.



Because we are not infallible, we believe in service



**Complete service proposal**

Because we are committed with the profitability and reliability of your machine, at **servicepoint** we propose:

**CUSTOMIZED MAINTENANCE CONTRACTS**

Various levels of maintenance contracts adjustable to each customer.

**PERIODIC PREVENTION MAINTENANCE**

**servicepoint** staff checks the machine periodically and tune it, ensuring an optimal availability of the machine.

**ASSISTANCE AND LOCAL SERVICE**

Objective, to respond to our customers quickly, efficiently and at a reasonable cost. We are creating a global service network to ensure we respond to our clients in the shortest time possible.

**SPARE PART MANAGEMENT**

We are well aware of the importance that the parts replaced in our machines maintain the same quality as the originals. Our spare part management service ensures that.

**CRITICAL COMPONENTS HIRE**

Our machines have a high level of technology reflected on key elements of high value and sometimes long delivery times. Following our commitment to reduce the machine break down times to a minimum, we stock those key elements for hire.

**MACHINE RECALIBRATION**

The accumulation of working hours and other factors might affect the machine's adjustment. At **servicepoint** we offer the possibility of readjusting them, leaving them almost as brand new.

**REMOTE AND ONLINE MONITORING AND DIAGNOSE**

It allows knowing the machine status from the distance to ensure an intelligent diagnosis of the key elements.

**INTELLIGENT DATA REGISTRATION, FILTERING AND PROCESSING**

Data recovery applying advance AI techniques to generate information about optimal machine use, life cycle of its components or information about the process.



Committed to the profitability and reliability of your machine

**TELEPHONE SUPPORT SERVICE BY EXPERT MULTILINGUAL STAFF**

**ONLINE AND REMOTE MONITORING AND DIAGNOSE**

**QUICK REACTION AND SOLUTION TIMES**

**GLOBAL SERVICE VOCATION**

**HIGHLY QUALIFIED TECHNICIANS**

**your service point**

**service.**

## TECHNICAL DATA

### T 12 EXTREME

### T 16 EXTREME

### T 22 EXTREME

#### TRAVELS

X axis travel (length)	mm	1200	1600	2200
Y axis travel (cross)	mm	1100	1300	1600
Z axis travel (vertical)	mm	1000	1200	1500
NC head tilting range	continuous		-15/+195°	
C axis turning range	continuous		360°	
Maximum diameter of swing	mm	Ø1200	Ø1600	Ø2200
Piece maximum height	mm	1250	1450	1750
Minimum distance from spindle nose to table with spindle head in vertical position (*)	mm	100 / 1100	100 / 1300	0 / 1500
Minimum distance from spindle nose to table with spindle head in horizontal position (*)	mm	-200 / 900	-200 / 1100	-200 / 1400

#### TABLE

Table dimensions	mm	Standard: 800 x 800 Option: 1000x1000	1000 x 1000	1250 x 1250
Maximum table load capacity	kg	3500	6000	10000
Nominal speed	rpm		1,5	
Maximum speed	rpm	15	13	10
Nominal torque	Nm	2000	3200	8000
"T" slots			Parallel	
Number of "T" slots			7	9
"T" slots size	mm		T18	T22
Distance between "T" slots	mm	100		125

#### MAIN SPINDLE

Spindle taper		Standard: ISO 50 (DIN 69871) / Option: MAS 403 BT50 (JIS B 6339 Pull Studs) ; HSK A-100 (DIN 69893) / CAPTO C8		
Tool clamping force	N		17000	
Turning motor torque (continuous turning)	Nm		1210	
Hydraulic damping for positioning (continuous turning)	Nm		7000	

#### HEADSTOCK ELECTROSPINDLE

Maximum speed	rpm		Standard: 7000 / Option: 10000	
Power at 100% (S6 40%)	kW		Standard: 52 (73) / Option: 32 (44)	
Torque at 100% (S6 40%)	Nm		Standard: 500 (700) / Option: 303 (413)	

#### CONTROLS

Available digital controls		Fanuc - Heidenhain - Siemens		
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#### FEED

Maximum working feed X/Y/Z	m/min		30	
Rapid feed for positioning X-Z	m/min	45	40	40
Rapid feed for positioning Y	m/min		37,5	30
X,Y and Z axis acceleration	m/s <sup>2</sup>		2,5	2
Positioning feed rate on the B axis	rpm		50	

#### ACCURACY VDI/DGQ3441

Positioning accuracy Tp X-Y (1000 mm)	µm		10	
Repeatability	µm		5	
Measuring system on B axis			Encoder	
Positioning accuracy Tp B	s		+/- 5"	

#### CAPACITIES

Milling capacity in steel St60	cm <sup>3</sup> /min		1100	
Drilling capacity in steel St60	Ømm		70	
Tapping capacity in steel St60	mm		M 45	

#### TOOL MAGAZINE

Number of tools			Standard: 60 / Standard: 120, 240, 360	
Maximum tool length	mm		450	
Maximum tool weight	kg		20	
Maximum tool Ø with full magazine	mm		125	
Maximum tool Ø with free spaces	mm		250	
Tool changing time	s		6"	
Chip to chip time	s		8"	

#### GENERAL

Machine painted in 3 colours	RAL		Grey 7021, Grey 9006, Violet 4008	
Total power installed	kW	60	63	66
Power connection voltage	V		400 V / 50 Hz	
Required compressed air pressure	bar		6	
Approximate net weight	kg	25000	30000	42000

#### STANDARD EQUIPMENT

Measuring by glass scales in X/Y/Z				
Chip conveyor and coolant tank				
Full protection guarding				
Rotating control panel				
Automatic central lubrication system				
Lighting equipment				
Cooled electrical cabinet				
Air blowing for cone cleaning				
Headstock hydraulic counterbalance				
Vertical protection on the X axis				

#### MAIN OPTIONS

Coolant through main spindle				
APC Pallet Changer (Rotopallet, pallet pool)				

(\*) THC data

## TECHNICAL DATA

### T 12 MULTIPROCESS

### T 16 MULTIPROCESS

### T 22 MULTIPROCESS

#### TRAVELS

X axis travel (length)	mm	1200	1600	2200
Y axis travel (cross)	mm	1100	1300	1600
Z axis travel (vertical)	mm	1000	1200	1500
NC head tilting range	continuous		-15/+195°	
C axis turning range	continuous		360°	
Maximum diameter of swing	mm	Ø1200	Ø1600	Ø2200
Piece maximum height	mm	1250	1450	1750
Minimum distance from spindle nose to table with spindle head in vertical position (*)	mm	100 / 1100	100 / 1300	0 / 1500
Minimum distance from spindle nose to table with spindle head in horizontal position (*)	mm	-200 / 900	-200 / 1100	-200 / 1400

#### TABLE

Table dimensions	mm	Standard: Ø 1000 Option: Ø 1250	Ø 1250	Ø 1600
Maximum table load capacity	kg	t2250/m4500	t3000/m6000	t6000/m10000
Nominal speed	rpm	450	260	190
Maximum speed	rpm	500	500	400
Nominal torque	Nm	1900	2950	3440
"T" slots			Radial	
Number of "T" slots			12	
"T" slots size	mm		T18	T22
Distance between "T" slots	mm		30°	

#### MAIN SPINDLE

Spindle taper		HSK A-100 (DIN 69893) / Option: CAPTO C8		
Tool clamping force	N	45000		
Turning motor torque (continuous turning)	Nm	1210		
Hydraulic damping for positioning (continuous turning)	Nm	7000		

#### HEADSTOCK ELECTROSPINDLE

Maximum speed	rpm	Standard: 7000 / Option: 10000		
Power at 100% (S6 40%)	kW	Standard: 52 (73) / Option: 32 (44)		
Torque at 100% (S6 40%)	Nm	Standard: 500 (700) / Option: 303 (413)		

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Positioning accuracy Tp X-Y (1000 mm)	µm	10		
Repeatability	µm	5		
Measuring system on B axis		Encoder		
Positioning accuracy Tp B	s	+/- 5"		

#### CAPACITIES

Milling capacity in steel St60	cm <sup>3</sup> /min	1100		
Drilling capacity in steel St60	Ømm	70		
Tapping capacity in steel St60	mm	M45		

#### TOOL MAGAZINE

Number of tools		Standard: 60 / Option:120, 240, 360		
Maximum tool length	mm	450		
Maximum tool weight	kg	20		
Maximum tool Ø with full magazine	mm	125		
Maximum tool Ø with free spaces	mm	250		
Tool changing time	s	6"		
Chip to chip time	s	8"		

#### GENERAL

Machine painted in 3 colours	RAL	Grey 7021, Grey 9006, Violet 4008		
Total power installed	kW	125	130	140
Power connection voltage	V	400 V / 50 Hz		
Required compressed air pressure	bar	6		
Approximate net weight	kg	25000	30000	42000

#### STANDARD EQUIPMENT

Measuring by glass scales in X/Y/Z				
Chip conveyor and coolant tank				
Full protection guarding				
Rotating control panel				
Automatic central lubrication system				
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Vertical protection on the X axis				

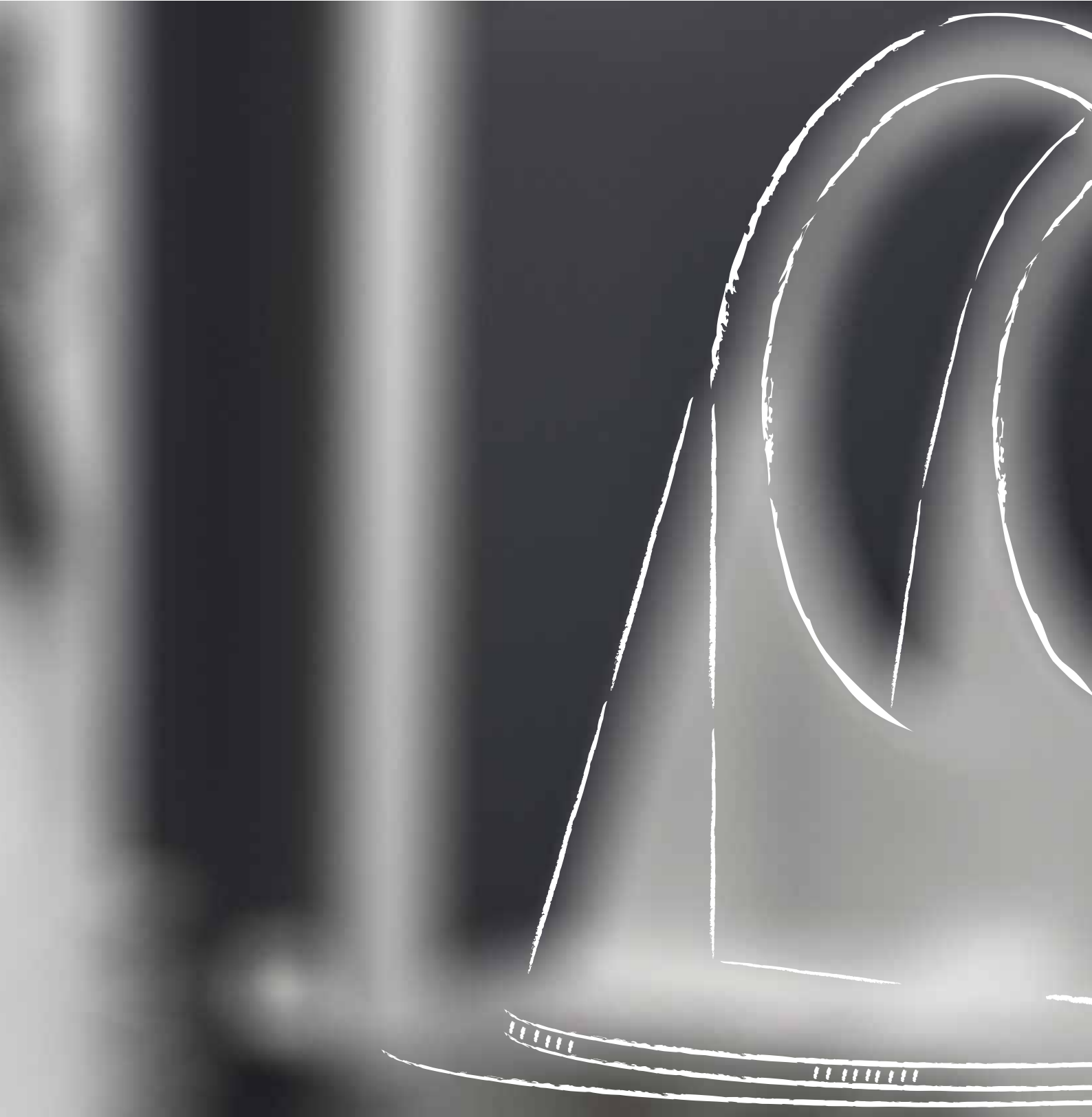
#### MAIN OPTIONS

Coolant through main spindle				
APC Pallet Changer (Rotopallet, pallet pool)				

(\*) t: Turning / m: Milling

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