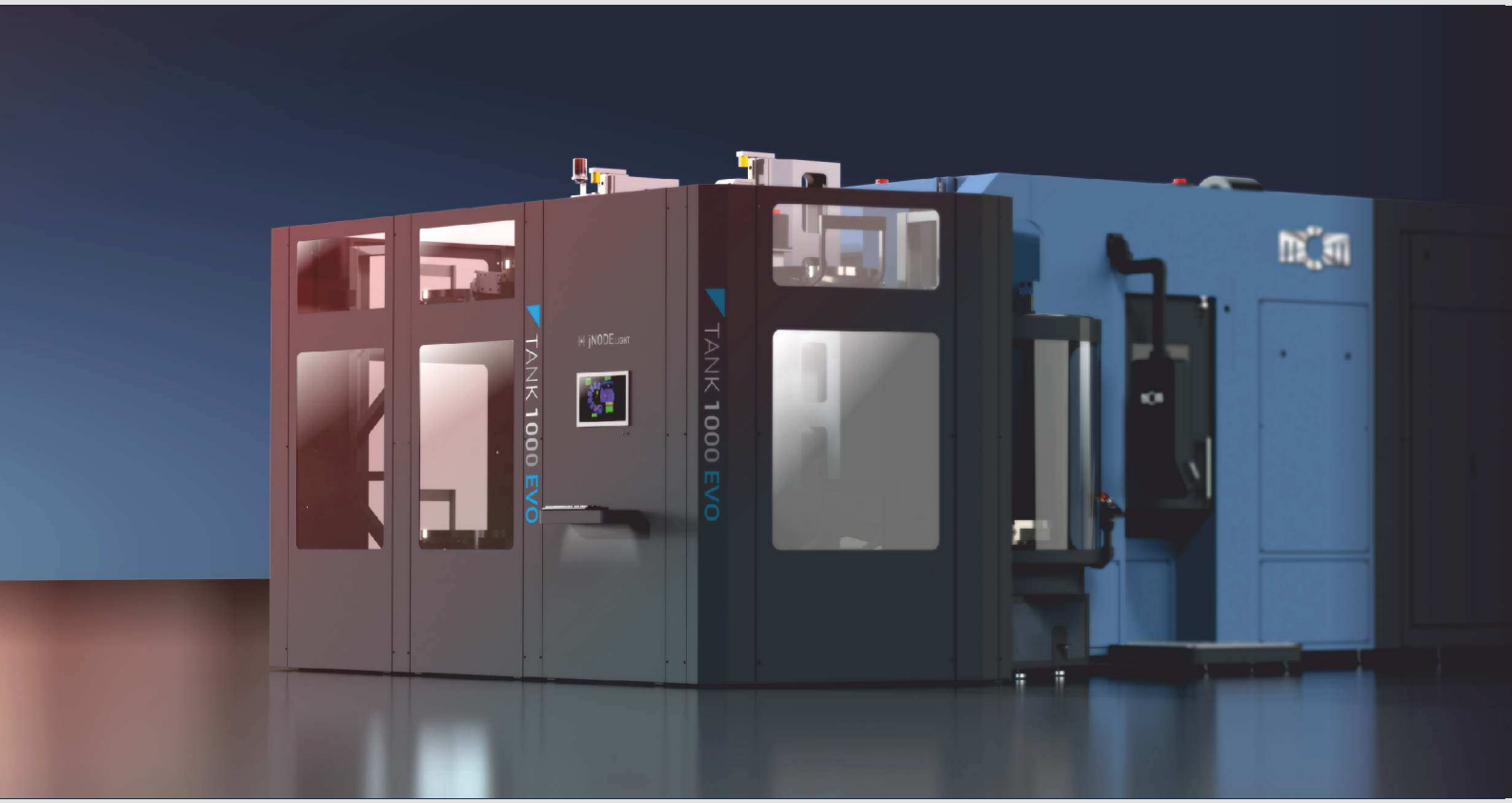
INTEGRATED MANUFACTURING SOLUTIONS

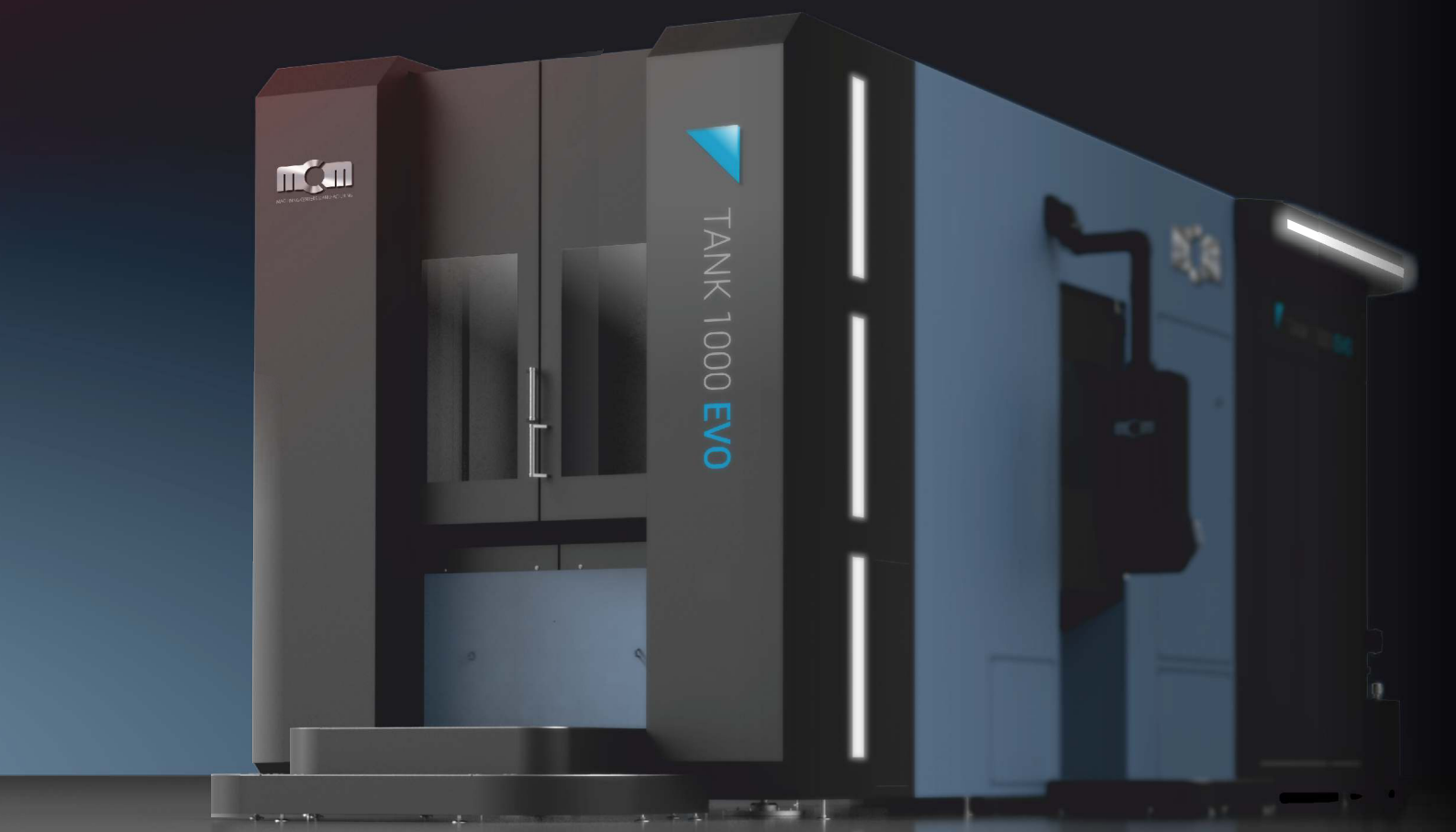
TANK EVO LINE

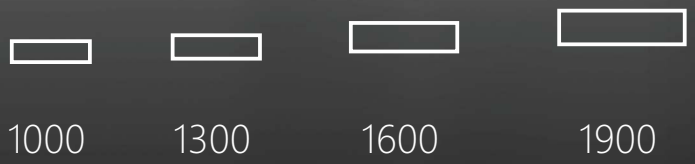
THE NEW STANDARD IN HORIZONTAL MACHINING CENTERS



EN

TANK >> TANK EVO





APPLICATIONS

AEROSPACE

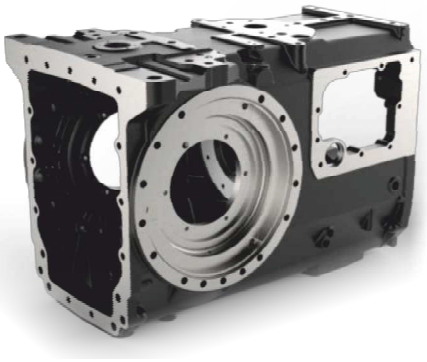
AUTOMOTIVE

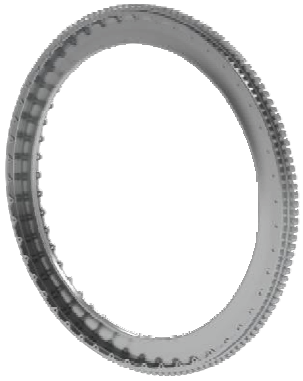
HEAVY EQUIPMENT
AGRICULTURAL
MACHINERY

ENERGY
OIL & GAS

MACHINERY,
TOOLING, DEFENCE

INDUSTRIAL
COMPONENTS

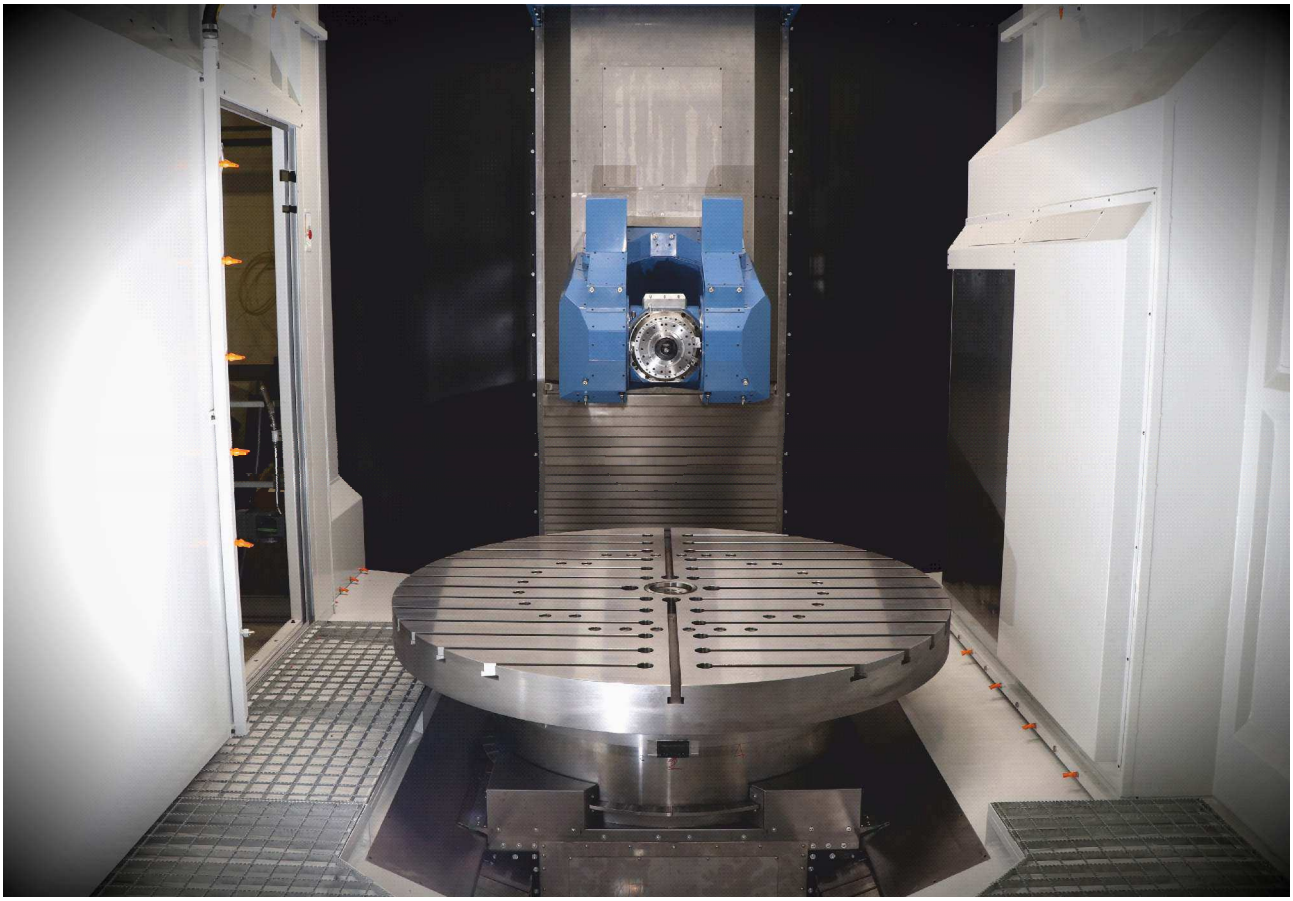


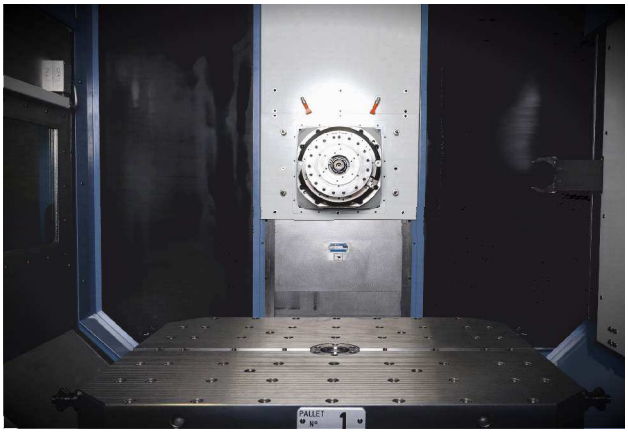


SINGLE/TWIN PALLET

SMART MANUFACTURING GOES COMPACT

The whole TANK EVO family is available starting from single and twin-pallet configurations. Dedicated solutions allow to combine compactness and process flexibility, such as the availability of specific supervision software and the ergonomic design. A wide front and roof opening standard for stand-alone single-pallet configuration and optional for the other versions, allows to load heavy parts directly from a crane or bridge crane.



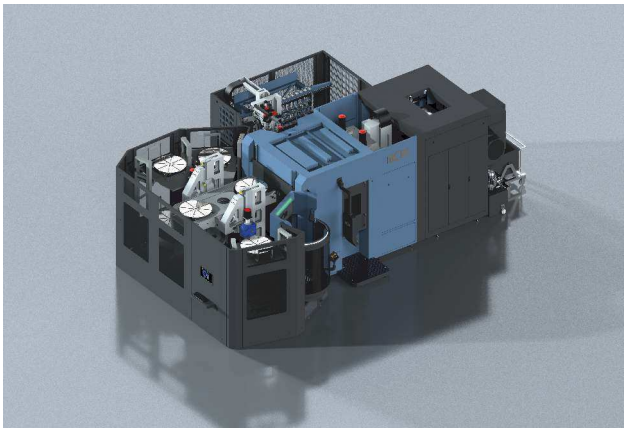


Available in 4 and 5-axis configuration with multitasking functions for turning, grinding and power skiving.

MULTIPALLET

AUTONOMY FIRST

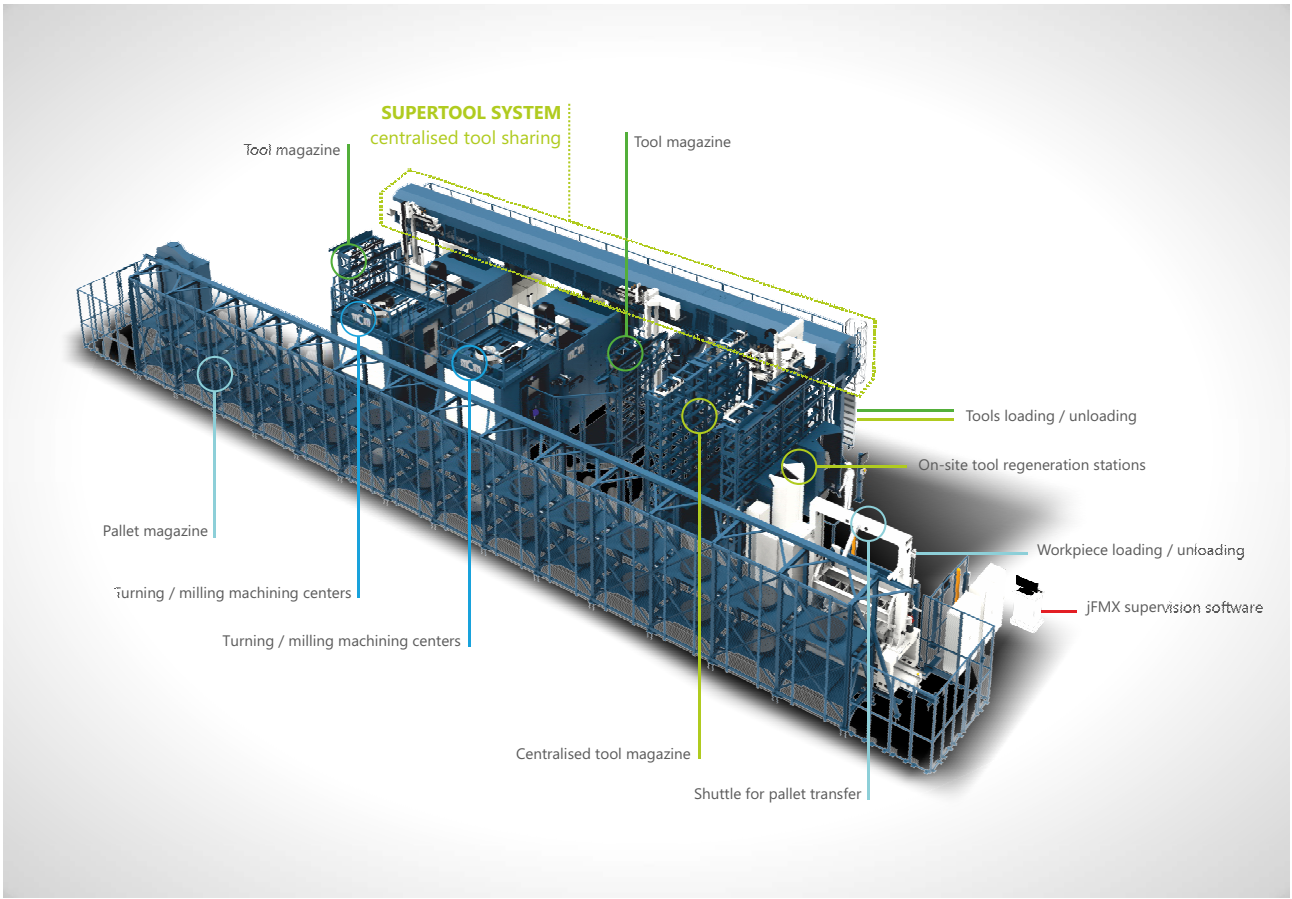
Multipallet solutions are part of MCM DNA, representing the best compromise between flexibility, autonomy and easy-to-use system. Up to 15 pallets can be managed by one machine thanks to jFMX supervision software and an innovative smart design that optimizes the overall dimensions of pallet magazine and operator station.



FMS

FLEXIBLE MANUFACTURING AND SYSTEM INTEGRATION

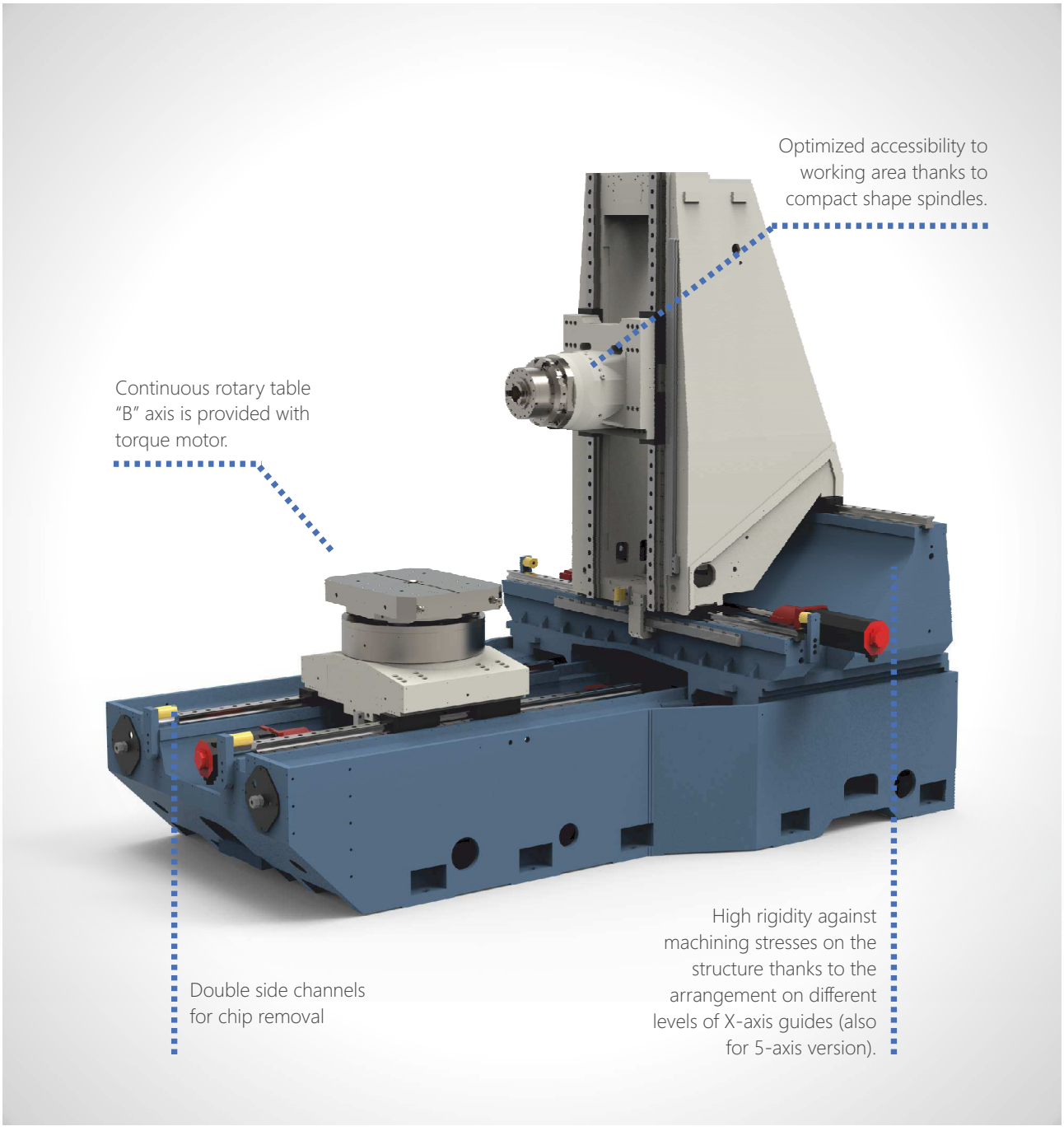
MCM has been building its own FMSs since the early 1980's. Like all MCM machining centers, the TANK EVO line can be integrated into flexible manufacturing systems for the most advanced process applications. Auxiliary technological elements can be integrated into the FMSs with TANK EVO (e.g. CMMs, washing stations, robots, EDMs, storage units), coordinated by jFMX supervision software. In addition, MCM designs advanced tool-sharing technologies (SuperTool®) to provide the maximum level of flexibility.



4-axis _ Tank EVO

Highlights

The TANK EVO family line has been designed to combine flexibility, high dynamics, rigidity and accuracy. The machine features a T-shaped structure with mobile column in transversal direction, table with longitudinal movement and horizontal-axis spindle. The structure is engineered to provide maximum rigidity with constant accuracy in terms of geometry. The axes design ensures guides and screws in optimal position to achieve high dynamic features. The two-level position of the X-axis guides represents the state of the art in terms of stiffness and thrust resistance in heavy duty machining. The table rotation axis (B) is equipped with a measuring system with a large diameter absolute encoder.

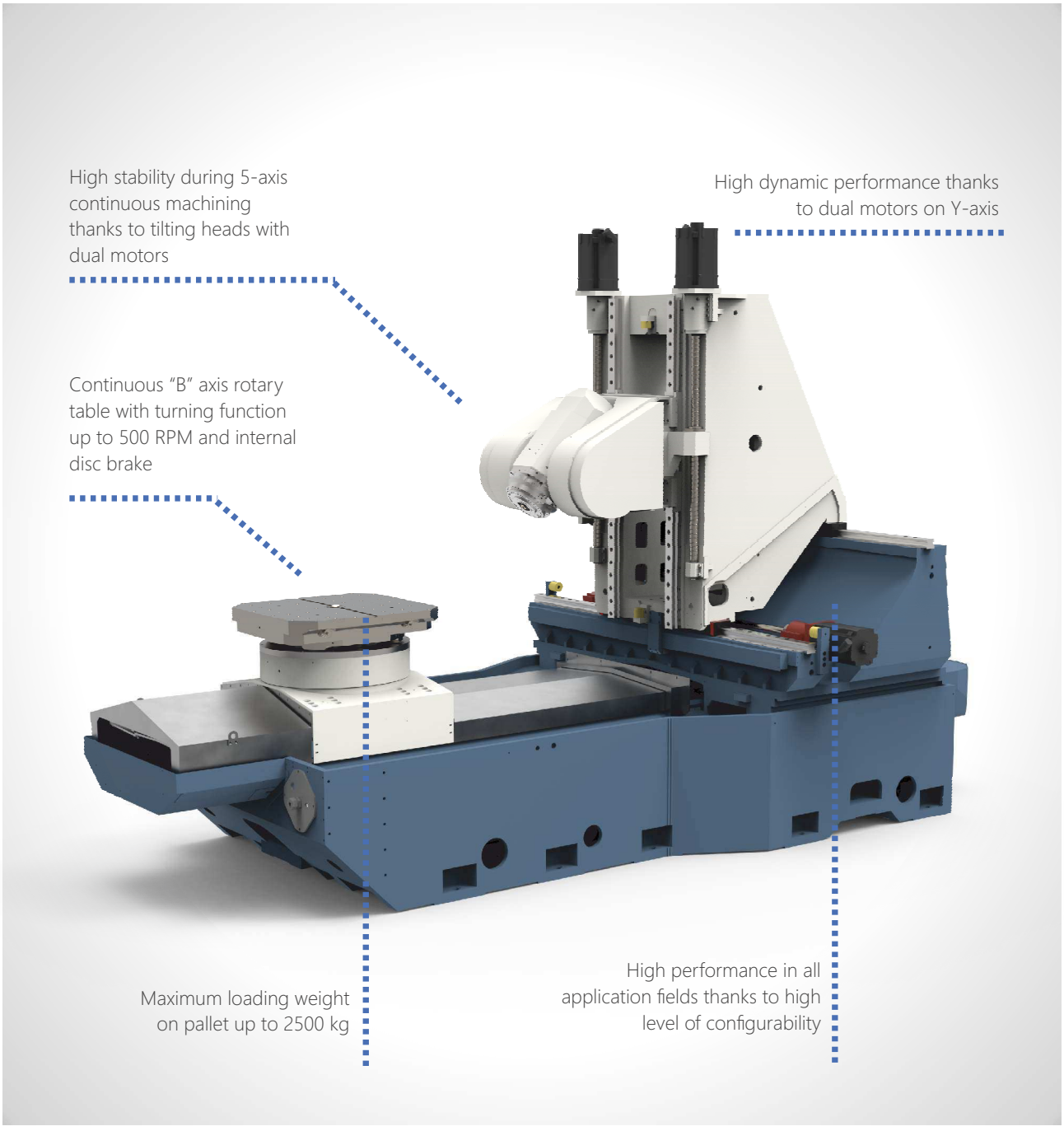


5-axis _ Tank EVO

Highlights

The 5-axis kinematics is obtained through a Tilting Head (A-axis), while B-axis is obtained through table rotation. Head tilting is ensured by a pair of Torque motors integrated into the head frame. In basic configuration, the

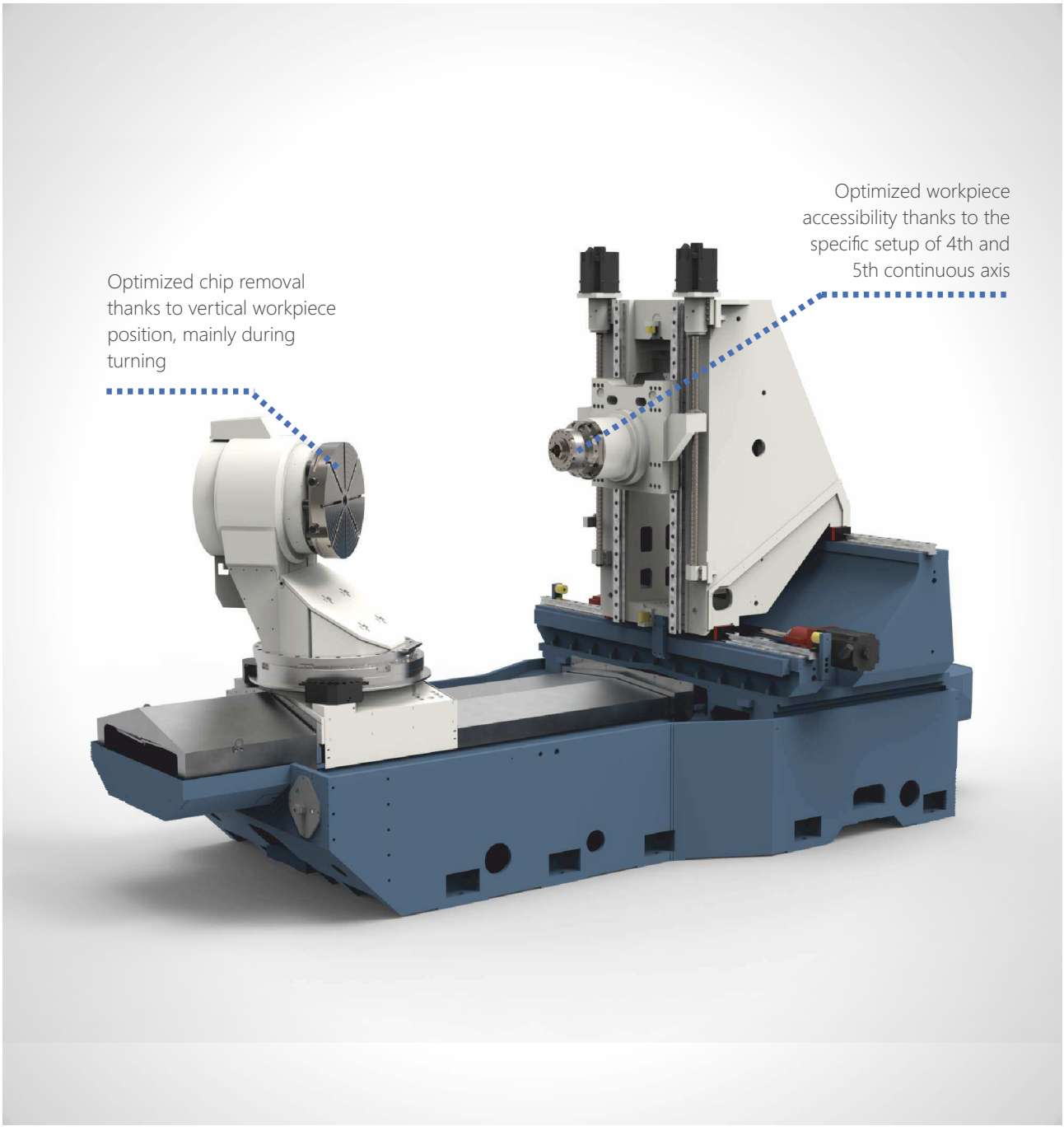
TANK EVO series machines are equipped with direct measuring systems using high-precision optical scales on the linear axes, while all rotary axes are equipped with direct measuring systems through large-sized encoders.



5-Axis _ D-Version Tank EVO

Highlights

The 5-axis kinematics is obtained through the presence of a so-called "divider" that, mounted on the rotary table, is able to place the workpiece+pallet unit with horizontal rotary axis. This solution, particularly suitable for turning operations, allows perfect chips removal. Thanks to one spindle integrated into the "divider" itself, it is possible to achieve turning speed up to 500 RPM. A proper pallet changing system allows to pick up pallets from storage stations horizontally and place them vertically on board the "divider".

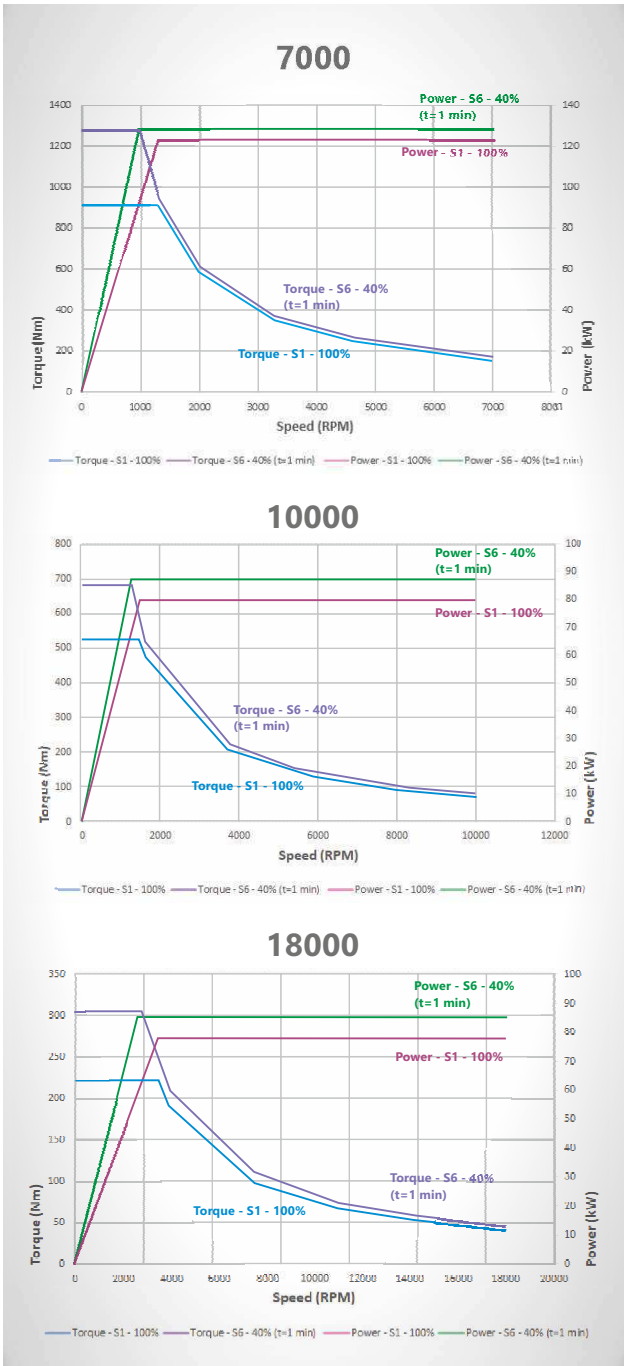


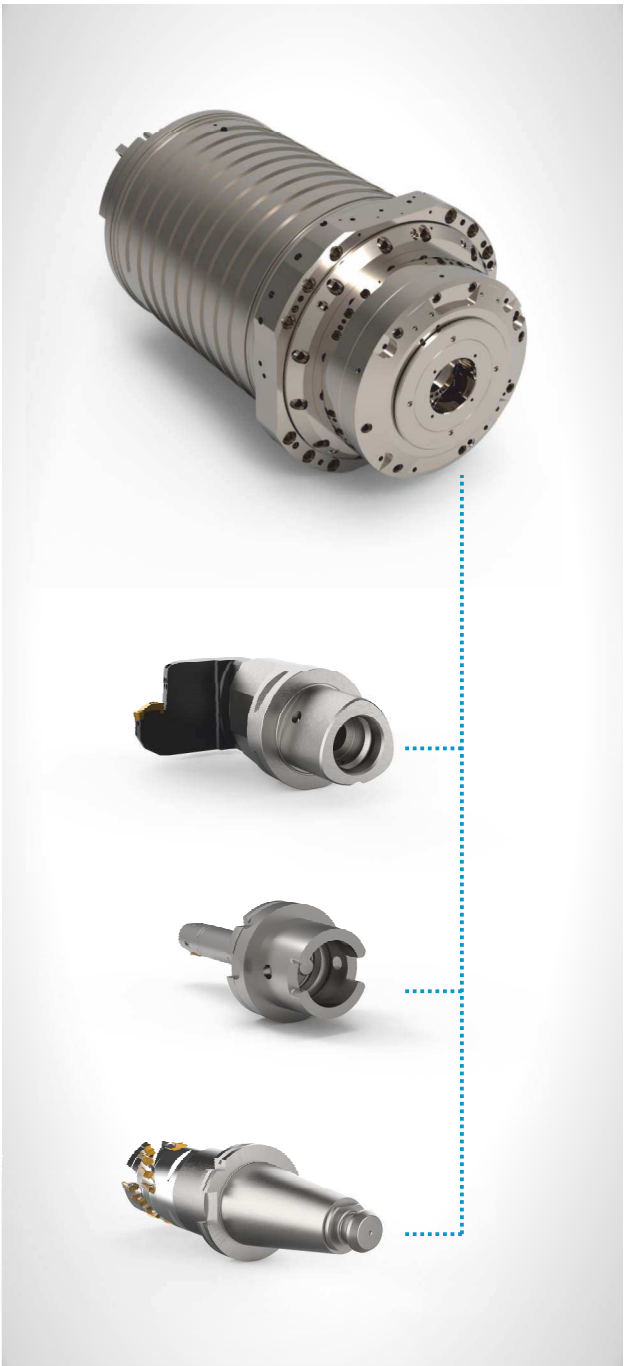
SPINDLES

BUILT TO EXCEL

MCM electro spindles can significantly extend the average lifetime of the machining center compared to other manufacturers. The exclusive MCM design, the high-tech, dedicated building process, the attention to details and proven reliability allow to offer a wide range of spindles specifically designed and manufactured by MCM for TANK EVO model.

All this allow efficiently machining of a wide range of materials, with torques up to 2.000 Nm, powers up to 140 kW and HSK-A, ISO, MAS BT, BIG-PLUS, CAPTO tool-tapers. The spindles designed by MCM feature advanced solutions such as the variable automatic pre-load level on the bearings depending on how demanding the ongoing machining operation is.

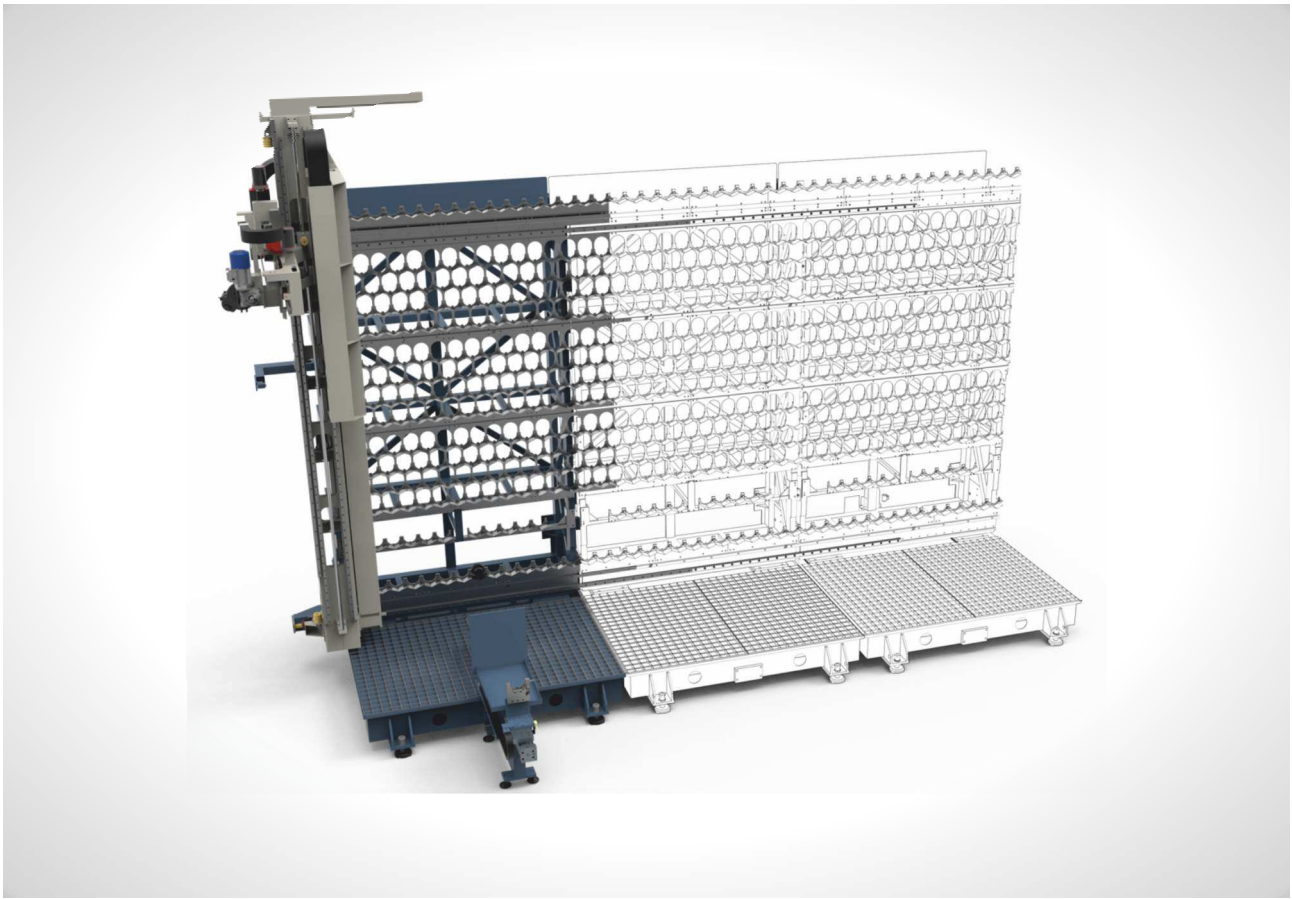




TOOL MANAGEMENT

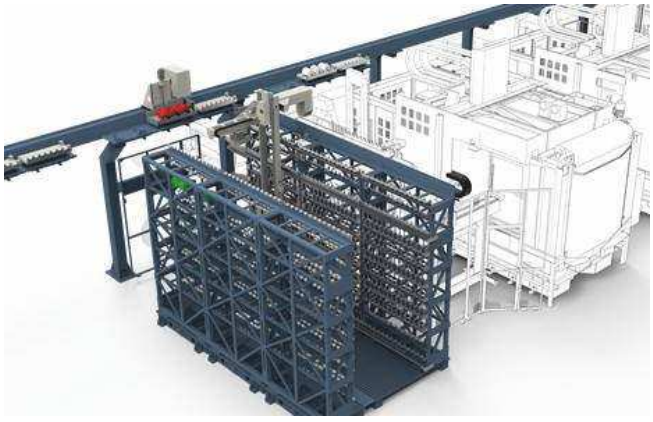
HIGH CAPACITY, CONFIGURABLE, QUICK

The tool-magazine for TANK EVO range maintains the well-established features of flexibility and reliability, improving tool regeneration and the tool-changing time. The tool-magazine orientation can be adapted to specific workshop layout. Tool sharing solutions with one tool magazine between two side-by-side machines are also possible ("mirror" magazine). All MCM tool-magazines are modular, therefore size and capacity can be easily increased even after the first installation, to adapt them to the new needs in case of changes in the production scenarios. The SuperTool® system is available for FMS plants, capable of feeding the tool magazines of single machines through a large, centralized tool room combined with an overhead shuttle.



Modularity

Mirror

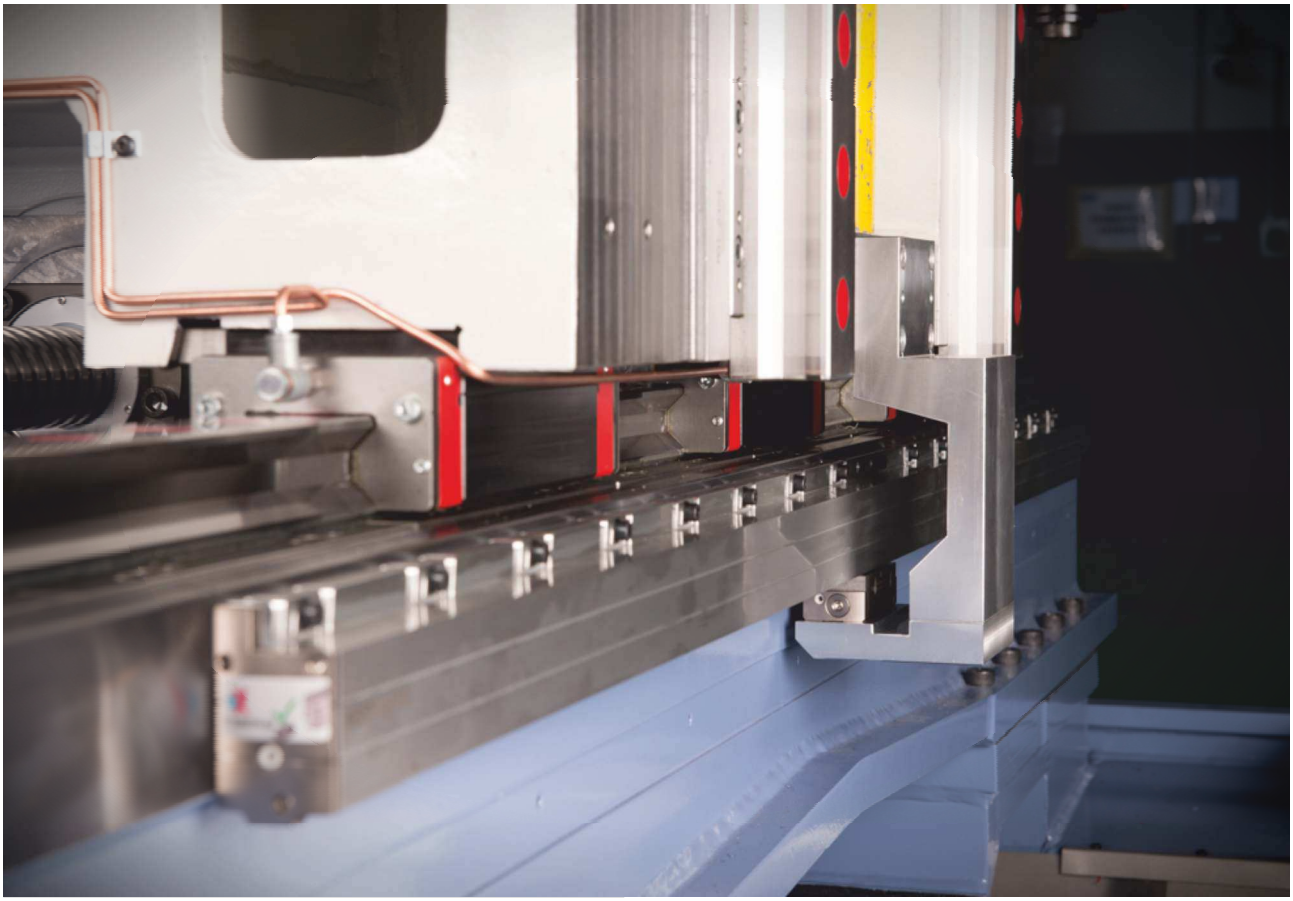


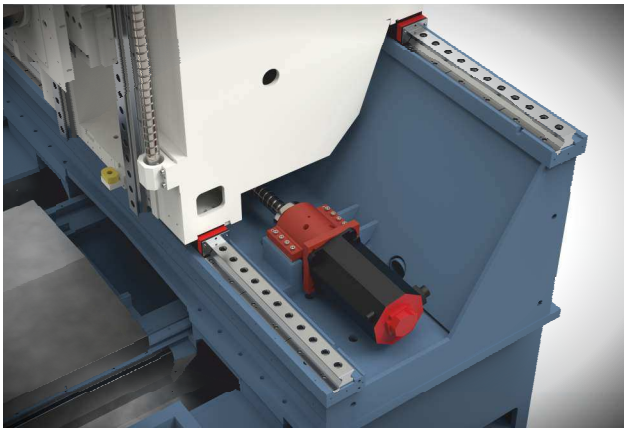
Tool Room

ACCURACY

UNCOMPROMISED

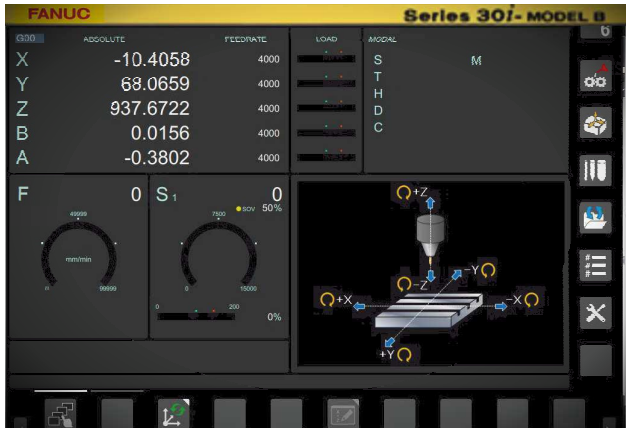
More than 80 hours of manual scraping on the structures, the adoption of absolute pressurized optical scales and large high-resolution absolute encoders, an excellent thermo-symmetrical structure- and a cooling system, designed to avoid disharmonic thermal deformation, and the use of high-quality guides and preloaded screws, are some of the key points that make MCM machines extremely reliable in terms of operational accuracy.





CNC Siemens / Fanuc / Heidenhain

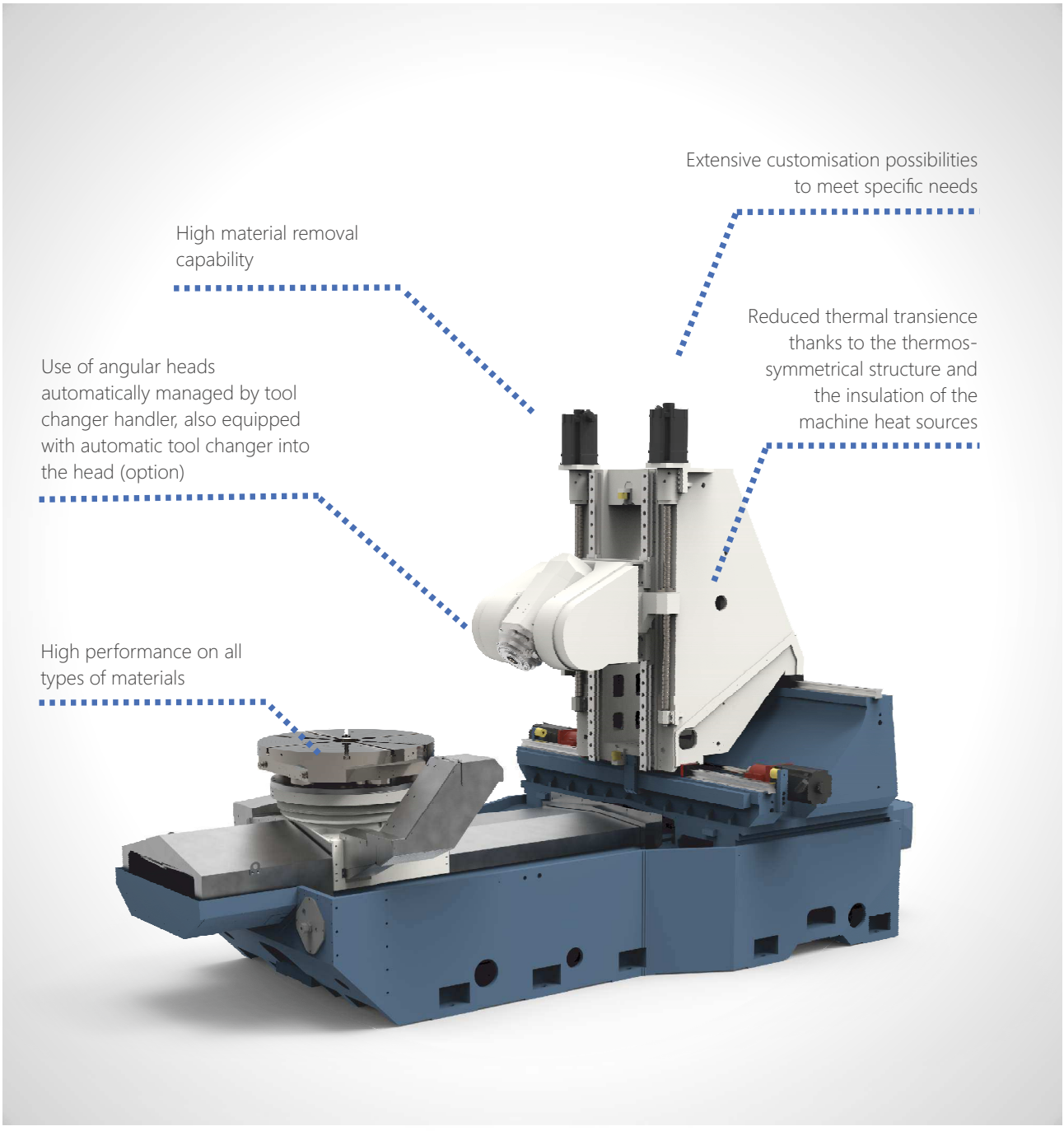
HUMAN-MACHINE INTERACTION GOES SMART



HIGHLIGHTS

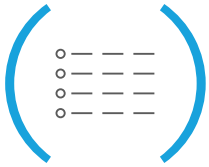
CONTINUOUS IMPROVEMENT

The TANK EVO line consists of machines with high capability to achieve high precision levels while maintaining speeds and dynamics suitable for the most demanding machining operations. The versatility of this model, configurable in 4-axis or 5-axis version with tilting table or vertical divider, has allowed to integrate several multitasking applications that combine milling and turning operations, with excellent results in the machining of strategic and complex components for the Aerospace, Energy, Oil & Gas and General Precision Mechanics sectors.



TECHNICAL DATA

TANK 1000

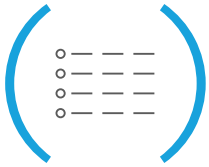


		5-AXIS	Multitasking
Working Area			
X-Axis Stroke	[mm]	1.200	1.200
Y-Axis Stroke	[mm]	1.000	1.000
Z-Axis Stroke	[mm]	1.100	1.100
X/Y/Z Axis Thrust	[kN]	10	10
X/Y/Z Axis Rapid Feed	[m/min]	75	75
Acceleration	[m/s^2]	7	7
Pallet			
Option 1	[mm]	(630 x 630)	Ø 800[3]
Option 2	[mm]	(630 x 800)	-
Option 3[2]	[mm]	-	-
Rotary Table (B-Axis)			
Max. Rotation Speed	[RPM]	100	100 / 800[3]
5th Axis (A-Axis)			
Type		Tilting Head	Tilting Head
Max. Tilting Speed[2]	[RPM]	40	40
Tilting Angle[2]	[degrees]	180 (+80/-100)	180 (+80/-100)
Accuracy			
Linear Axes			
A/M/R as per ISO 230-2	[µm]	4 / 3 / 3	4 / 3 / 3
Circular Axes			
A/M/R as per ISO 230-2	[arcsec]	4 / 2 / 3	4 / 2 / 3
Spindle Unit			
Tool-Taper		HSK-A / ISO / MAS BT / BIG-PLUS	HSK-T / CAPTO
Speed Range	[RPM]	from 14.000 to 18.000	from 14.000 to 18.000
Max. Power (up to)	[kW]	120	120
Max. Torque (up to)	[Nm]	411	411
Tool-Magazine			
Capacity (up to)	[n.]	89 (999+)	89 (999+)
Tool Mass (up to)	[kg]	25	25
Max. Length (up to)	[mm]	500	500
Max. Diameter (up to)[4]	[mm]	320	320
Available Configurations		Single-Pallet / Twin-Pallet / Multi-Pallet / FMS	

Note: [1]available as an option / [2]further options available / [3]available for Multitasking version only, max. turning speed depends on mass of component+fixture
[4] Free contiguous tool places

TECHNICAL DATA

TANK 1300

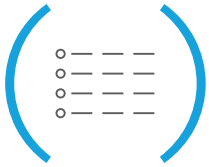


		4-AXIS	5-AXIS	Multitasking	D-Version
Working Area					
X-Axis Stroke	[mm]	1.300	1.300	1.300	1.300
Y-Axis Stroke	[mm]	1.300	1.400	1.400	1.010
Z-Axis Stroke	[mm]	1.300	1.400	1.560	1.000
X/Y/Z Axis Thrust	[kN]	20	20	20	20
X/Y/Z Axis Rapid Feed	[m/min]	50	50	50	50
Acceleration	[m/s²]	5	5	5	5
Pallet					
Option 1	[mm]	630 x 800	630 x 800	Ø 860	Ø 600
Option 2	[mm]	800 x 800	800 x 800	Ø 1.000	Ø 700
Option 3[2]	[mm]	-	-	-	Ø 800
Rotary Table (B-Axis)					
Max. Rotation Speed	[RPM]	40	40	40 / 500[3]	40
5th Axis (A-Axis)					
Type		-	Tilting Head	Tilting Head	Vertical dividing unit
Max. Tilting Speed[2]	[RPM]	-	20	20	60/500[3]
Tilting Angle[2]	[degrees]	-	175 (+80/-95)	175 (+80/-95)	360° continuous
Accuracy					
Linear Axes A/M/R as per ISO 230-2	[µm]	5 / 3 / 4	5 / 3 / 4	5 / 3 / 4	5 / 3 / 4
Circular Axes A/M/R as per ISO 230-2	[arcsec]	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3
Spindle Unit					
Tool-Taper		HSK-A / ISO MAS BT / BIG-PLUS	HSK-A / ISO MAS BT / BIG-PLUS	HSK-T / CAPTO	HSK-A / ISO MAS BT / BIG-PLUS HSK-T[3] / CAPTO[3]
Speed Range	[RPM]	from 6.000 to 30.000	from 6.000 to 30.000	from 6.000 to 18.000	from 6.000 to 30.000
Max. Power (up to)	[kW]	142	128	128	142/128[3]
Max. Torque (up to)	[Nm]	2093	1283	1283	2093/1283[3]
Tool-Magazine					
Capacity (up to)	[n.]	89 (999+)	89 (999+)	89 (999+)	89 (999+)
Tool Mass (up to)	[kg]	35	35	35	35
Max. Length (up to)	[mm]	800	800	800	520
Max. Diameter (up to)[4]	[mm]	325/450	325/450	325/450	230
Available Configurations		Single-Pallet / Twin-Pallet / Multi-Pallet / FMS			

Note: [1]available as an option / [2]further options available / [3]available for Multitasking version only, max. turning speed depends on mass of component+fixture
[4] Free contiguous tool places

TECHNICAL DATA

TANK 1600

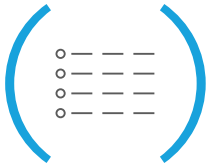


		4-AXIS	5-AXIS	Multitasking
Working Area				
X-Axis Stroke	[mm]	1.600	1.600	1.600
Y-Axis Stroke	[mm]	1.400	1.400 / 1.500	1.400 / 1.500
Z-Axis Stroke	[mm]	1.500	1.600 / 2.000	1.560 / 1.960
X/Y/Z Axis Thrust	[kN]	20	20	20
X/Y/Z Axis Rapid Feed	[m/min]	50	50	50
Acceleration	[m/s^2]	5	5	5
Pallet				
Option 1	[mm]	800 x 1.000	800 x 1.000	Ø 860
Option 2	[mm]	1.000 x 1.000	1.000 x 1.000	Ø 1.000
Option 3[2]	[mm]	-	Ø 1.000 (Ø 1.250)	Ø 1.250 (Ø 1.400)
Rotary Table (B-Axis)				
Max. Rotation Speed	[RPM]	40	40	40 / 500[3]
5th Axis (A-Axis)				
Type		-	Tilting Head	Tilting Head
Max. Tilting Speed[2]	[RPM]	-	20	20
Tilting Angle[2]	[degrees]	-	175 (+80/-95)	175 (+80/-95)
Accuracy				
Linear Axes A/M/R as per ISO 230-2	[µm]	5 / 3 / 4	5 / 3 / 4	5 / 3 / 4
Circular Axes A/M/R as per ISO 230-2	[arcsec]	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3
Spindle Unit				
Tool-Taper		HSK-A / ISO MAS BT / BIG-PLUS	HSK-A / ISO MAS BT / BIG-PLUS	HSK-T / CAPTO
Speed Range	[RPM]	from 6.000 to 30.000	from 6.000 to 30.000	from 6.000 to 18.000
Max. Power (up to)	[kW]	142	128	128
Max. Torque (up to)	[Nm]	2093	1283	1283
Tool-Magazine				
Capacity (up to)	[n.]	89 (999+)	89 (999+)	89 (999+)
Tool Mass (up to)	[kg]	35	35	35
Max. Length (up to)	[mm]	800	800	800
Max. Diameter (up to)[4]	[mm]	325 / 450	325 / 450	325 / 450
Available Configurations		Single-Pallet / Twin-Pallet / Multi-Pallet / FMS		

Note: [1]available as an option / [2]further options available / [3]available for Multitasking version only, max. turning speed depends on mass of component+fixture
[4] Free contiguous tool places

TECHNICAL DATA

TANK 1900



		4-AXIS	5-AXIS	Multitasking
Working Area				
X-Axis Stroke	[mm]	1.900	1.900	1.900
Y-Axis Stroke	[mm]	1.400	1.400	1.400
Z-Axis Stroke	[mm]	1.960	1.960	1.960
X/Y/Z Axis Thrust	[kN]	20	20	20
X/Y/Z Axis Rapid Feed	[m/min]	50	50	50
Acceleration	[m/s²]	5	5	5
Pallet				
Option 1	[mm]	800 x 1.000	800 x 1.000	Ø 1.000
Option 2	[mm]	1.000 x 1.000	1.000 x 1.000	Ø 1.250
Option 3[2]	[mm]	1.250 X 1.250	Ø 1.250	Ø 1.400
Rotary Table (B-Axis)				
Max. Rotation Speed	[RPM]	40	40	40 / 500[3]
5th Axis (A-Axis)				
Type		-	Tilting Head	Tilting Head
Max. Tilting Speed[2]	[RPM]	-	20	15
Tilting Angle[2]	[degrees]	-	175 (+80/-95)	180 (+90/-90)
Accuracy				
Linear Axes A/M/R as per ISO 230-2	[µm]	5 / 3 / 4	5 / 3 / 4	5 / 3 / 4
Circular Axes A/M/R as per ISO 230-2	[arcsec]	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3
Spindle Unit				
Tool-Taper		HSK-A / ISO MAS BT / BIG-PLUS	HSK-A / ISO MAS BT / BIG-PLUS	HSK-T / CAPTO
Speed Range	[RPM]	from 6.000 to 30.000	from 6.000 to 30.000	from 6.000 to 18.000
Max. Power (up to)	[kW]	142	128	128
Max. Torque (up to)	[Nm]	2093	1283	1283
Tool-Magazine				
Capacity (up to)	[n.]	89 (999+)	89 (999+)	89 (999+)
Tool Mass (up to)	[kg]	35	35	35
Max. Length (up to)	[mm]	800	800	800
Max. Diameter (up to)[4]	[mm]	325 / 450	325 / 450	325 / 450
Available Configurations		Single-Pallet / Twin-Pallet / Multi-Pallet / FMS		

Note: [1]available as an option / [2]further options available / [3]available for Multitasking version only, max. turning speed depends on mass of component+fixture
[4] Free contiguous tool places

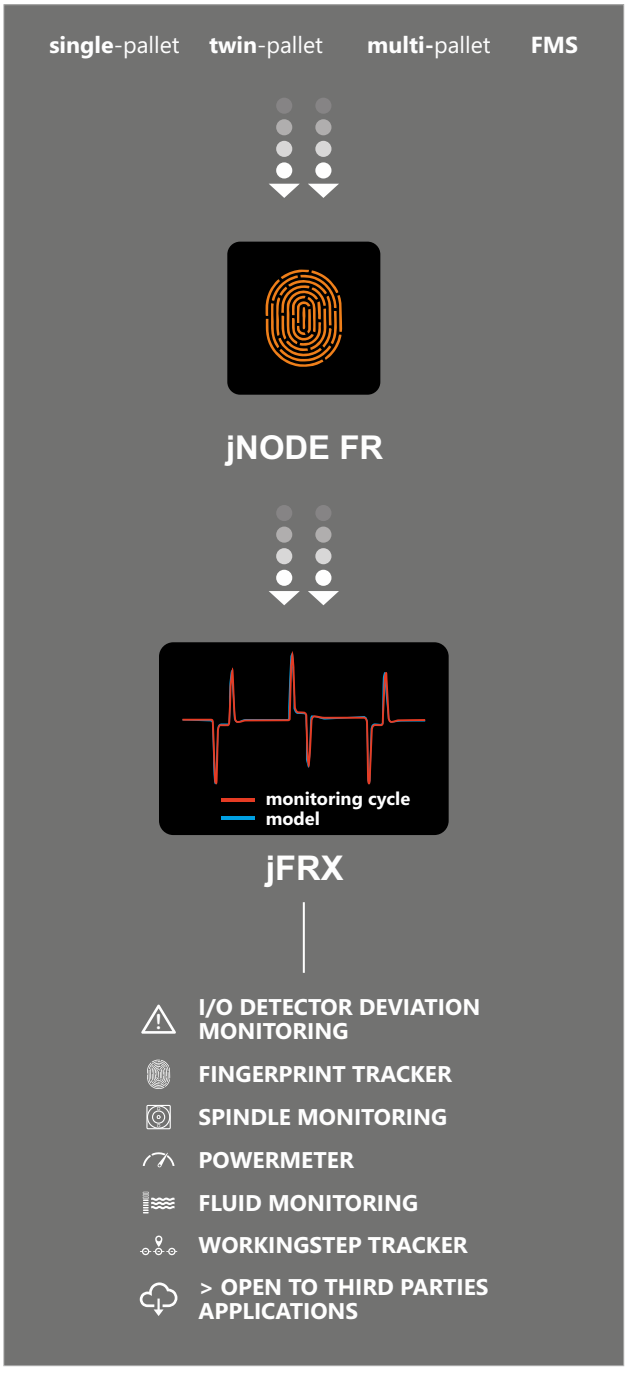
MULTITASKING

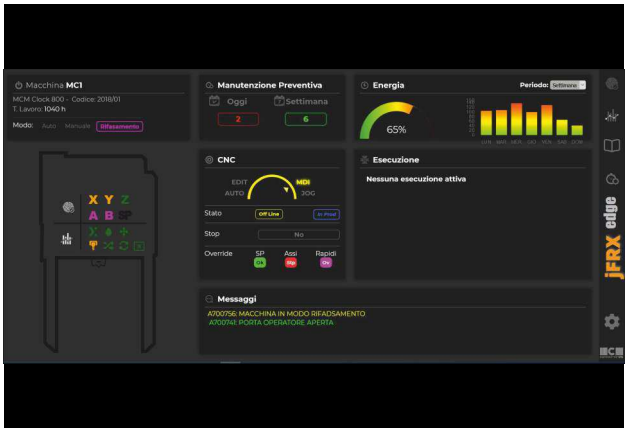
- Milling
- Turning
- Grinding
- Power Skiving

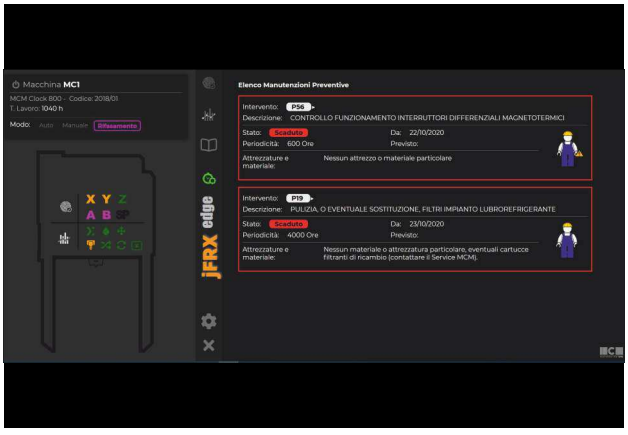
jFRX

PREDICTIVE MAINTENANCE

jFRX is the new software by MCM which enables predictive maintenance. Based on Industry 4.0 principles, jFRX records and analyses a large number of outputs coming from the ongoing process and machine status. Thanks to the comparison of these data between a reference optimal status and the current machine status, it is possible to identify potential functional drift trends, avoiding unexpected failures. Cloud connectivity and MCM remote service enhance the machine reliability and user satisfaction.



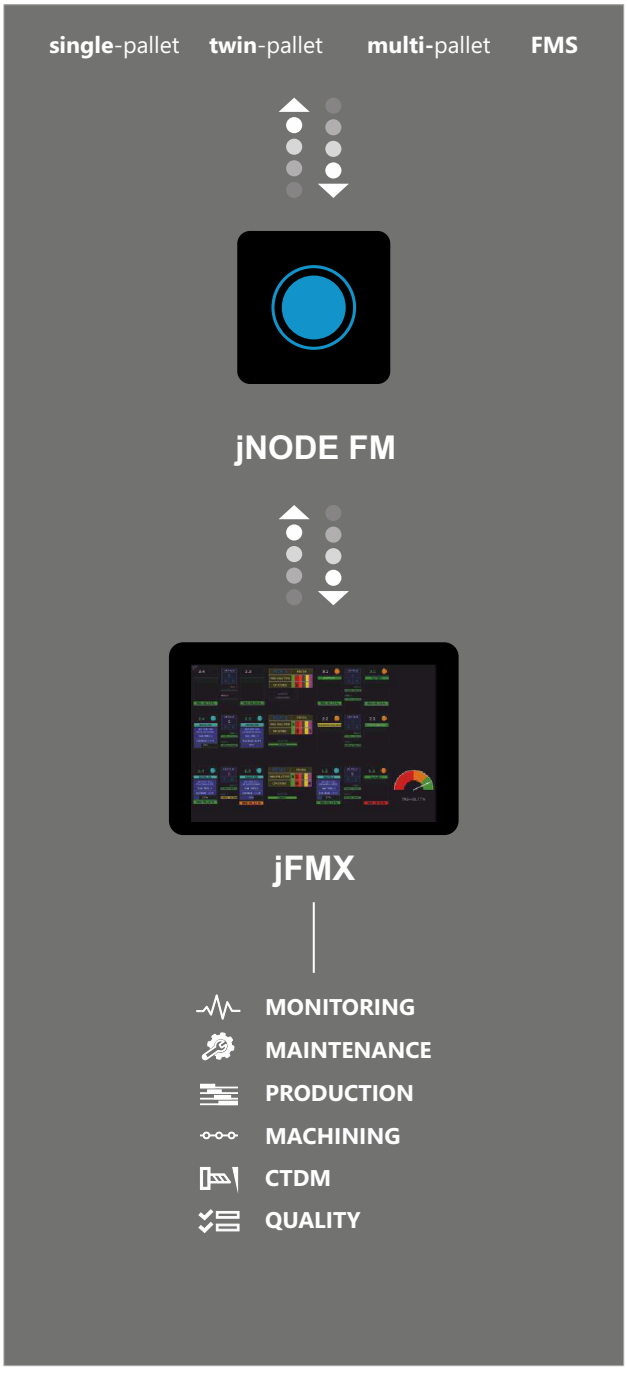


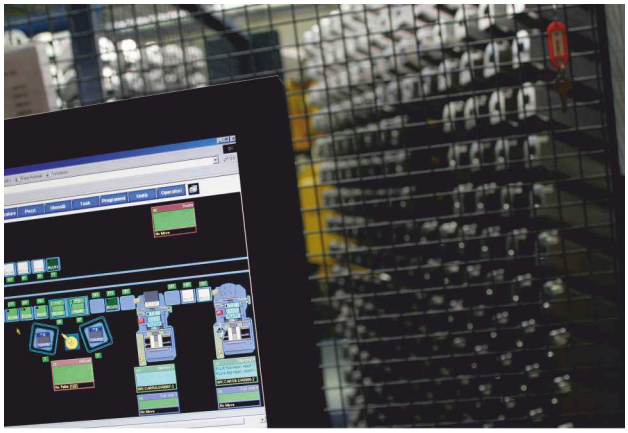


MANUFACTURING SUPERVISION PLATFORM

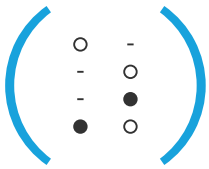
jFMX
SUPERVISION SOFTWARE

jFMX can supervise all the aspects of the ongoing process and of the machine. jFMX architecture can be scaled, making it suitable for a simple single-pallet machine up to a complex FMS. jFMX can manage in an effective way, tools, pallets, workpieces, programs, sequences, priorities, resources, inputs/outputs, etc. Moreover, it can be interfaced with other customer's management software, always ensuring a high level of cybersecurity.

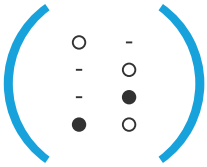




OPTIONS



	TANK 1000 5AX	TANK 1300 4AX - 5AX		TANK 1600 4AX - 5AX		TANK 1900 4AX - 5AX	
STRUCTURE VARIANTS							
B-Axis table with Torque motor	○	○	○	○	○	○	○
Tilting head in milling version with Dual-Torque motor	○	-	○	-	○	-	○
Tilting head in milling and turning version with Dual-Torque motor	○	-	○	-	○	-	○
Grinding function with grinding wheel dressing tool in the work area	○	-	○	-	○	-	○
SPINDLE							
Electrospindle HSK-A100 8.000rpm, 26kw (S1), 605Nm (S1)	○	●	○	●	○	●	○
Electrospindle HSK-A100 10.000rpm, 50kw (S1), 308Nm (S1)	●	○	●	○	●	○	●
Other tool tapers available HSK-A/ HSK-T/ISO/ CAPTO/ MAS BT/ BIG PLUS	○	○	○	○	○	○	○
SPINDLE OPTIONS							
Spindle cooling	●	●	●	●	●	●	●
Spindle axis extension compensation	●	●	●	●	●	●	●
Variable preload bearings	●	●	●	●	●	●	●
Spindle vibration check system (VIBROCONTROL)	○	○	○	○	○	○	○
MCM STOP-BLOCK for angular heads	○	○	○	○	○	○	○
TOOL MAGAZINE							
Side tool magazine 1 module 4 levels: 230 HSK100 tools / 450 HSK63 tools	●	●	●	●	●	●	●
Additional modules and levels up to 1150 HSK100 tools / 2250 HSK63 tools	○	○	○	○	○	○	○
Rear loading/unloading tool station	●	●	●	●	●	●	●
Balluff RFID system-type M	○	○	○	○	○	○	○
Balluff RFID system-type C	○	○	○	○	○	○	○
jTERM 2.0 terminal for tool loading / unloading	○	○	○	○	○	○	○
AUTOMATION							
Pallet exchanger in the machine for twin pallet machines	●	●	●	●	●	●	●
Single-Pallet / FMS machine version	○	○	○	○	○	○	○
Multipallet MP10 with two pallets manipulator – 1 loading/unloading operator station	○	○	○	○	○	○	○
Additional operator loading/unloading station	○	○	○	○	○	○	○
Motorized operator loading/unloading station	○	○	○	○	○	○	○
High-precision (20 µ) motorized operator loading/unloading station	○	○	○	○	○	○	○
CLAMPING SYSTEM (HYDRAULIC/VACUUM)							
Hydraulic connection on rotary table – 2/4 lines	○	○	○	○	○	○	○
Pre-arrangement for vacuum clamping system on the rotary table	○	○	○	○	○	○	○
SYSTEMS							
Chip conveyor with rear outlet and built-in tank	●	●	●	●	●	●	●
Side outlet for chip conveyor	○	○	○	○	○	○	○
Cooling system with 20 bar - 28 l/min pump through the center of the tool	●	●	●	●	●	●	●
Cooling system with 80 bar - 37 l/min pump through the center of the tool	○	○	○	○	○	○	○
Cooling system with 120 bar – 37 l/min pump through the center of the tool and	○	○	○	○	○	○	○
2000 l external tank	○	○	○	○	○	○	○
Filtering system with 40 µ for tool passage- 250 µ for general use	●	●	●	●	●	●	●
Filtering system with <40 µ for tool passage- 250 µ for general use	○	○	○	○	○	○	○
Automatic programmable chip separation system	○	○	○	○	○	○	○



OPTIONS

	TANK 1000 5AX	TANK 1300 4AX - 5AX	TANK 1600 4AX - 5AX	TANK 1900 4AX - 5AX
Tool taper washing/blowing	●	● ●	● ●	● ●
CNC side washing gun	○	○ ○	○ ○	○ ○
Blowing gun	○	○ ○	○ ○	○ ○
Minimal lubrication through the center of the tool	○	○ ○	○ ○	○ ○
PROBES				
Tool integrity control through laser outside automatic tool change area	○	○ ○	○ ○	○ ○
Milling tool laser measuring system in work area	○	- ○	- ○	- ○
Turning tool measurement probe in the work area	○	- ○	- ○	- ○
Workpiece measurement probe controlled by NC through automatic tool change	○	○ ○	○ ○	○ ○
Workpiece temperature control sensor	○	○ ○	○ ○	○ ○
DIGITAL SOLUTIONS				
jNODE-Light complete with jFMX Supervisor System (standard for Multi-Pallet versions)	○	○ ○	○ ○	○ ○
jNODE 2.0 complete with jFMX Supervisor System	○	○ ○	○ ○	○ ○
jNODE FR complete with jFRX MONITORING	●	● ●	● ●	● ●
jFRX ADVANCED MONITORING	○	○ ○	○ ○	○ ○
jFRX PREDICTIVE MAINTENANCE	○	○ ○	○ ○	○ ○
jFRX FLUID MONITORING with sensors	○	○ ○	○ ○	○ ○
MCM Tool Monitor	●	● ●	● ●	● ●
Auto Power off	○	○ ○	○ ○	○ ○
Standby Mode	○	○ ○	○ ○	○ ○
Advanced Standby Mode	○	○ ○	○ ○	○ ○
Machine Preheating Cycle	○	○ ○	○ ○	○ ○
Work area camera	○	○ ○	○ ○	○ ○
Work area 3D model	○	○ ○	○ ○	○ ○
3D PROGRAMMING SYSTEMS				
CNC FANUC iSeries 31-iB5	●	● ●	● ●	● ●
CNC Siemens 840D Solution Line	○	○ ○	○ ○	○ ○

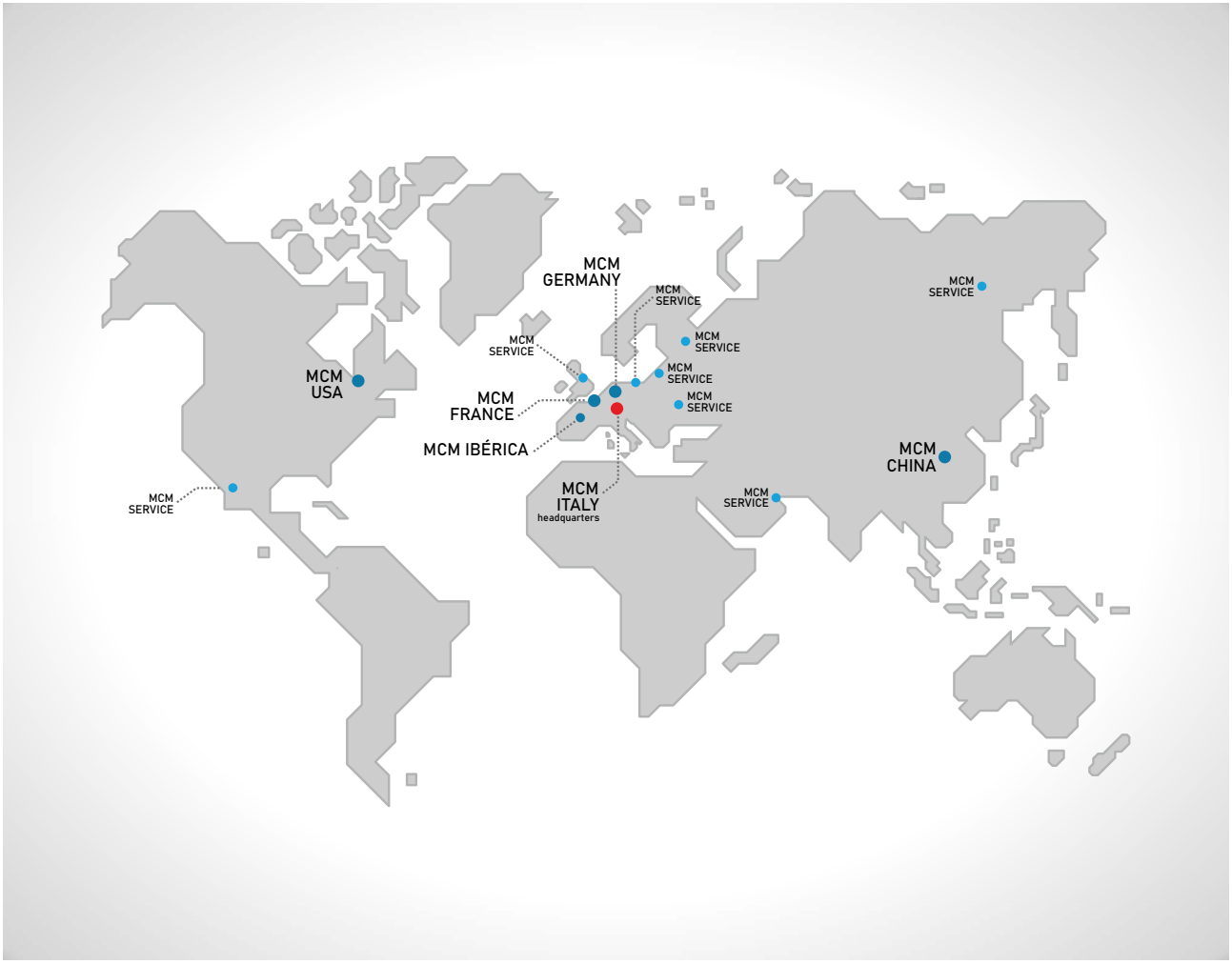
● Basic ○ Optional - unavailable

SERVICE, SPARE PARTS & UPGRADE

Headquartered in Italy, MCM operates all over the world with service subsidiaries located in France, Germany, Spain, USA, China and a constantly growing network of local partners. A global network ensuring sharing of technical documents, information and experiences, allowing the real effectiveness of an integrated service.

An efficient service and a global presence

MCM worldwide subsidiaries and partners are available to support and serve all the reference markets, offering a direct after-sales support. All the services are conceived around the idea that the true value of the manufacturing systems is based on their full availability and efficiency during the entire life-cycle. Teams of qualified engineers can perform a quick and effective troubleshooting using a wide range of operating tools: remote diagnostics, preventive and extraordinary maintenance, system efficiency inspections and full availability of spare parts. MCM offers complete and tailored training courses that significantly enhance productivity of the installed machines.



HEADQUARTER

MCM SpA

MCM SpA - Machining Centers Manufacturing
Via Celaschi,19 | 29020 Vigolzone | Piacenza | ITALY
+39 0523 879811
info@mcm-group.com
service.italy@mcm-group.com

SUBSIDIARIES

MCM FRANCE

MCM France S.A.S.U.
4, Rue du Parc des Vergers | F-91250 Tigery
+33 1 69 21 21 00
service.france@mcm-group.com

MCM GERMANY

MCM Vertriebs GmbH Deutschland
Bürgermeister-Wegele-Straße 12 | D-86167 Augsburg
Service +49 821 4501 6750
Vertrieb +49 821 4501 6751
service.germany@mcm-group.com

MCM IBÉRICA

MCM Spain & Portugal
C. de Julian Camarillo 10 | E-28037 Madrid
+34 91 368 11 90
service.iberica@mcm-group.com

MCM USA

MCM U.S.A. Inc.
215 Fifth Avenue | Chardon, OH 44024
+1 440 286 2148
service.usa@mcm-group.com

MCM CHINA

ZHEJIANG MAXIMU PRECISION MACHINE TOOL CO.,LTD.
Building 1, No. 3 | Rifa Digital Technology Park | Qixing Street
Xinchang County | Shaoxing City | Zhejiang Province
service.china@mcm-group.com

www.mcm-group.com

MCM TANK EVO _ EN R03 _ 07/2023

_ MACHINING CENTERS
_ FLEXIBLE AUTOMATION
_ SYSTEM INTEGRATION
_ SUPERVISING SOFTWARE
_ MANUFACTURING TECHNOLOGY
_ SERVICE

MCM Spa - Machining Centers Manufacturing
Via Celaschi,19 | 29020 Vigolzone | Piacenza | ITALY
+39 0523 879811
info@mcm-group.com | service.italy@mcm-group.com
www.mcm-group.com

graph. mumbledesign.com