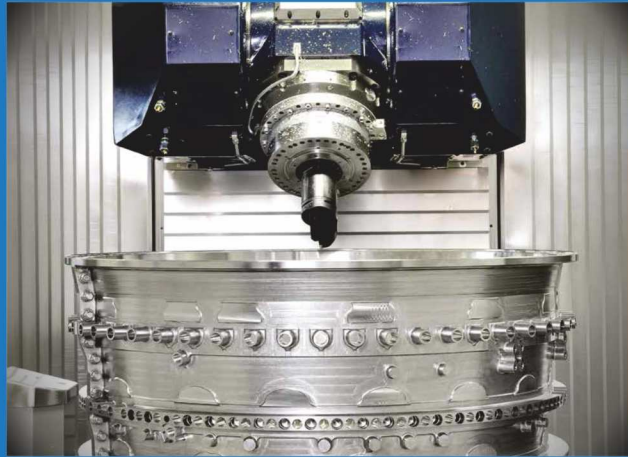
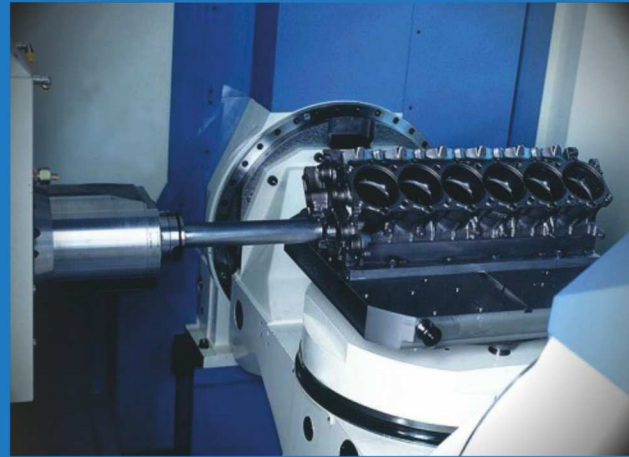


MCM FIELDS OF APPLICATION

AEROSPACE



AUTOMOTIVE



HEAVY EQUIPMENT AGRICULTURAL MACHINERY



ENERGY, OIL & GAS



MACHINERY, TOOLING, DEFENCE



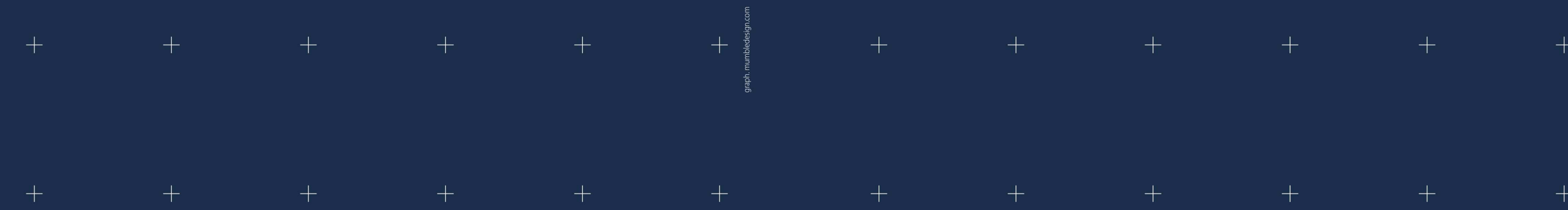
INDUSTRIAL COMPONENTS



INTEGRATED MANUFACTURING SOLUTIONS



INTEGRATED MANUFACTURING SOLUTIONS



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#evolvingtogether

SERVICE

Headquartered in Italy, MCM operates all over the world with service subsidiaries located in France, Germany, USA, China and a constantly growing network of local partners. The MCM network provides and guarantees a global and

efficient assistance service. Specialised teams of engineers present alongside customers and de-centralised spare parts stocks, strengthen the company mission to service its customers anywhere and at any time.

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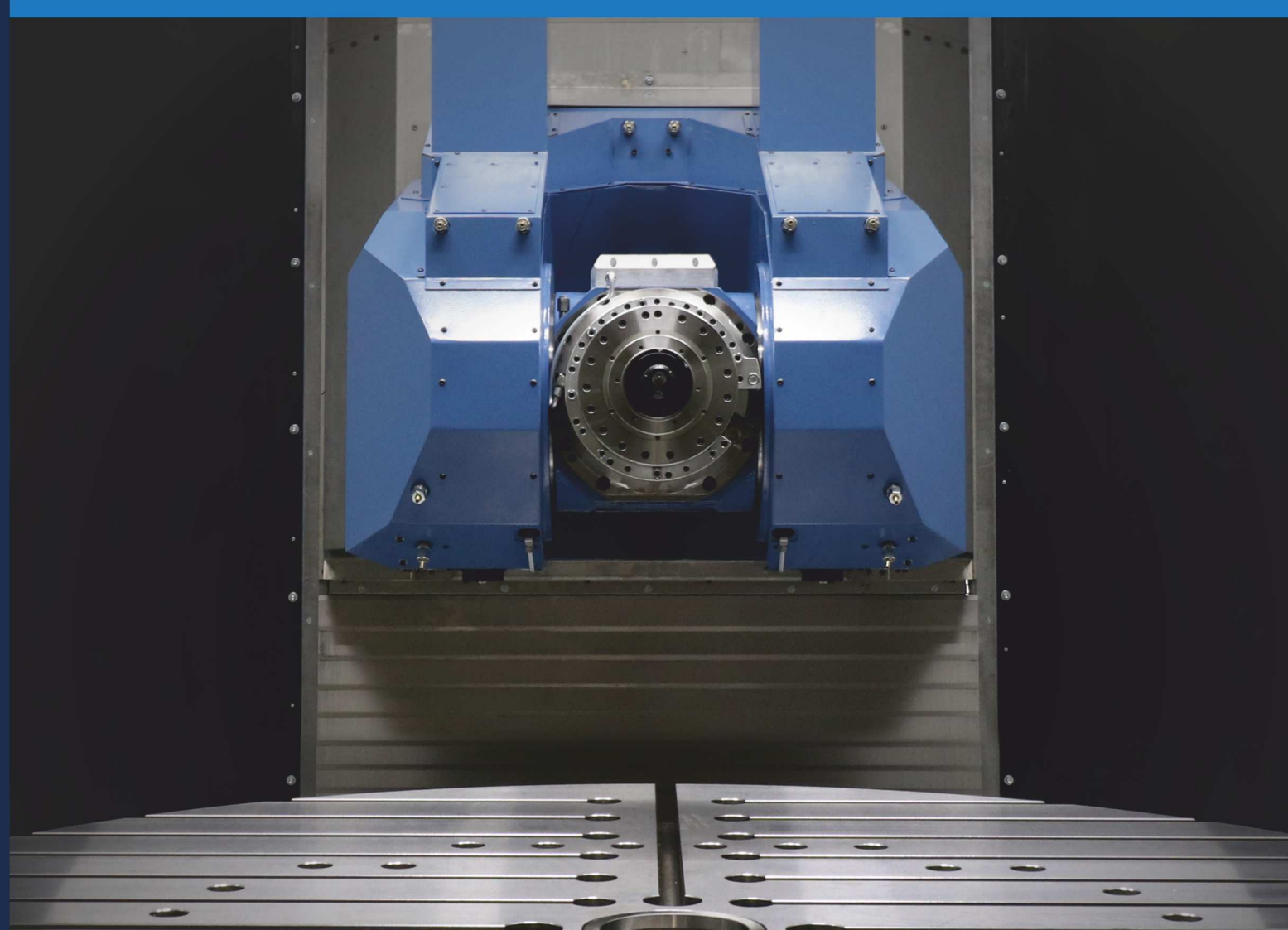
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COMPANY PROFILE / MISSION

MCM designs and manufactures high-performance horizontal machining centers, flexible manufacturing systems and customised solutions for the main sectors of precision mechanics (aerospace, automotive, energy, oil & gas, industrial components). Three production sites located in the area of Piacenza, subsidiaries in France, Germany, USA and China and operating partnerships in Spain, Russia, UK, Poland, Czech Republic and Middle East confirm the image of solid international company that MCM created throughout its long history.

MCM machining centers are available in single-, twin- and multi-pallet version or connected one to each other in FMS. The Software Solutions provided by MCE, the IT Division of MCM, are crucial and exclusive tools for production management. The professional skills and the overall know-how of the MCM people are the main added value of the company. "Evolving together" is the motto that MCM follows and shares with customers, stakeholders and suppliers.

MCM machines guarantee maximum performance in terms of precision, productivity and reliability. Three lines of horizontal machining centers: Clock, Tank and Jet Five, covering machining volumes up to 12 meters and configurable in 4 or 5 axes with milling, turning and grinding capacity.

It is a common statement to define MCM as the right partner for all the customer needs: from the study of the production process to the technological solution including turnkey project and industrialisation, up to the after sales services all over the world.

INTEGRATED PRODUCTION PROGRAM

MACHINING CENTERS

A high performance complete line of horizontal machining centers



FLEXIBLE AUTOMATION

Systems and solutions for FMS and manufacturing lines automation



SYSTEM INTEGRATION

A single partner to integrate machines and machining accessory technologies



SOFTWARE SOLUTIONS

jFMX, the exclusive MCM supervision software and the jFRX platform represent the state of the art of the system information, monitoring and control solution



MANUFACTURING TECHNOLOGY

MCM supports the customers in design and development of manufacturing processes



SERVICE

MCM provides an extensive technical service network through its branches and local partners in Europe, USA and Far East, centrally coordinated by the parent company

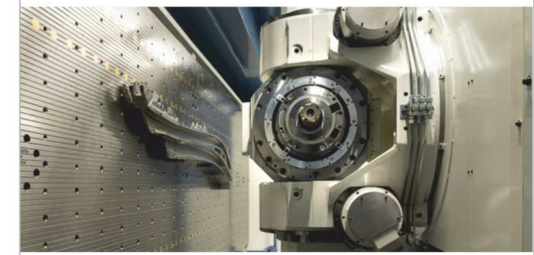


INTEGRATED PRODUCTION PROGRAM

MACHINING CENTERS



		CLOCK 800 EVO	CLOCK 1000 EVO	CLOCK 1200 EVO	TANK 1300	TANK 1600	TANK 1900	TANK.G 1600	TANK.G 2000	TANK.G 2600	TANK.G 3000	JET FIVE
Process Technology		Milling / Turning ¹ / Grinding ¹			Milling / Turning ¹ / Grinding ¹			Milling / Turning ¹ / Grinding ¹			Highlights	
X-Axis Stroke [mm]		800	1.000	1.200	1.300	1.600	1.900	1.600	2.000	2.600	3.000	from 3.000 to 12.000
Y-Axis Stroke [mm]		800	1.000	1.000	1.400	1.400	1.400	1.500	1.800	2.000	2.500	from 1.500 to 2.500
Z-Axis Stroke [mm]		800	1.000	1.000	1.400	1.600	1.960	2.000	2.000	2.500	2.500	from 600 to 3.000
X/Y/Z-Axis Thrust [kN]		8	10	12	20	20	20	20	30	30	30	40
X/Y/Z-Axis Rapid Feed [m/min]		75	75	75	50	50	50	50	45	40	40 / 40 / 32	40 / 70 (linear motors)
Pallet	Option 1 [mm]	500 x 500	630 x 630	630 x 630	630 x 800	800 x 1.000	1.000 x 1.000	1.000 x 1.000	1.000 x 1.000	1.000 x 1.250	1.250 x 1.600	1.600 x 2.000
	Option 2 [mm]	500 x 630	630 x 800	630 x 800	800 x 800	1.000 x 1.000	1.250 x 1.250	1.250 x 1.250	1.250 x 1.250	1.250 x 1.250	1.600 x 1.600	3.000 x 2.000
	Option 3 ² [mm]	Ø 630	Ø 800	Ø 800	Ø 860 / Ø 1.000	Ø 1.000 / Ø 1.250	Ø 1.250 / Ø 1.400	Ø 1.000 / Ø 1.250	Ø 1.000 / Ø 1.250	Ø 1.250 / Ø 1.400	-	6.000 x 2.000
Rotary Table (B-axis)	Max. Rotation Speed [RPM]	100 / 1.200 ³	100 / 800 ³	100 / 800 ³	20 / 40 ¹ / 500 ³	20 / 40 ¹ / 500 ³	20 / 40 ¹ / 500 ³	20 / 400 ³	20 / 200 ³	20 / 200 ³	8 / 15 ¹	Bi-Rotary Head
	Type	Tilting Table	Tilting Table	Tilting Table	Tilting Head	Tilting Head	Tilting Head	Tilting Head	Tilting Head	Tilting Head	Tilting Head	12
5th Axis (A-axis)	Max. Tilting Speed [RPM]	40	40	40	20 / 40 ¹	20 / 40 ¹	20 / 40 ¹	20 / 35 ¹ / 40 ¹	20 / 35 ¹ / 40 ¹	20 / 35 ¹ / 40 ¹	20 / 40 ¹	±110 (A) ±360 (C)
	Tilting Angle [degrees]	140 (+35/-105)	145 (+25/-120)	145 (+25/-120)	175 (+80/-95)	175 (+80/-95)	175 (+80/-95)	175 (+80/-95)	175 (+80/-95)	175 (+80/-95)	175 (+80/-95)	5 / 3 / 4
Accuracy	Linear Axes A/M/R as per ISO 230-2 [µm]	4 / 2 / 3	4 / 3 / 3	4 / 3 / 3	5 / 3 / 4	5 / 3 / 4	5 / 3 / 4	5 / 3 / 4	5 / 3 / 4	5 / 3 / 4	5 / 3 / 4	4 / 2 / 3
	Circular Axes A/M/R as per ISO 230-2 [arcsec]	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3	4 / 2 / 3
Spindle Unit	Tool-Taper	HSK / ISO / CAPTO	HSK / ISO / CAPTO	HSK / ISO / CAPTO	HSK / ISO / CAPTO	HSK / ISO / CAPTO	HSK / ISO / CAPTO	HSK / ISO / CAPTO	HSK / ISO / CAPTO	HSK / ISO / CAPTO	HSK / ISO / CAPTO	HSK-B160 / HSK-A125 / HSK-A63
	Speed Range [RPM]	from 10.000 to 30.000	from 8.000 to 30.000	from 8.000 to 30.000	from 6.000 to 30.000	from 6.000 to 30.000	from 6.000 to 30.000	from 6.000 to 30.000	from 6.000 to 30.000	from 6.000 to 30.000	from 6.000 to 30.000	from 4.000 to 30.000
	Max. Power (up to) [kW]	120	120	120	115	115	115	115	115	115	115	up to 120
	Max. Torque (up to) [Nm]	320	541	541	1.300	1.300	1.300	1.300	1.300	1.300	1.300	up to 10.000
	Capacity (up to) ¹ [No.]	80 - 500	80 - 500	80 - 500	80 - 999	80 - 999	80 - 999	80 - 999	80 - 999	80 - 999	80 - 999	199 - 450
Tool-Magazine	Tool Mass (up to) [kg]	25	25	25	35	35	35	35	35	35	35	
	Max. Length (up to) [mm]	500	600	600	600	600	600	700	700	700	700	
	Max. Diameter (up to) ⁴ [mm]	300	320	320	325	325	325	325	325	325	325	
Machine Data	Indicative Footprint Area [m ²]	20 ⁵	23 ⁵	33 ⁵	74 ⁵	95 ⁵	115 ⁵	104 ⁵	115 ⁵	124 ⁵	171 ⁵	
	Indicative Weight [kg]	14.500 ⁵	24.000 ⁵	29.500 ⁵	42.000 ⁵	45.500 ⁵	50.000 ⁵	48.000 ⁵	52.000 ⁵	55.500 ⁵	59.000 ⁵	
Available Configurations		Single-Pallet / Twin-Pallet / Multi-Pallet / FMS			Single-Pallet / Twin-Pallet / Multi-Pallet / FMS			Single-Pallet / Twin-Pallet / Multi-Pallet / FMS				



Machining of large components | Excellent material removal capabilities | Open configuration to better match customer needs | High Dynamic Machining version with Linear Motors for axes motion | High Rigidity and Stiffness version with Ball Screws system for axes motion | Twin-pallet, Multi-pallet, FMS configurations | Wide range of options for customisation.

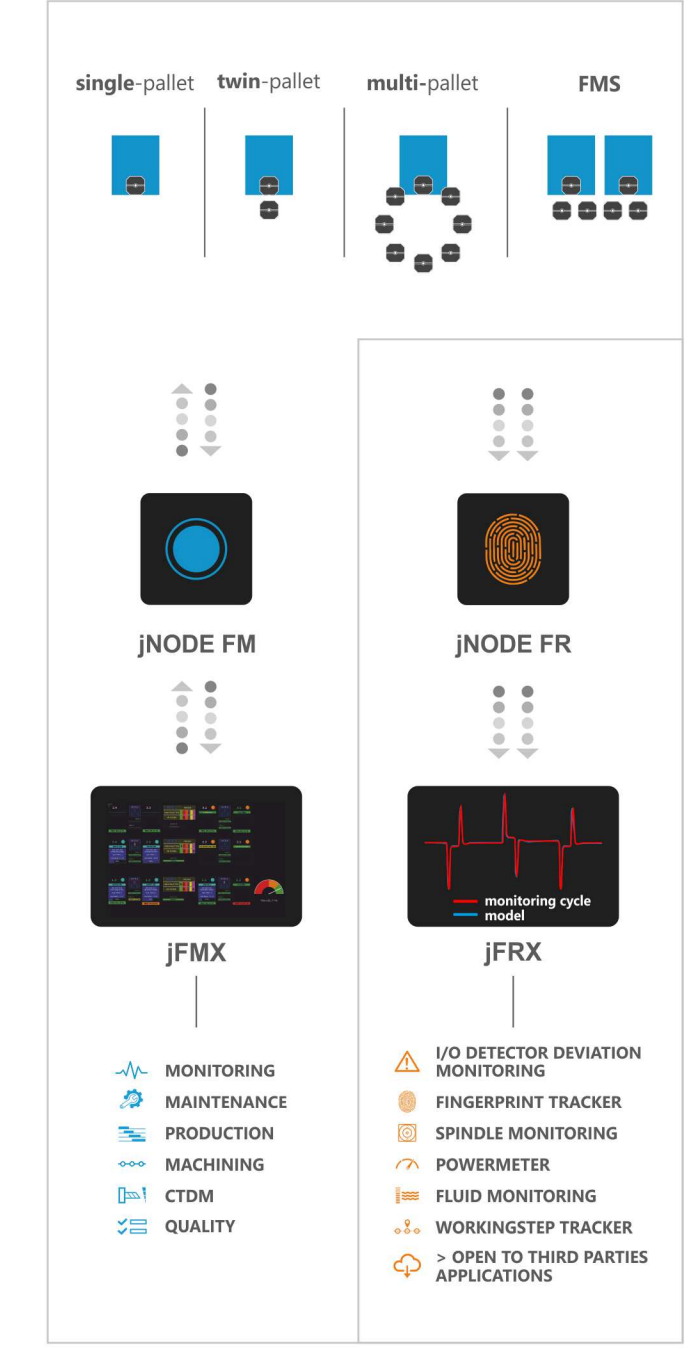
Notes - The data reported in this table are referred to a 5-axis machining center in twin-pallet configuration
¹ Available as an option ² / Further Options Available
³ Available for Multitasking machining centers only, turning max. speed depends on mass of component+fixture
⁴ Free adjacent tool places / ⁵ Depending on configuration

SOFTWARE SOLUTIONS

The jFMX platform, the exclusive MCM supervision software, has an architecture organised in different levels in order to manage all the complexities of systems and information, with the possibility to become the coordination and management control center of an entire workshop.

High autonomy, optimal flexibility and reduction of human activities around the machine are just some of the advantages integrated in the jFMX software packages.

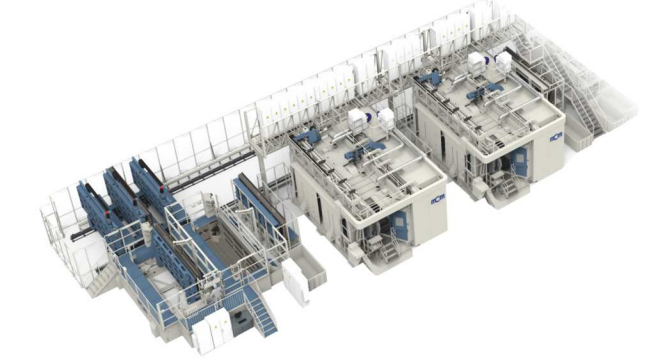
The jFRX platform based on an IT device, integrated on all new MCM machines, allows to monitor and compare the machine performance and operativity with a predictive Service and Maintenance indications, when connected to the cloud computing services offered by MCM.



FMS

MCM designs and develops all the units that make up an FMS (Flexible Manufacturing System). The main customer benefit is to have a single partner for the realisation of entire projects.

- Layout engineered to optimize the use of the surface and the production flow
- Better performance, flexibility and autonomy
- Integration of third party machines (washing stations, EDM, storage units and CMMs)
- Software solutions engineered for the specific application covering all the FMS production units.



SYSTEM INTEGRATION

MANUFACTURING TECHNOLOGY

The ability to integrate complementary and auxiliary technologies is the kernel of the MCM portfolio. Based on the long experience in turnkey solutions for the realization of complex parts in all major sectors of precision mechanics (aerospace, automotive, energy, oil & gas, industrial components), MCM is well known as a systems integrator able to solve all the problems related to a mechanical production within their FMS:

- Coordinate Measuring Machines (CMMs)
- Washing stations
- Robot
- Non-conventional technologies (e.g. EDM)
- Raw parts or W.I.P. storage units
- Programming and simulation of processes to analyse saturation and availability

