

athena

Monobloc CNC machining centers
for vertical milling



CMS is part of the SCM Group, technological world leader in processing a wide variety of materials: wood, plastic, glass, stone, metal and composites. Across the globe, the Group's companies act as a solid, reliable partner to the main manufacturing industries in various product sectors: from furniture to construction, the automotive, aerospace and nautical industries to plastic machining. SCM Group supports and coordinates the development of a system of industrial excellence in three large, highly specialised production centers employing more than 4,000 workers and operating in all 5 continents. Globally, SCM Group represents the most advanced skills in the design and construction of machines and components for industrial machining.

CMS SpA produces machinery and systems for machining composites, carbon fibre, aluminium, light alloys, plastic, glass, stone and metal. It was founded in 1969 from an idea by Pietro Aceti with a view to providing custom-designed, state-of-the-art solutions based on an expert knowledge of the customer process. Important technological innovations, generated by significant investments in research and development as well as the purchase of premium companies, has ensured a steady growth in the various reference sectors.



CMS Advanced Materials Technology is a leader in the field of numerically controlled machining centers for the working of advanced materials: composites, carbon fiber, aluminum, and light alloys. Substantial investments in research and development have allowed the brand to always be on the forefront of cutting edge design, with machines that ensure best-in-class performance in terms of accuracy, speed of execution, and reliability; meeting the needs of customers operating in the most demanding divisions. Since the early 2000's, **CMS Advanced Materials Technology** has established itself as a technology partner in areas of excellence such as aerospace, aviation, automotive, race boating, Formula 1, and the most advanced railway industry.

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APPLICATIONS	4-5
ATHENA TECHNOLOGICAL ADVANTAGES	6-7
ATHENA APC TECHNOLOGICAL ADVANTAGES	8
ATHENA TR TECHNOLOGICAL ADVANTAGES	9
ACCESSORIES	10-13
ATHENA TECHNICAL DATA	14-17
DIGITAL SERVICES	18-19
SERVICE	20-21
THE RANGE	22-23



APPLICATIONS



transportation | aerospace | carbon fiber components | aluminum parts



aeronautics | F1 & motor sport | marine industry | automotive



Unparalleled.

New.

Innovative.

Quality.

Ultra.

Effective solutions.

The **UNIQUE cnc machines.**

Monobloc CNC machining centers for vertical milling

ATHENA

TECHNOLOGICAL ADVANTAGES



LEARN MORE

HIGH SPEED 5-AXIS MACHINING CENTER

Mobile gantry machining center designed for high speed machining of composite materials and aluminium capable of offering exceptional dynamic movement to ensure excellent productivity. The advanced structural design guarantees the reduction of vibrations generated by machining and an excellent finishing quality.

- vast work areas for maximum productivity
- wide configurability in the work areas (single zone or pendulum cycle)
- The compact design and optimisation of the machine's components guarantee a reduction in re-commissioning times.
- Smart4Cut programming system is dedicated to the optimization of the trimming path. Interactive software, a portable keypad with joystick and touch screen provide the operator the ability to easily manage all the CNC functions. Cutting programs can be created by starting from the 3d model or directly from the sample piece fitted on the machine, automatically eliminating all unnecessary movements and reducing the cycle time to a minimum.



Operator panel:
PC Panel Console entirely developed internally, with IP53 protection rating and fanless cooling system. 21.5" multi touch screen. Numeric control with option of choosing between CNC OSAI or GE FANUC



CX5 solid, compact operating unit for continuous 5-axis machining



Shavings collection system with frontal extraction wheeled tanks. The removable tanks, even with doors closed, are the most ergonomic, functional and rapid solution for keeping the area clean and efficient.



KEY BUYER BENEFITS

- + **Reduction of cycle times: reactivity and speed where and when required:** Dedicated dynamics both in acceleration and braking provide a 13% reduction in overall machining times.
- + **Optimization and use of work volumes with non-configurability limitations:** Minimum space taken up and maximum use of factory space in proportion to workable cubic space for all versions. Its compact, hard structure was designed to grip to the working stroke as much as possible. Pendulum processing available with Athena's vast configurability, extractable (APC) and rotating (TR) tables make it the perfect solution for trimming plastic materials.
- + **Shorter programming and contouring times:** The avoidance of repositioning and extensive capabilities of the CX5 working unit allow for a 15% reduction in cutting and programming times.

ATHENA APC

TECHNOLOGICAL ADVANTAGES

All the potential of the Athena machine with the advantages of the APC (Automatic Pallet Change) extractable work tables that permit loading and unloading outside the work area for maximum accessibility to the tables and in an area protected against dust and noise. The APC system's operating modes are as follows:

- with tables in pendulum: the tables enter the work area independently or alternating
- with paired tables: the two tables are paired to create a single, extensive working zone

KEY BUYER BENEFITS

- + **Greater scope for your efficiency:** Facilitated loading and unloading outside the work area, thanks to the APC (Automatic Pallet Change) solution, allows for a 21% reduction in handling times



ATHENA TR

TECHNOLOGICAL ADVANTAGES

Athena is also available in the rotating table version (TR) that simplifies the loading and unloading outside of the machine and allows for the pendulum cycle using the whole work area.

- easy insertion of the machine in the company production layout
- reduced loading/unloading times
- opportunity to automate loading and unloading function

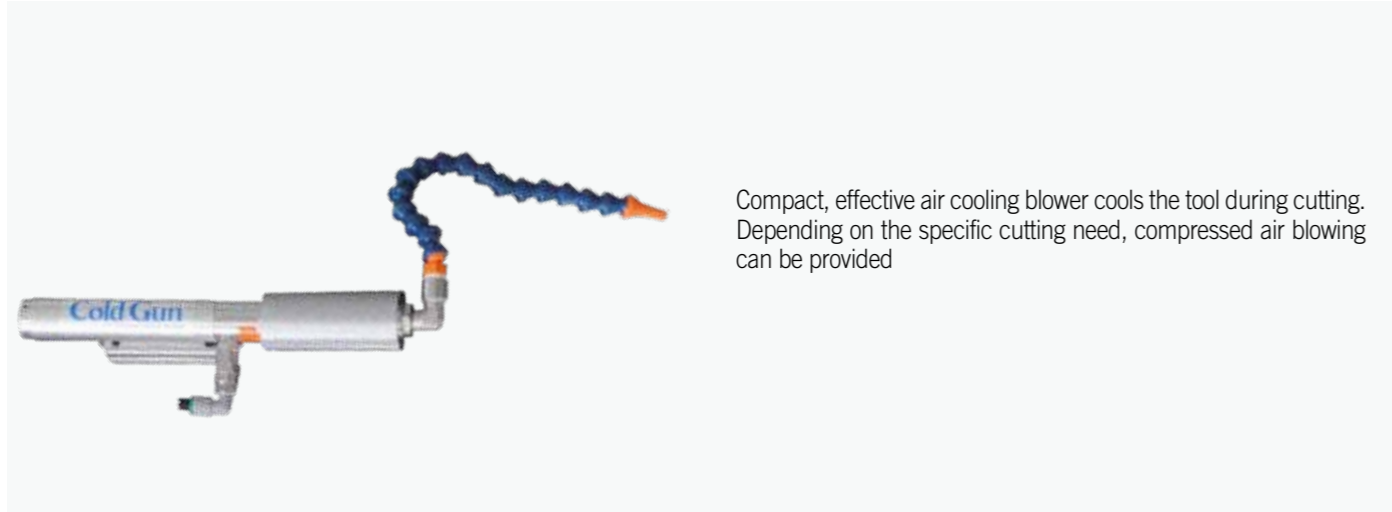
The rotating table (TR) is controlled by a numeric control axis to guarantee speed, accuracy, repeatability of the positioning and reliability.

KEY BUYER BENEFITS

- + **Greater volume to your productivity:** The TR version combines the productivity of the pendulum cycle and the ease of loading and unloading outside the work area, making full use of Athena's exclusive workable cubic space



ACCESSORIES



Compact, effective air cooling blower cools the tool during cutting. Depending on the specific cutting need, compressed air blowing can be provided



8-station tool storage that allows tools with a significant weight to be handled while simultaneously providing pressurized protection to the tool holder



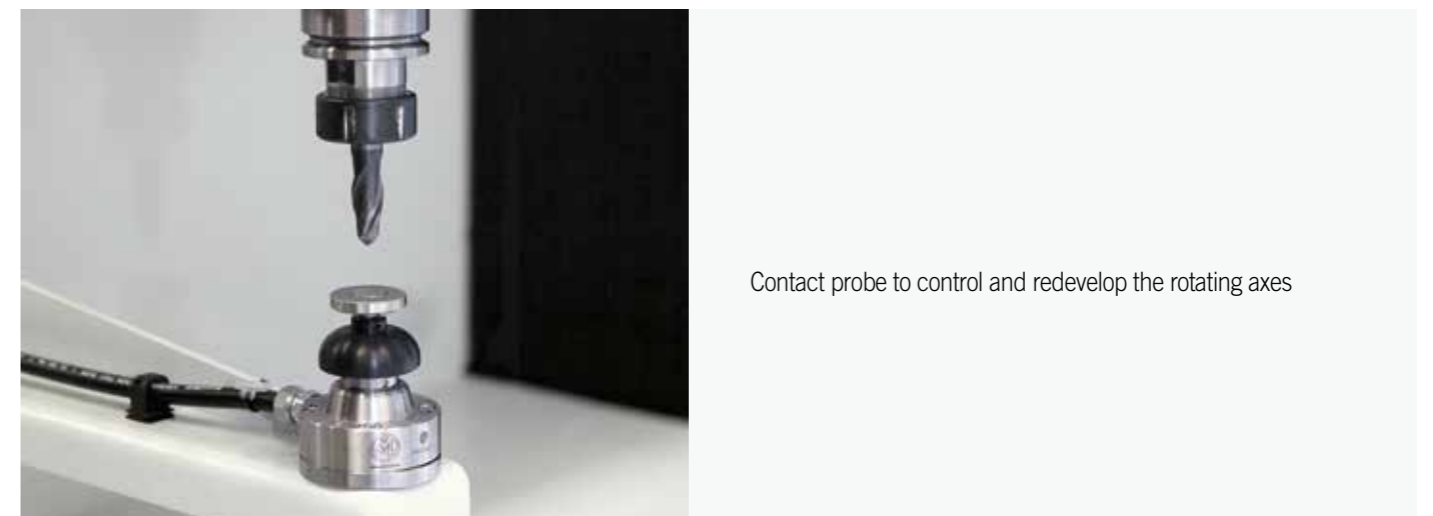
Minimal lubrication fitted with control unit and capacious tank



Re-alignment system of rotating axes with laser to measure tool length and diameter



The 3-position conveyor bulkhead is the ideal solution for maximizing the workable volumes in the pendulum cycle



Contact probe to control and redevelop the rotating axes

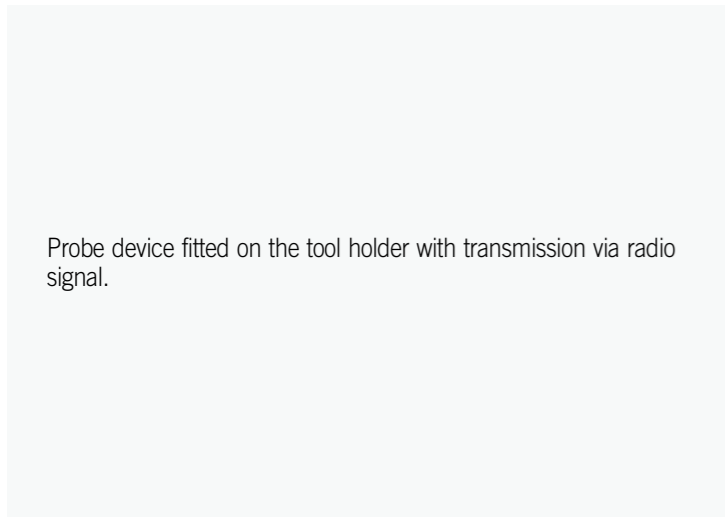
ACCESSORIES



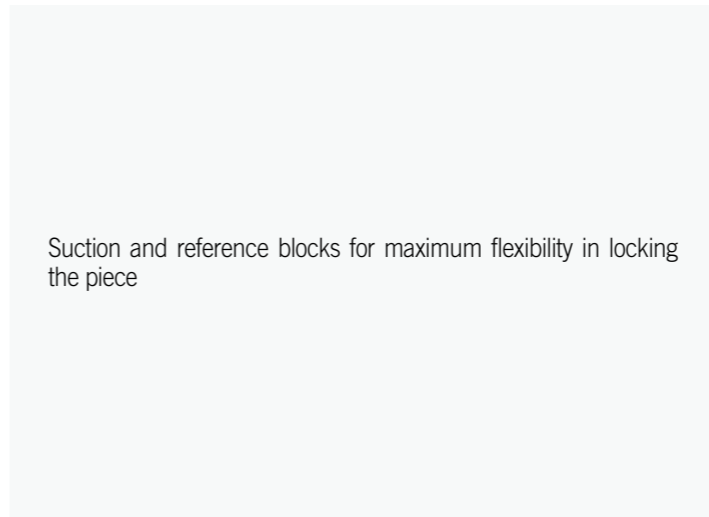
Dust extraction system for effective air recirculation and combating dust inside the work area



Integral cabin to contain dust and reduce noise



Probe device fitted on the tool holder with transmission via radio signal.



Suction and reference blocks for maximum flexibility in locking the piece



Air/vacuum distributors capable of supplying compressed and vacuum air both directly and commanded by M code



5-axis suction hood for concentrated suction on the cutting zone. Pneumatic opening for tool change and release.

ATHENA

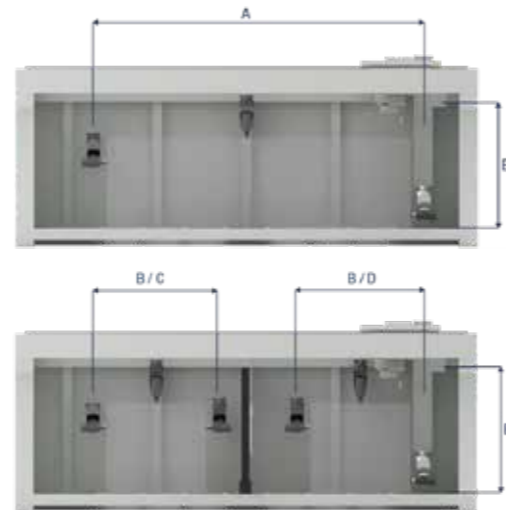
TECHNICAL DATA



MACHINING UNIT AND ELECTRO-SPINDLE						
MODEL	NOMINAL POWER (S1)	MAXIMUM POWER (S6)	MAXIMUM RPMs	TORQUE (S1)	TOOL CHANGE	COOLING
	Kw S1	Kw S6	RPM	Nm S1	Connection	Liquid
CX5	8,5	10	24000	6,8	HSK 63F	
CX5 10	10	12	24000	8	HSK 63F	
CX5 8	8	9	40000	5,2	HSK 32E	

WORKABLE CUBIC SPACE				
MODEL	NO BULKHEAD	WITH BULKHEAD	WITH CONVEYOR BULKHEAD	
X	A (mm)	B (mm)	C (mm)	D (mm)
2000	2012			
3000	3012	1175	1390	1450
4000	4012	1675	1890	1950
5000	5012	2175	2390	2450
Y	(mm)			
1500	1142			
2000	1642			
Z	E (mm)			
800	621			
1200	1021			

Figures refer to clamp threading with ER/ETS32 tool holder (length 65 mm) on CX5 (pivot 114 mm)



ATHENA: STROKES AND SPEED

MODEL	FAST AXIS					STROKES				
	(mm)			(°)		(m/min)			(°/min)	
	X	Y	Z	B	C	X	Y	Z	B	C
2015	2370	1500	1200	±120	±360	90	60	40	10800	
3015	3370									
4015	4370									
5015	5370	2000	1200	±120	±360	90	60	40	10800	
3020	3370									
4020	4370									
5020	5370	2500	1200	±120	±360	90	60	40	10800	
4025	4370									
5025	5370									

A (mm)	Z AXIS STROKE (mm) 1200			
		3840 (3440 con Z=800)		
B (mm)	X AXIS STROKE (mm)			
	2000	3000	4000	5000
	4630	6230	6630	8360
B (mm) with electrical cabinet	4970	6270	6970	8360
C (mm)	Y AXIS STROKE (mm)			
	1500		2000	
	2465		3040	
C (mm) with push-button	2855		3430	

TOOL CHANGE STORAGES

	Standard	Optional		
NO. OF STATIONS	6	12	8*	16*
STATION INTERAXIS (mm)	100	100	80	80
Ø MAX WITHOUT LIMITATIONS (mm)	90	90	70	70
Ø MAX WITH LIMITATIONS (mm)	250	250	200	200
MAXIMUM TOOL LENGTH (mm)	300	300	300	300
MAXIMUM WEIGHT OF INDIVIDUAL TOOL (Kg)	3	3	5	5

* With pressurised protection

WORKTABLES

STANDARD	MULTI-LAYER SUCTION	ALUMINIUM SUCTION	AL + T-MORTISES SUCTION	ALUMINIUM WITH BUSHES
STEEL FRAME SECTION TABLE WITH 50X20 ALUMINIUM STRIPS MACHINED IN M10 THREADED HOLE MACHINE	PHENOLIC MULTI-LAYER SQUARING/30 / 30 [mm]	ALUMINIUM SQUARING / 30 [mm] FASTENINGS / M8 PACE / 150 [mm]	ALUMINIUM SQUARING / 30 [mm] FASTENINGS / M8 PACE / 150 [mm] MORTISES w12H11 [mm] PACE 300 [mm]	SMOOTH ALUMINIUM WITH THREADING PACE HOLES (to be defined) M THREAD (to be defined)

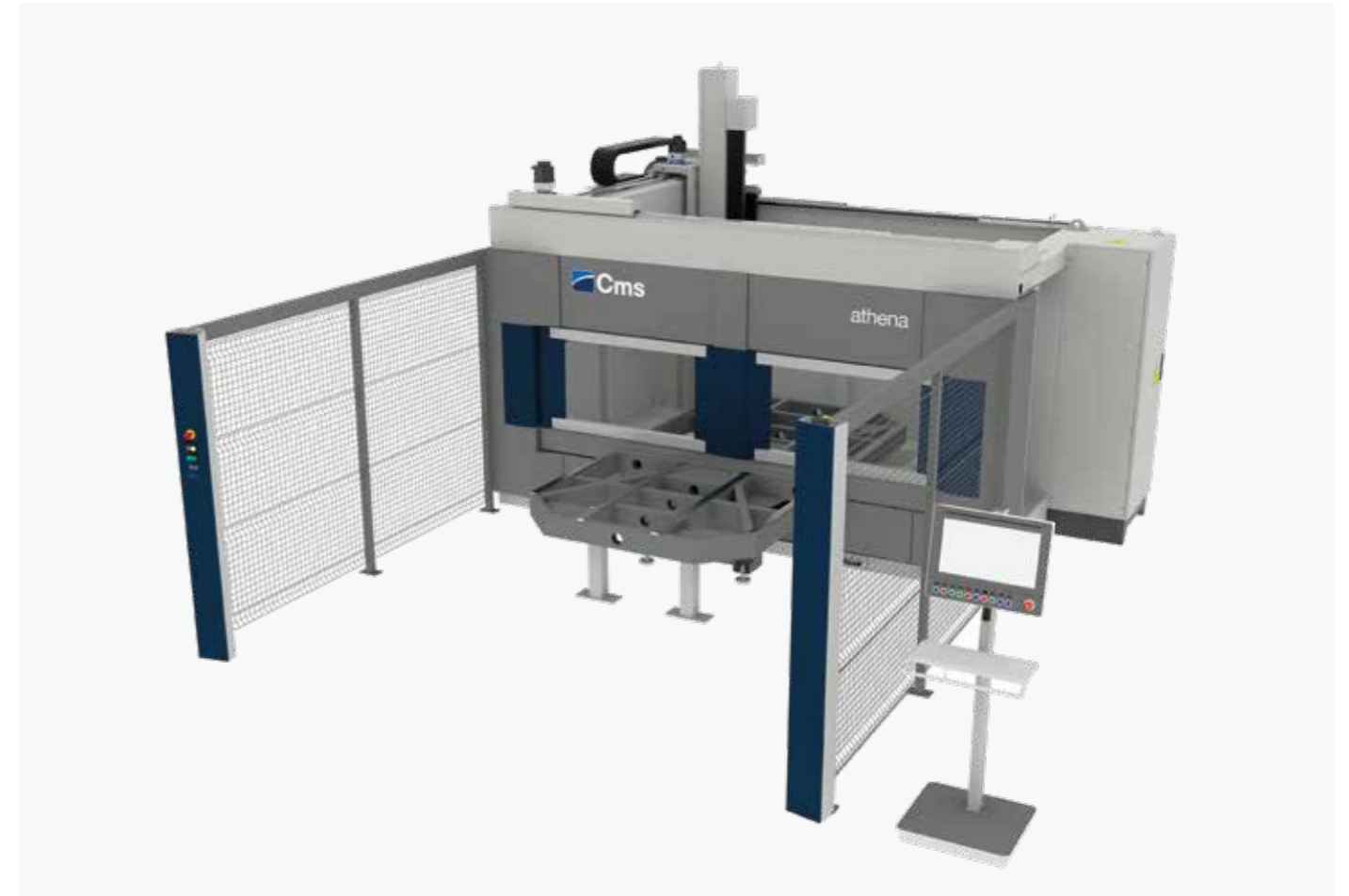
ATHENA APC

TECHNICAL DATA



ATHENA TR

TECHNICAL DATA



ATHENA APC: STROKES AND SPEED									
MODEL	FAST AXIS					STROKES			
	(mm)			(°)		(m/min)			
	X	Y	Z	B	C	X	Y	Z	
4015	4370	1500	800	± 120	± 360	90	60	40	
5015	5370								
4020	4370	2000	800	± 120	± 360	90	60	40	
5020	4370								
5025	5370	2500	950 [1200]	± 120	± 360	90	60	40	

ATHENA TR: STROKES AND SPEED										
MODEL	FAST AXIS					STROKES				
	(mm)			(°)		(m/min)			(°/min)	
	X	Y	Z	B	C	X	Y	Z	B	C
2015	2370	1500	800	±120	± 360	90	60	40	10800	
3015	3370	1500	800	± 120	± 360	90	60	40	10800	
4020	4370	2000	800	± 120	± 360	90	60	40	10800	

CMS connect the IoT platform perfectly integrated with the latest-generation CMS machines

CMS Connect is able to offer customised micro services through the use of IoT Apps that support the daily activities of industry operators - improving the availability and use of machines or systems. The platform displays, analyses and monitors all data from connected machines. The data collected by the machines in real time become useful information increase machine productivity, reduce operating and maintenance costs and cut energy costs.



CMS active a revolutionary interaction with your CMS machine

Cms active is our new interface. The same operator can easily control different machines as the "CMS Active interfaces maintain the same look&feel, icons and iteration approach.



APPLICATIONS

SMART MACHINE: Section designed for the continuous monitoring of machine operation, with information on:

Status: machine status overviews. The representations provided allow machine availability to be checked - to identify possible bottlenecks in the production flow;

Monitoring: instantaneous, live display of the operation of the machine and its components, of currently running programs and potentiometers;

Production: list of machine programs run within a given timeframe with best time and average running time;

Alarms: active and historical warnings.

SMART MAINTENANCE

This section provides a first approach to predictive maintenance by sending notifications when machine components indicate a potentially critical state associated with reaching a certain threshold. In this way, it is possible to take action and schedule maintenance services, without any down-time.

SMART MANAGEMENT

Section designed for KPI presentation for all the machines connected to the platform. The indicators provided assess of the availability, productivity and. The indicators provided assess of the availability,

productivity and efficiency of the machine and the quality of the product.

MAXIMISED SECURITY

CMS Connect uses the standard OPC-UA communication protocol, which guarantees the encryption of data at Edge interface level. CMS Connect's Cloud and DataLake levels meet all state-of-the-art cyber-security requirements. Customer data are encrypted and authenticated to ensure total protection of sensitive information.

ADVANTAGES

- ✓ Optimisation of production performance
- ✓ Diagnostics to support components warranty optimisation
- ✓ Productivity increase and downtime reduction
- ✓ Improvement of quality control
- ✓ Maintenance costs down

EASY OF USE

The new interface has been especially developed and optimized to be immediately used via touch screen. Graphics and icons have been redesigned for user-friendly and comfortable navigation.

ADVANCED ORGANIZATION OF PRODUCTION

Cms Active enables configuring different users with different roles and responsibilities according to the operation mode of the machining centre (e.g.: operator, maintenance man, administrator, ...).

It is also possible to define the work shifts on the machining centre and then survey activities, productivity and events that have occurred in each shift.

ABSOLUTE QUALITY OF THE FINISHED WORKPIECE








With CMS aActive the quality of the finished workpiece is no longer jeopardized by worn-out tools. The new Tool Life Determination system of CMS Active sends warning messages when the tool life is running out and recommends its replacement at the most appropriate time.

TOOL SET-UP? NO PROBLEM!

CMS Active guides the operator during the tool magazine set-up phase, also allowing for the programs to be run.



SERVICE OUR TECHICIANS BY YOUR SIDE ALL OVER THE WORLD

-  Training
-  Installation
-  Remote Customer Care (RCC)
-  On-site assistance
-  Maintenance
-  Changes & Retrofitting
-  Spare Parts

A GLOBAL PRESENCE FOR BEST-IN-CLASS SERVICE

- 36,000 different codes to serve machinery of all ages;
- 1 central warehouse at the headquarters in Zogno and 6 bases around the world fully integrated at IT level and controlled by a shipping optimisation software to reduce waiting times;
- 98% of orders available in stock;
- spare parts guaranteed thanks to a scrupulous control process and validation via our internal quality laboratory;
- availability to draw up recommended spare parts lists based on client needs, to reduce down time to a minimum;

CMS ADVANCED MATERIALS TECHNOLOGY RANGE OF MACHINES

FOR COMPOSITE MATERIALS, ALUMINUM AND METAL PROCESSING

MONOBLOC CNC MACHINING CENTERS FOR VERTICAL MILLING



ARES



ANTARES



ANTARES K



VM 30



ETHOS K

GANTRY CNC MACHINING CENTERS FOR LARGE-SIZE WORK AREAS



MX5



POSEIDON



ETHOS



CONCEPT

HYBRID ADDITIVE MANUFACTURING AND MILLING SYSTEMS



KREATOR ARES

MONOBLOC CNC MACHINING CENTERS FOR HORIZONTAL MILLING

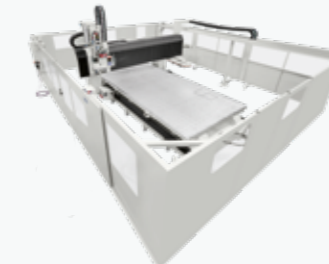


IKON

FIXED AND MOBILE BRIDGE CNC MACHINING CENTERS



FXB



MBB



AVANT CARAVAN

CNC MACHINING CENTER FOR THE EYEWEAR INDUSTRY



MONOFAST



EOS

WIND BLADE WORKING SYSTEMS

CNC MACHINING CENTERS FOR GUNSTOCKS PROCESSING



MULTILATHE



MONOFAST



KARAT

WATERJET CUTTING SYSTEMS



TECNOCUT PROLINE



TECNOCUT SMARTLINE



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