

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 fibre, aluminum, light alloys and metal. 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



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 aluminum capable of offering exceptional dynamic movement to ensure excellent productivity. In addition to reducing the vibrations generated by machining (thanks to its cross beams) and offering excellent finish quality, the new base structure helps the operator when preparing the work, thanks to:

- Large access area with door opening and closing system based on electric motors, pinion and rack for faster, smoother, more fluid movement.
- Possibility of managing the work areas as a single area, or divided in two by a central partition for a much faster machining process
- New "support surface" for jigs, with fine pitch fastening holes to facilitate jig positioning.
- 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 Siemens One



CX5 working unit

Rigid and compact, with spindles from 8 kW up to 10 kW in 24,000 and 40,000 rpm versions for machining workpieces continuously with 5 axes.



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

- + **Shorter cycle times, responsiveness and speed where and when needed:** A macro provides dedicated dynamics during both acceleration and braking in order to handle the different stages of the cutting cycle with the same machine. The macro and the CMS S4C programming software can reduce overall processing times by 13%, thanks to a reduction in repositioning spaces.
- + **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. The rigid, compact structure has been designed to follow the working travel as closely as possible. Extensive configuration options, the possibility of pendulum operation and the availability of versions with extractable (APC) and rotary (TR) worktables make Athena the ideal solution for trimming
- + **Safety always comes first:** This machine is designed in accordance with the latest safety regulations to ensure not only maximum operational reliability, but also a safe, protected working environment for the operator

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:** The APC (Automatic Pallet Change) solution ensures easy loading and unloading outside the work area, allowing a 20% reduction in handling times. Moreover, heavy loads can be handled easily with the aid of external machinery or equipment.



ATHENA TR

TECHNOLOGICAL ADVANTAGES

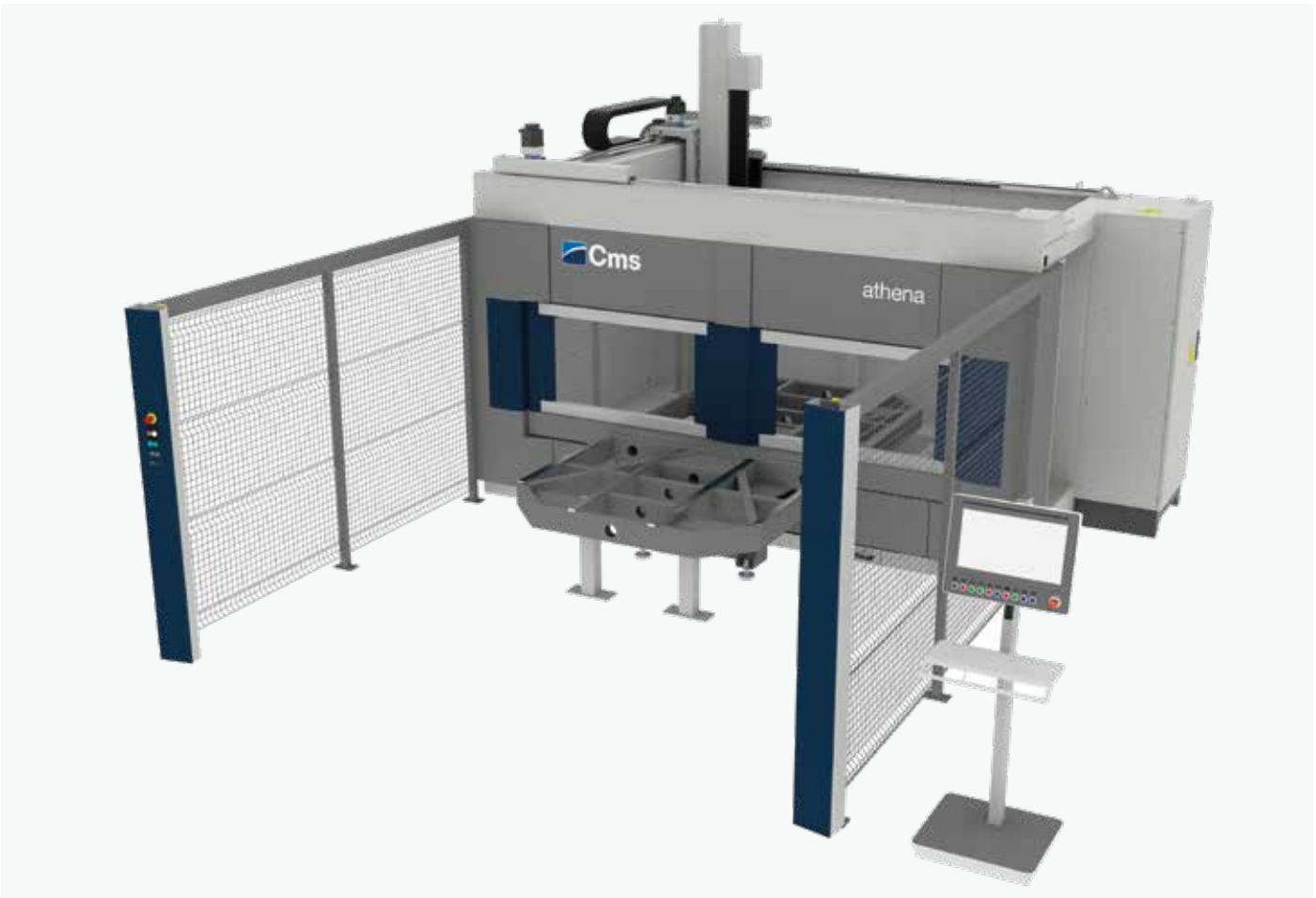
Athena is also available in the rotating table version (TR) that simplifies the loading and unloading outside of the machine and allows for the pendulum cycle using the whole work area.

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

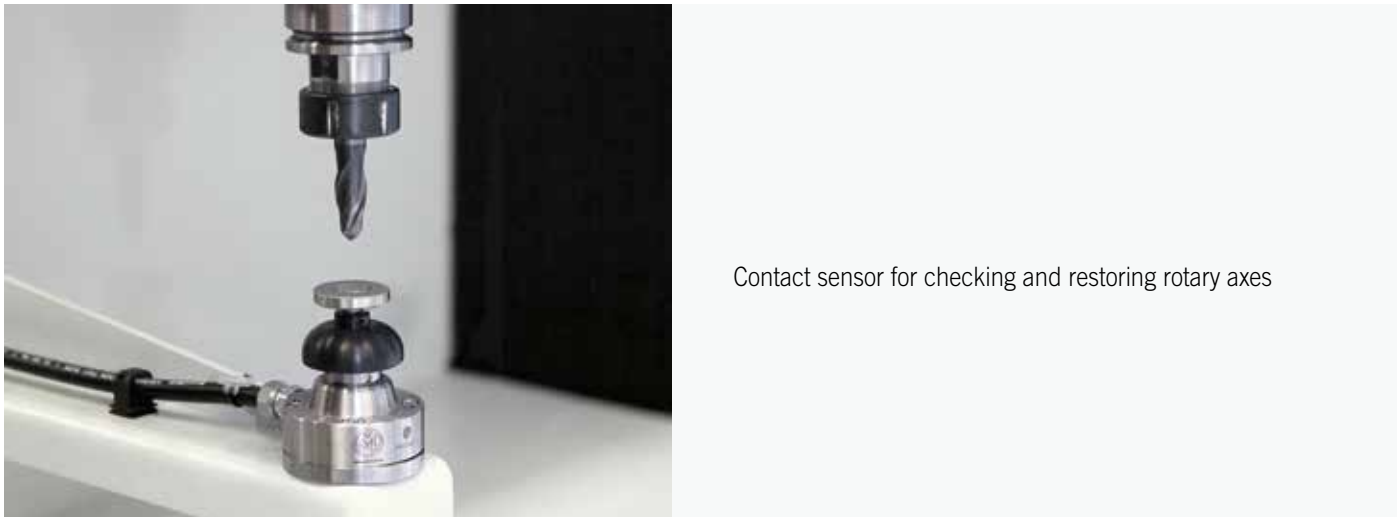
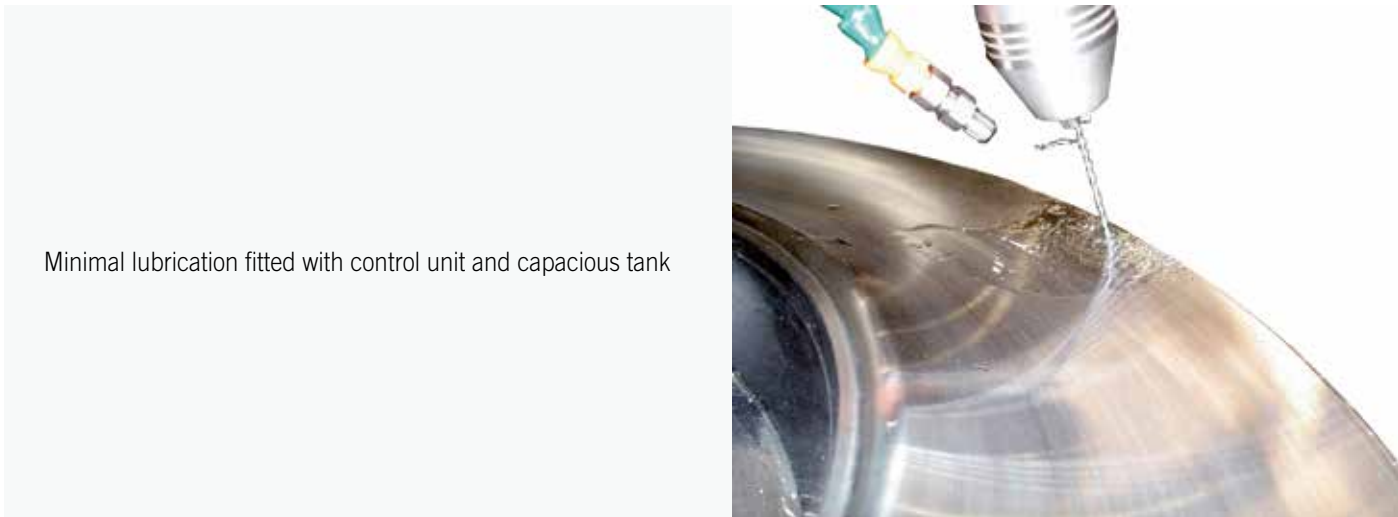
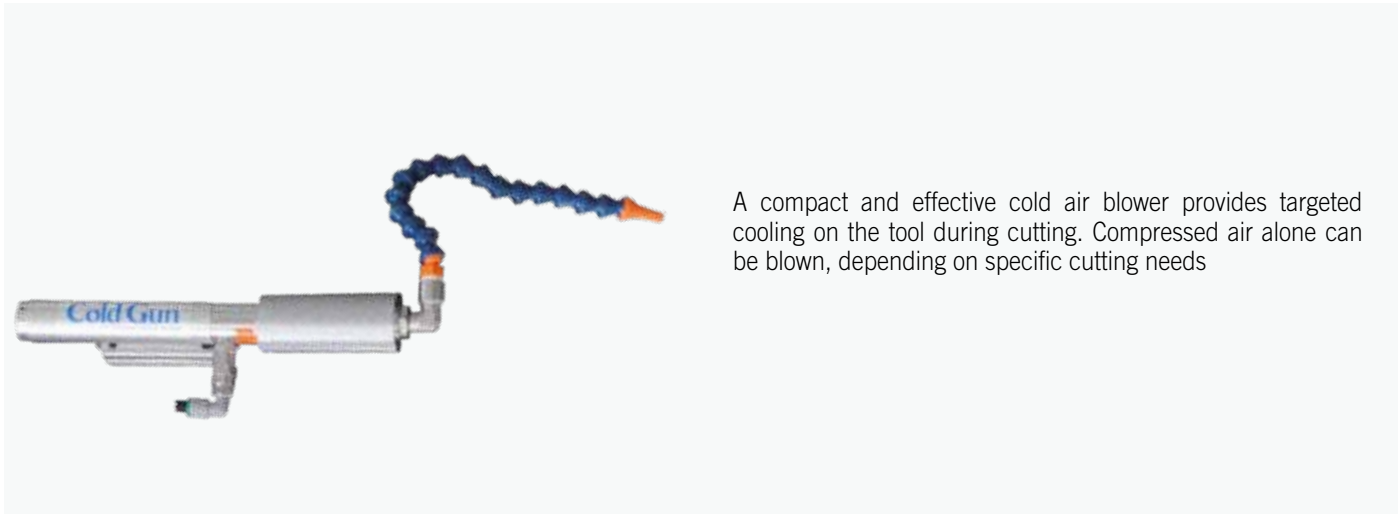
The rotating table (TR) is controlled by a numeric control axis to guarantee speed, accuracy, repeatability of the positioning and reliability.

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
- + **Automatic workpiece loading/unloading cycle:** This machine model adapts easily to an automatic workpiece loading and unloading cycle, with the aid of robots. Having a single loading and unloading point simplifies robot programming.



ACCESSORIES



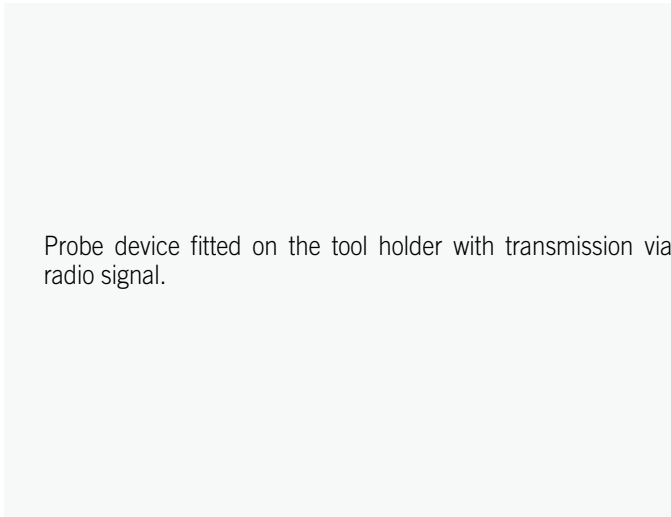
ACCESSORIES



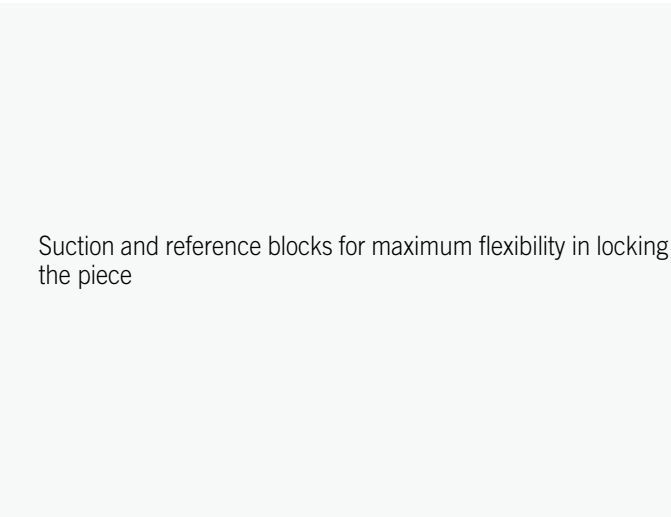
Dust extraction system for effective air change and dust abatement within the work area



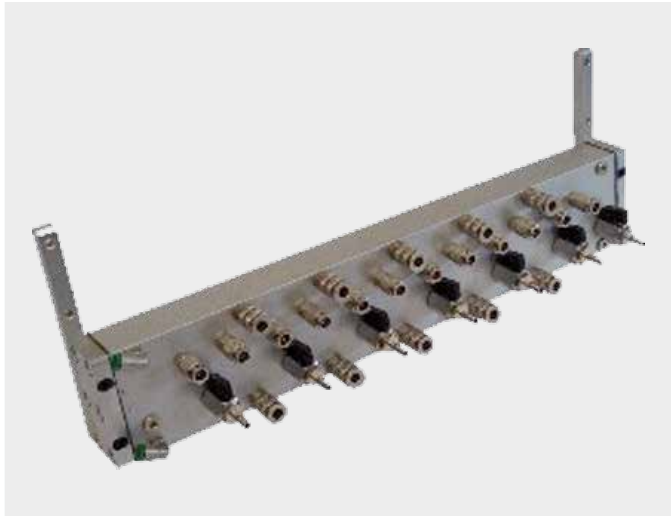
Integral cabin to contain dust and reduce noise



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



Suction and reference blocks for maximum flexibility in locking the piece



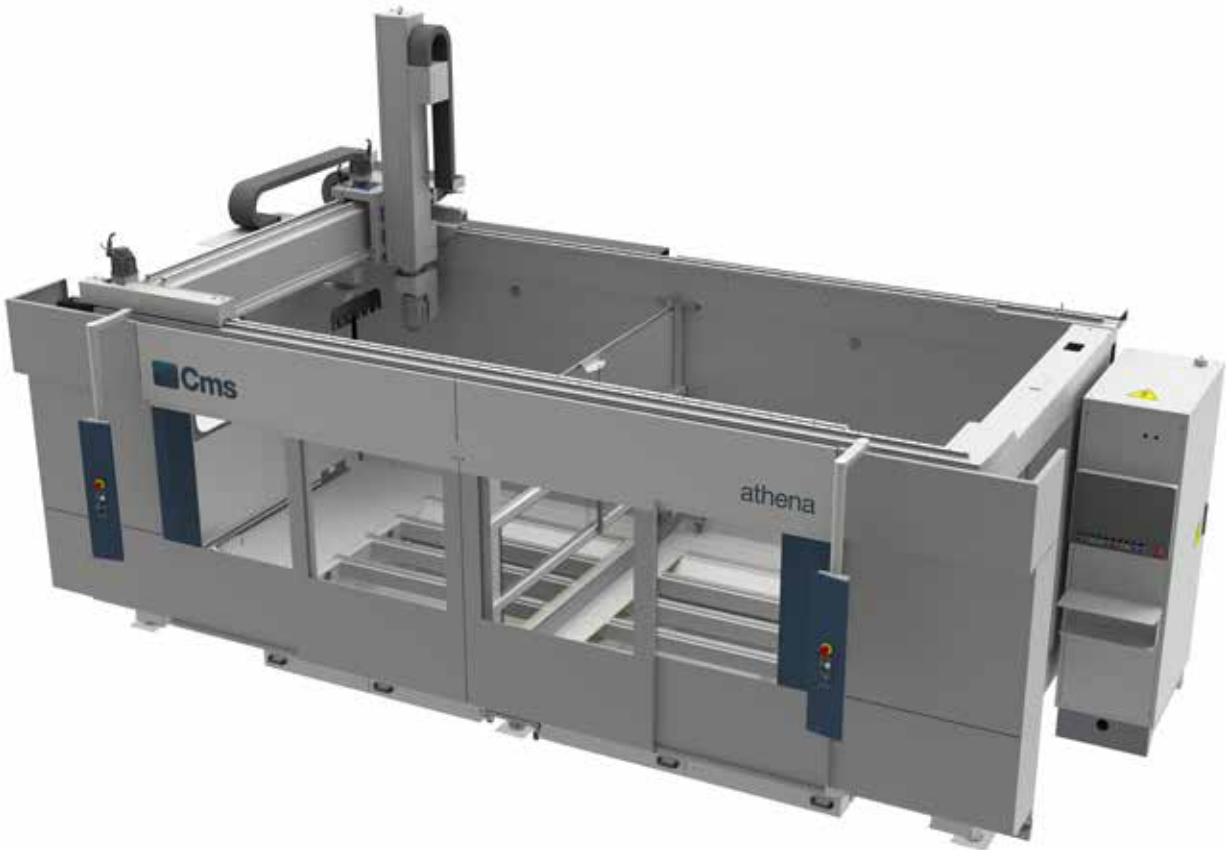
Air/vacuum distributors capable of supplying compressed and vacuum air both directly and commanded by M code



Conveyor belt under the table for chip removal

ATHENA

TECHNICAL DATA



ATHENA: STROKES AND SPEED										
MODEL	AXES STROKES					RAPIDS				
	(mm)			(°)		(m/min)			(°/min)	
	X	Y	Z	B	C	X	Y	Z	B	C
2015	2200	1500	900 / 1200	±120	± 370	90	90	60	14000	
3015	3200									
4015	4200									
5015	5200									
3020	3200	2000	900 / 1200	±120	± 370	90	90	60	14000	
4020	4200									
5020	5200									

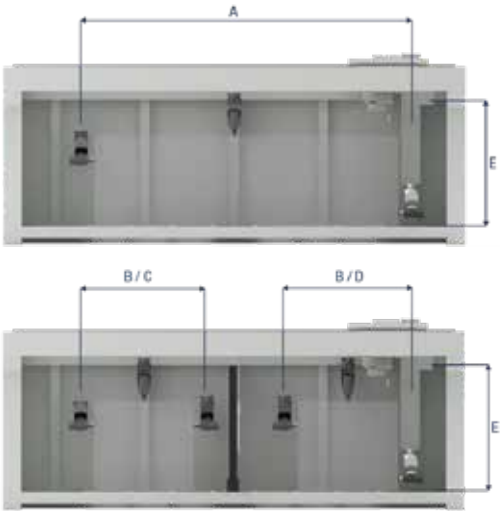
ATHENA APC: STROKES AND SPEED								
MODEL	AXES STROKES					RAPIDS		
	(mm)			(°)		(m/min)		
	X	Y	Z	B	C	X	Y	Z
4025	4370	2500	1200	± 120	± 370	90	60	40
5025	5370							

ATHENA TR: STROKES AND SPEED										
MODEL	AXES STROKES					RAPIDS				
	(mm)			(°)		(m/min)			(°/min)	
	X	Y	Z	B	C	X	Y	Z	B	C
2015	2200	1500	900	±120	± 370	90	90	60	14000	
3015	3200	1500	900	± 120	± 370	90	90	60	14000	
4020	4200	2000	900	± 120	± 370	90	90	60	14000	

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	1820			
3000	2820	795	1070	1070
4000	3820	1295	1570	1570
5000	4820	1795	2070	2070
Y	(mm)			
1500	1140			
2000	1640			
Z	E (mm)			
900	850			
1200	1150			

Figures refer to clamp threading with ER/ETS32 tool holder (length 75 mm) on CX5 (pivot 115 mm) for 5-axis machining



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 QUARING / 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)
				

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.

CMS ADVANCED MATERIALS TECHNOLOGY RANGE OF MACHINES

MONOBLOC CNC MACHINING CENTERS FOR VERTICAL MILLING



ATHENA



ANTARES MK3



ANTARES MK3 FLOOD



ARES



VM 30



ETHOS K

GANTRY CNC MACHINING CENTERS FOR LARGE-SIZE WORK AREAS



MX5



ETHOS



POSEIDON



CONCEPT

HYBRID ADDITIVE MANUFACTURING AND MILLING SYSTEMS



KREATOR ARES

MONOBLOC CNC MACHINING CENTERS FOR HORIZONTAL MILLING



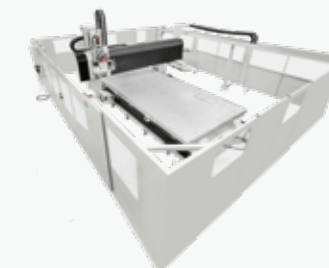
IKON

FOR COMPOSITE MATERIALS, ALUMINUM AND METAL PROCESSING

FIXED AND MOBILE BRIDGE CNC MACHINING CENTERS



FXB



MBB



AVANT CARAVAN

CNC MACHINING CENTER FOR THE EYEWEAR INDUSTRY



MONOFAST EVO



EOS

WIND BLADE WORKING SYSTEMS

CNC MACHINING CENTERS FOR GUNSTOCKS PROCESSING



MULTILATHE



MONOFAST GUNSTOCKS



KARAT

WATERJET CUTTING SYSTEMS



TECNOCUT PROLINE



TECNOCUT SMARTLINE



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