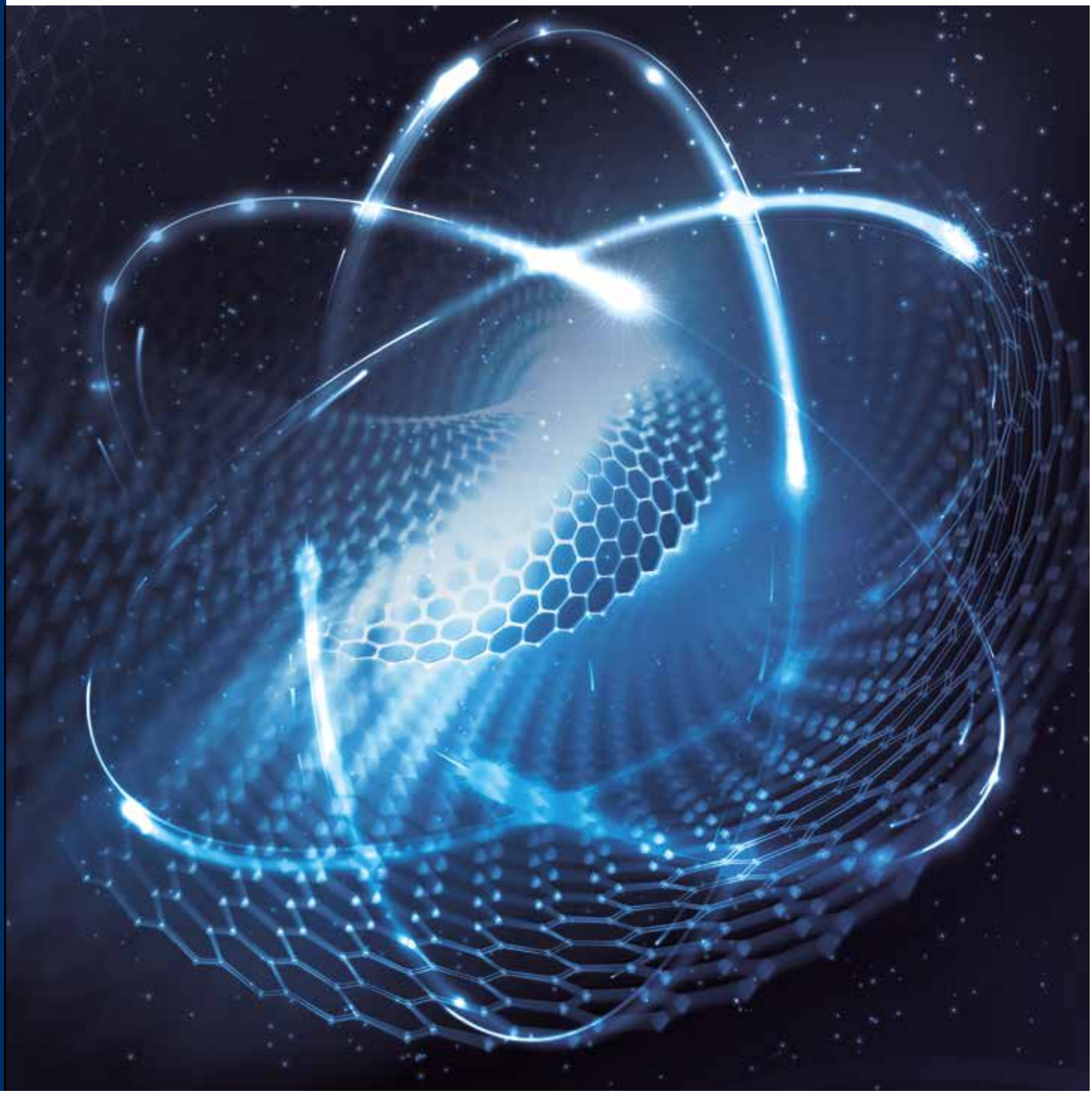
ADVANCED MATERIALS

kreator

hybrid **additive manufacturing** and milling system



Cms
advanced materials technology

CMS is part of SCM Group, a technological world leader in processing a wide range of materials: wood, plastic, glass, stone, metal, and composites. The Group companies, operating throughout the world, are reliable partners of leading manufacturing industries in various market sectors, including the furniture, construction, automotive, aerospace, ship-building, and plastic processing industries. SCM Group coordinates, supports, and develops a system of industrial excellence in three large, highly specialized production centers employing more than 4,000 workers and operating in five continents. SCM Group: the most advanced skills and know-how in the fields of industrial machinery and components.

CMS SpA manufactures machinery and systems for the machining of composite materials, carbon fiber, aluminum, light alloys, plastic, glass, stone, and metals. It was established in 1969 by Mr Pietro Aceti with a vision of offering customized and state-of-the-art solutions, based on the in-depth understanding of the customer's production needs. Significant technological innovations, originating from substantial investments in research and development and take-overs of premium companies, have enabled constant growth in the various sectors of reference.

Cms
advanced materials technology

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 investiments in research and development have allowed the brand to always be on the forefront of cuttingedge 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.

scm group | industrial machinery and components

Cms | your technology partner

kreator

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a company of scm group

MAKING ADDITIVE REAL REAL

tooling for composites

epoxy ureol or similar replacement

Revolutionary.

Efficient.

Accurate.

Largely sustainable.

Making Additive REAL.

Hybrid additive manufacturing and milling system

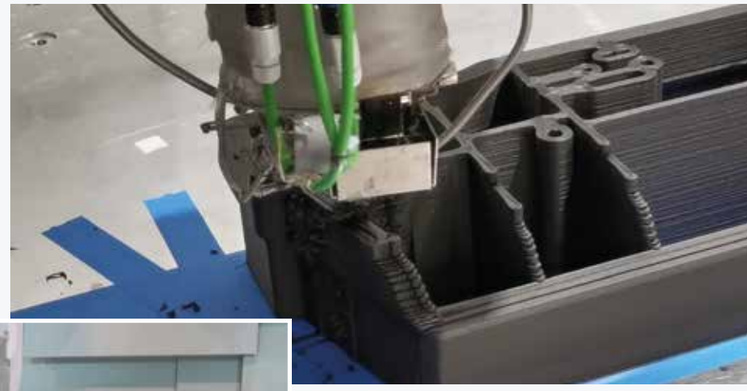
CMS KREATOR

CMS, leader in cnc machines for composite processing, started in 2018, in cooperation with the prestigious Fraunhofer institute**, to develop an original LFAM (LARGE FORMAT ADDITIVE MANUFACTURING) solution**, for improving the competitiveness of composite and other industries.

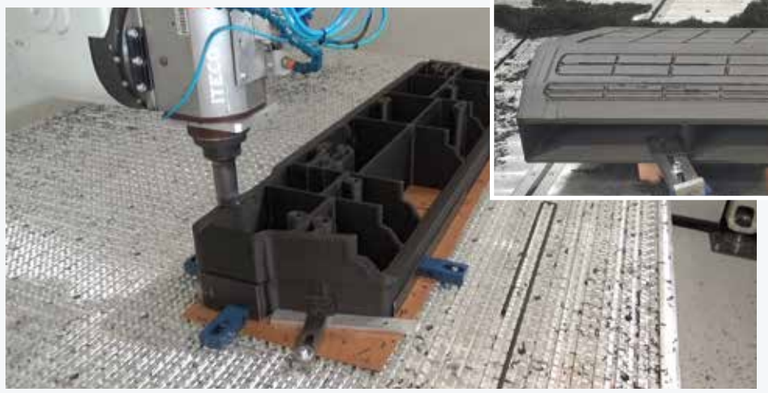
The hybrid system has been developed in
partnership with the prestigious Fraunhofer Institute
for Machine Tools and Forming Technology in Germany.

Fraunhofer IWU

PRINTING



MILLING



EXTRUDER FOR AUTOMATIC CONNECTION

- **3d printing device fully integrated in a standard CMS machine:**
  no manual operations needed.

LESS MATERIAL, MORE PRINTING SPEED: PRINTING SPEED UP TO 16 M/MIN

KREATOR ARES

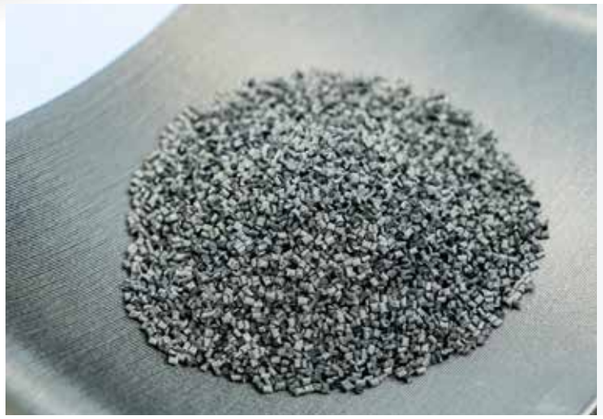
CMS kreator takes advantage of the **CMS mechanical base**, an integrated machining center for vertical milling **ideal for composite materials, aluminum, light alloys and metals processing**. The advanced design of its structures and the result of CMS's continuous investments in R&D with the sophisticated technological solutions adopted, provides **rigidity and precision, and exceptional movement dynamics**.

PATENTED!

EXTRUDER

CMS kreator's single screw extruder is **patented, designed for 3D printing and for the use of different materials**.

- **The CMS kreator technology allows for 45° and 90° printing**
- **Mass Flow = 1 ÷ 10 Kg/h**



MATERIAL

The extruder has been tested by R&D with **PA, PP, PESU, PEI, PET, ABS, AIRTECH DAHLTRAM and others, reinforced with carbon fibers or glass**.

CMS is open to test other materials requested by customers at **CMS KREATOR ADDITIVE LAB**

KREATOR ARES
TECHNOLOGICAL DETAILS

OPERATING PRINCIPLE

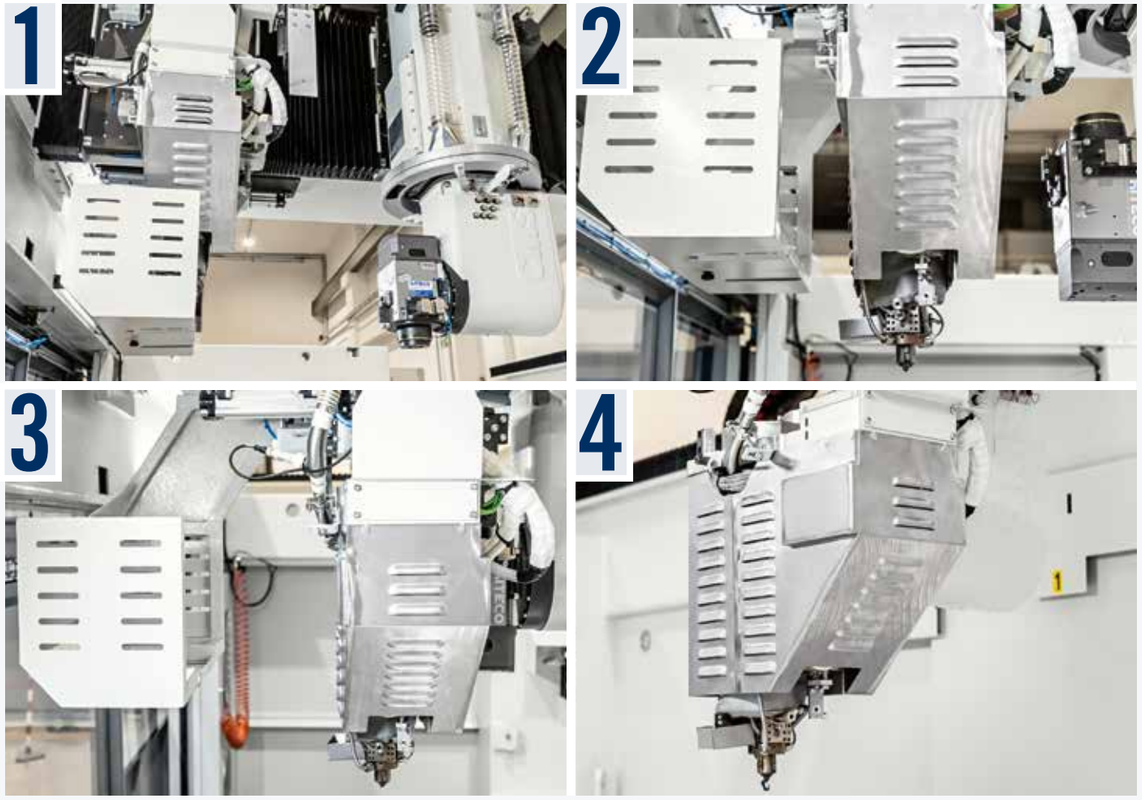
- The Additive Manufacturing **technology** adopted is **Screw Extrusion Additive Manufacturing (SEAM)**.
- **Thermoplastic polymer**, in **granulated** form is the material used.
- The polymer is almost always reinforced (discontinuous fibres of carbon or glass) and the reinforcement is inside the granules
- The extrusion is done by a single screw **extruder** that melts the granules.
- The extruder is **moved** by the tool machine's axes.
- The melted polymer exiting the extruder is **deposited in layers** that plasticize and **form a single piece**.

KEY BUYERS BENEFITS

+ **HIGH FLEXIBILITY**: The CMS kreator technology allows for **45° and 90° printing**. The CMS kreator technology permits the use of different kinds of materials: **PA, PP, PESU, PEI, PET, ABS, AIRTECH DAHLTRAM, and much more.**

+ **MATERIAL SAVING:** At least **81% material saving** for manufacturing a part, compared to **current manufacturing technologies and competitors.**

+ **SUSTAINABLE SOLUTION: Printing speed up to 16 m/min**, faster than large sized FDM and competitors.



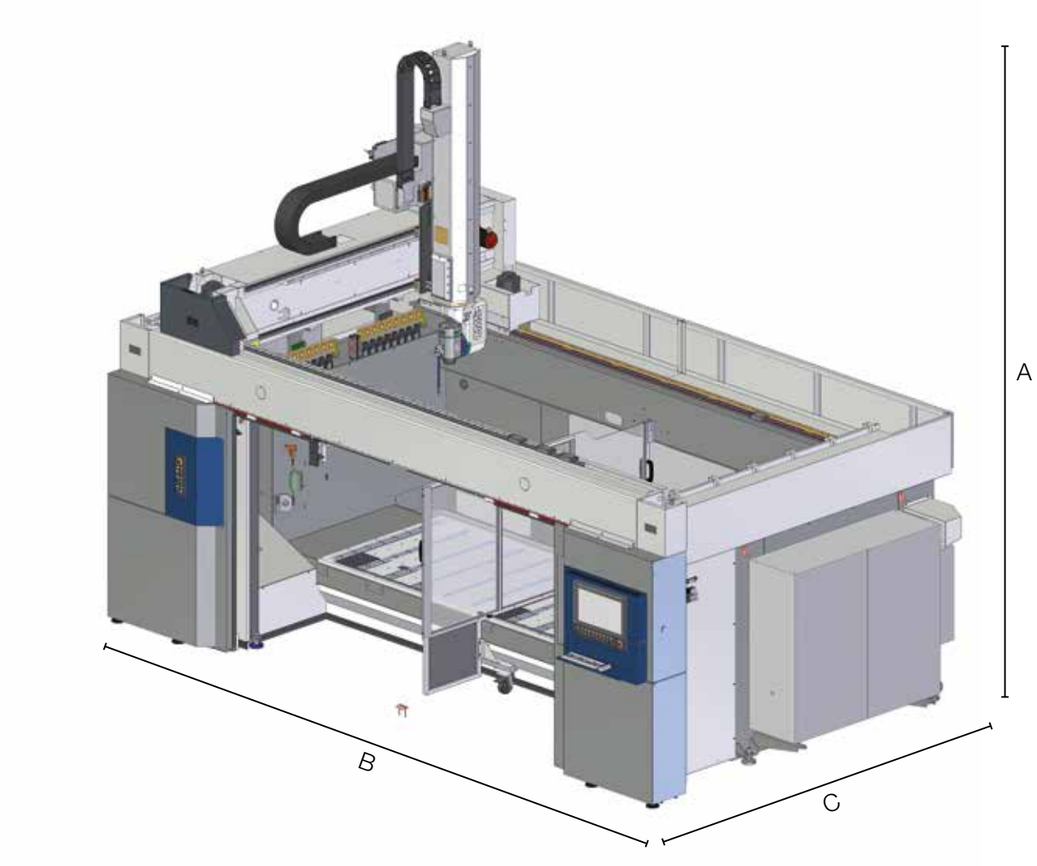
Patent pending - automatic connection between the electrospindle and the extruder.
An **additional y-carriage conveys the extruder with all its components** and it can be hooked on to the machining unit's y-carriage. In **this way the automatic tool/extruder change is carried out without the need of connectors**.

Material reloading and drying off the machine
The material is re-loaded manually. The material must be dried. Normally, the drying is not required when a new package of material is opened.

Material feeding system fully integrated in the machine.

KREATOR ARES

OVERALL DIMENSIONS & TECHNICAL DATA



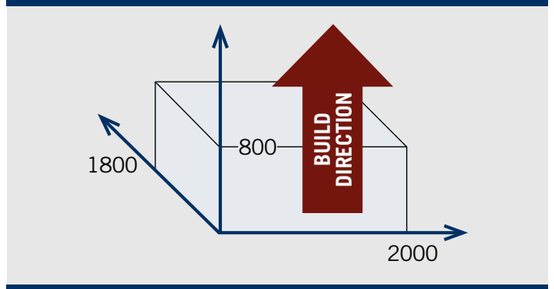
KREATOR ARES WORKING UNITS AND ELECTROSPINDLES	
	PX5 - 20_24 (sincronous)
NOMINAL POWER (S1)	20 kW
MAX POWER	22,3 kW
MAX RPM	24.000 rpm
MAX TORQUE	20 Nm
TOOL CHANGER	MANUAL AND AUTOMATIC
TOOLHOLDER	HSK 63 E
COOLING	LIQUID

KREATOR ARES: ENCUMBRANCE (mm)		
A	Z AXIS STROKE	
	4450	
B	X AXIS STROKE	
	36/18 36/26	48/18 48/26
	6400	7810
C	Y AXIS STROKE	
	36/18 48/18	36/26 48/26
	3920	4820

KREATOR ARES: WORKING PLANE	
MODEL	DIMENSIONS X (mm)
KREATOR ARES 36/18	3640x1360
KREATOR ARES 36/26	3640x2360
KREATOR ARES 48/18	4840x1360
KREATOR ARES 48/26	4840x2360

KREATOR ARES: STROKES AND SPEEDS (MILLING)									
MODEL	AXIS STROKE					RAPIDS			
	(mm)			(°)		(m/min)		(°/min)	
	X	Y	Z	B	C	X/Y	Z	B	C
36/18	3500	1190	1200	±120	±270	80	70	9000	
48/18	4700								
36/26	3500	1990							
48/26	4700								

MAX BUILD VOLUME



3D PRINTING SPEED: UP TO 16 M/MIN

KREATOR ARES: STROKES AND SPEEDS (3D PRINTING - LINEAR AXIS ONLY)			
MODEL	AXIS STROKE		
	(mm)		
	X	Y	Z
36/18	3400	1220	1100
48/18	4600		
36/26	3400	2020	
48/26	4600		

PRECISION AND REPEATABILITY			
LINEAR AXES*	Reference stroke	A	R
X/Y	2000 mm	0.025 mm	0.017 mm
Z	1200 mm	0.021 mm	0.015 mm
B	+/- 120°	26 arcsec	
C	360°	16 arcsec	

* Precision with linear scales and direct encoders on PX5 Accuracy (A) and Repeatability (R) on the basis of the ISO-230-2 Regulations

KREATOR ARES: TOOL CHANGER MAGAZINES	
N. STATIONS	20 carousel
HOLDER INTERAXES (MM)	117
Ø MAX WITHOUT LIMITATION (MM)	110
Ø MAX WITH LIMITATION (MM)	250
MAX TOOL LENGTH (MM)	465
MAX WEIGHT SINGLE TOOL	6 kg

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.

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 ser- vices, 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-theart 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

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.

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, maintainance 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

MONOBLOC CNC MACHINING CENTERS FOR VERTICAL MILLING

ARES

ANTARES

ANTARES K

ATHENA

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

AVANT

MBB

CNC MACHINING CENTER FOR THE EYEWEAR INDUSTRY

MONOFAST

WIND BLADE WORKING SYSTEMS

EOS

CNC MACHINING CENTERS FOR GUNSTOCKS PROCESSING

MULTILATHE

MONOFAST

KARAT

FOR COMPOSITE MATERIALS, ALUMINUM AND METAL PROCESSING

THE MOST ADVANCED SKILLS AND KNOW-HOW IN THE FIELDS OF MACHINERY AND INDUSTRIAL COMPONENTS

A technological world leader in processing a wide variety of materials: wood, plastic, glass, stone, metal and composites.
The Group companies, operating throughout the world, are reliable partners of leading companies in various market sectors, including the furniture, construction, automotive, aerospace, ship-building and plastic processing industries. SCM Group coordinates, supports and develops a system of industrial excellence in 3 large highly specialized production centres employing more than 4.000 workers and operating in all 5 continents.

INDUSTRIAL MACHINERY

Standalone machines, integrated systems and services dedicated to the processing of a wide range of materials.

scm
Woodworking technologies

Cms **DMS** DIVERSIFIED MACHINE SYSTEMS
Technologies for advanced materials,plastic, stone, glass and metals processing

INDUSTRIAL PARTS

Technological components for Group and third party machines and plants and for the mechanical industry

HITECO
Electro-spindles and technological components

es
Electrical panels

steelmec
Metalworking and mechanical machining

scmfonderie
Cast Iron

SCM GROUP IN BRIEF

+700 Million/Euro in consolidated turnover	**+4.000** people in Italy and abroad	**3** main production centres	**5** A presence on continents that is direct and widespread	**7%** of turnover invested in R&D

ACKREAT-0422E

Technical data are not binding and may be changed by CMS without prior notice.

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