

# ADVANCED MATERIALS TECHNOLOGY

a brand of **scm**group

PARTNER of



Advanced Manufacturing Research Centre



OFFICIAL SUPPLIER OF

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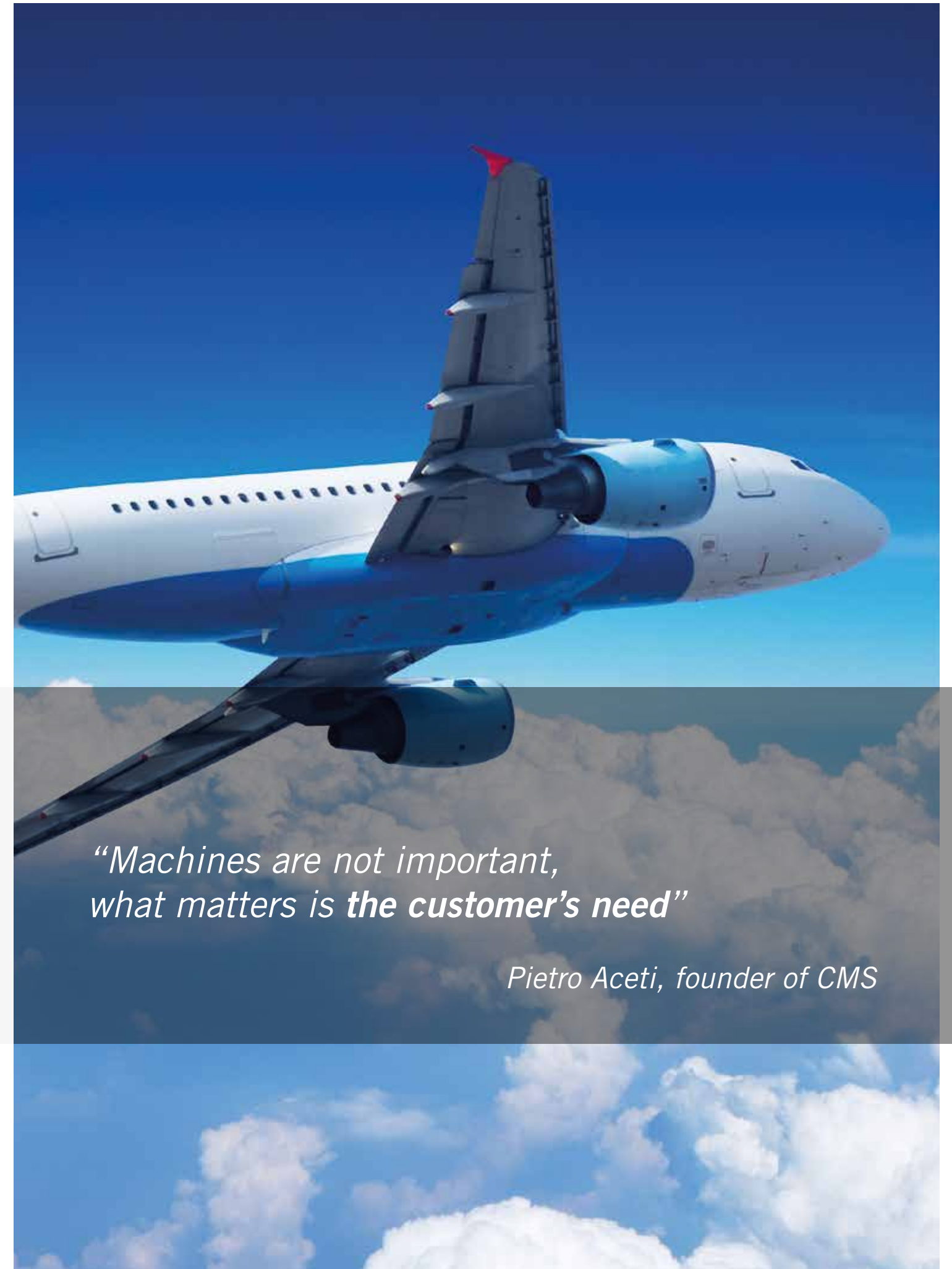
**TEAM USA**



## CUTTING-EDGE TECHNOLOGIES FOR THE PROCESSING OF **ADVANCED MATERIALS**

**CMS Advanced Materials Technology** is the leader in the field of numerically controlled machining centers for the processing of advanced materials: **composites, carbon fiber, aluminum, light alloys and metal**. Since the early 2000s, CMS Advanced Materials Technology has established itself as a **technological partner** in areas of excellence such as **aerospace, aviation, automotive, race boats, Formula 1 and the most advanced railway industry**.

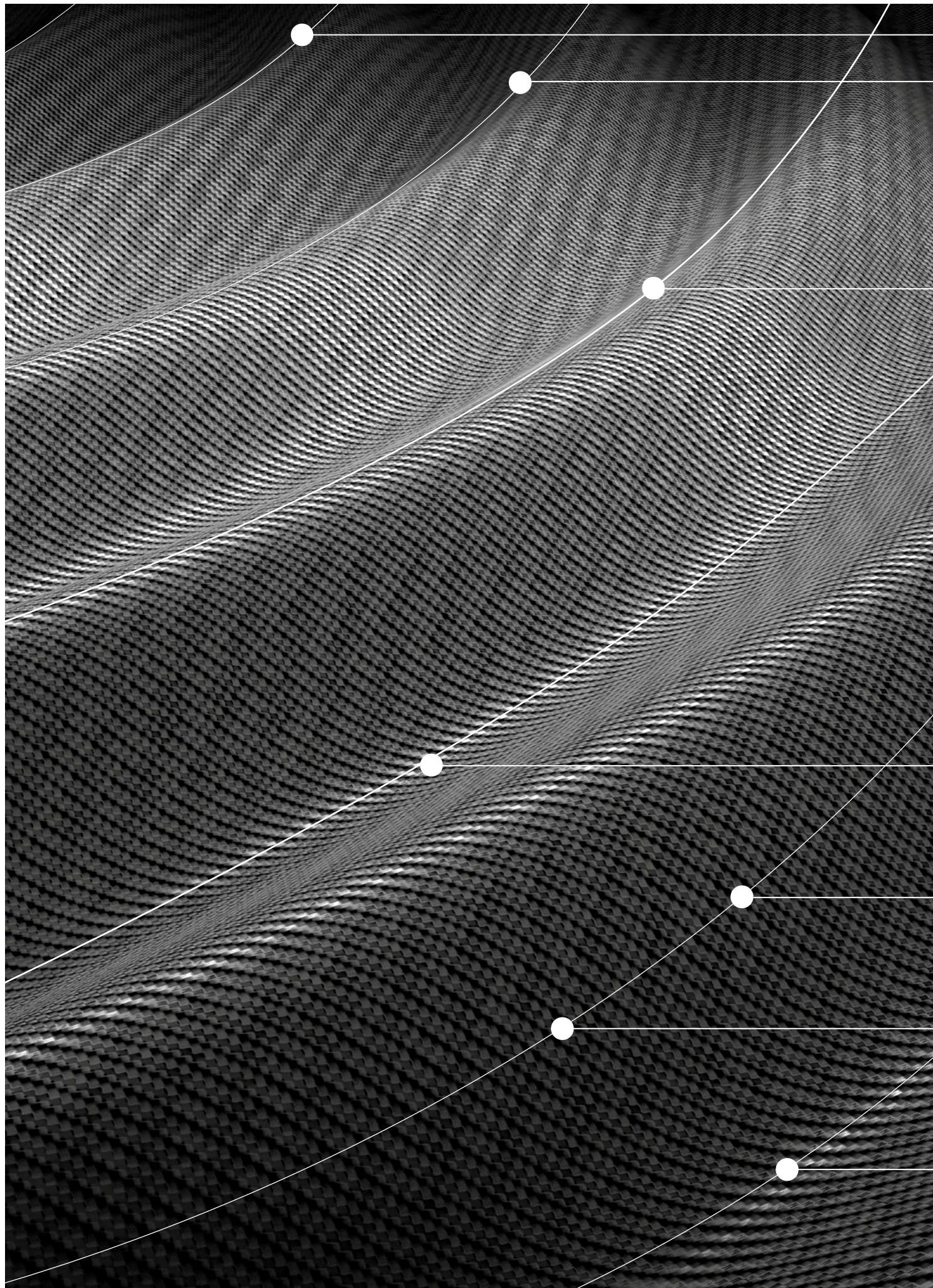
The ability to be close to its customers represents a precise guarantee that **CMS Advanced Materials Technology** has the organizational power to be a real partner, as well as a provider of excellent technologies.



*“Machines are not important,  
what matters is the customer’s need”*

*Pietro Aceti, founder of CMS*





## 1989

CMS joins the sector of processing machines for **advanced materials**, immediately becoming a reference point. The company operates in many sectors: **aerospace, aviation, automotive, race boats, railway industry, Formula 1** and many others.

## 1969

CMS is established. CMS is the acronym for **Costruzione Macchine Speciali (Special Machines Manufacturing)**. The company introduces itself to the market as a manufacturer of traditional machine tools, powered by mechanical, pneumatic or hydraulic systems.

## 2015

**SCM Group**, which had already acquired 51% of CMS in 2002, takes over the remaining shares. **CMS therefore becomes 100% part of the Group**, which guarantees international solidity and capillarity.

**FOR CMS, THE FUTURE IS THE DESTINATION OF A CONTINUOUS JOURNEY WHICH BEGAN IN 1969. IT IS BASED ON TWO FUNDAMENTAL ELEMENTS: IN-DEPTH UNDERSTANDING OF THE CUSTOMER'S NEEDS AND HIGH LEVEL OF SPECIALIZATION, TO PROVIDE UNIQUE ADDED VALUE TO THE CUSTOMER'S MANUFACTURING PROCESSES.**

## 2017

CMS **doubles its production capacity** with the opening of a **new production center, PLANT Z**, located in Zogno (Bergamo)

## 2018

CMS starts to develop its project of Technology for the **Additive Manufacturing** in partnership with the Fraunhofer Institute, a prestigious German research center. In the same year, CMS acquires the American company **Diversified Machine Systems (DMS)**.

## 2020

**The new technology center** is inaugurated in Zogno (Bergamo)

## 2021

Sales forces of CMS North America and **Diversified Machine Systems** merge in a single organization for the US market.



# AUTOMOTIVE



# F1&MOTORSPORT



# WIND ENERGY



# AERONAUTICS



# AEROSPACE



# DEFENCE



## UNIQUE SOLUTIONS FOR ANY NEED

**CMS Advanced Materials Technology** works with companies and research centers operating in sectors where efficiency, versatility and high quality performances are indispensable requirements. CMS Advanced Materials Technology machines make it easier to respond continuously to the needs of increasingly complex processes in extremely demanding sectors, such as **automotive, aerospace, F1 & motorsport, railway industry, race boats and more.**

# MARINE INDUSTRY



# TRAINS





## CMS ADVANCED MATERIALS TECHNOLOGIES

**5-axis machining centers**, highly specialized and specially designed for the processing of **composite materials, carbon fiber, aluminum and light alloys**. Its wide range of machines ensures CMS Advanced Materials Technology's ability to meet the needs of all its customers.

### TECHNOLOGIES FOR THE PROCESSING OF ADVANCED MATERIALS

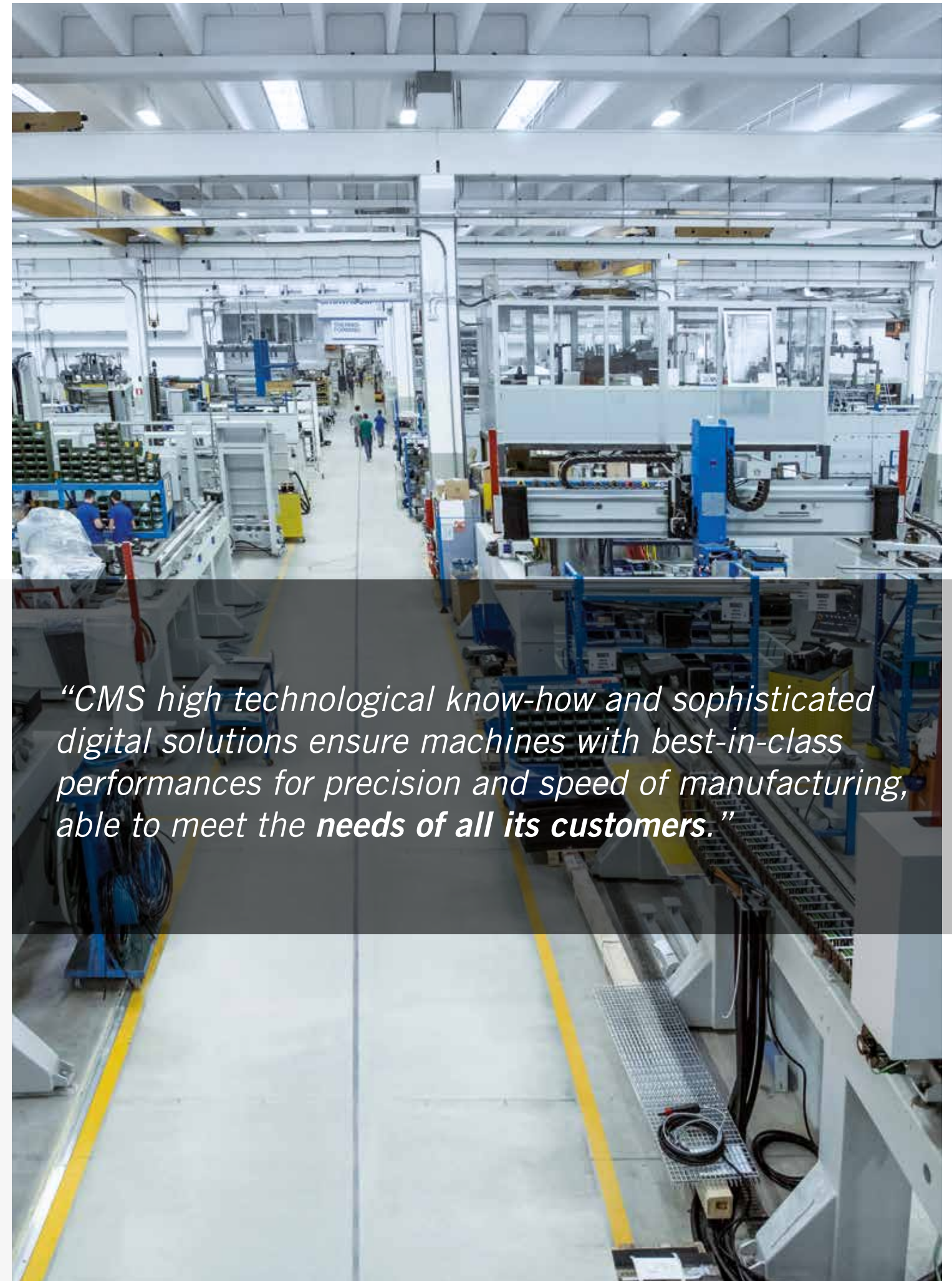
- A. MONOBLOC CNC MACHINING CENTERS FOR VERTICAL MILLING
- B. MONOBLOC CNC MACHINING CENTERS FOR HORIZONTAL MILLING
- C. GANTRY CNC MACHINING CENTERS FOR LARGE-SIZE WORK AREAS
- D. FIXED AND MOBILE BRIDGE CNC MACHINING CENTERS
- E. CNC MACHINING CENTERS FOR THE EYEWEAR INDUSTRY
- F. WIND BLADE WORKING SYSTEMS
- G. CNC MACHINING CENTERS FOR GUNSTOCKS PROCESSING
- H. SOLUTIONS FOR ADDITIVE MANUFACTURING

## CMS DIGITAL SYSTEMS

CMS accompanies its customers through the whole production process, combining **machines with software solutions** and digital services, with a constant attention to **performance improvement** in order to optimize the company productivity. CMS software solutions are developed to allow their integrability with the company pre-existing software, in order to **optimize the machine use** and the whole process.

### DIGITAL SOLUTIONS

- 1. CMS CONNECT
- 2. CMS ACTIVE



*“CMS high technological know-how and sophisticated digital solutions ensure machines with best-in-class performances for precision and speed of manufacturing, able to meet the needs of all its customers.”*



- A. Monobloc CNC machining centers for vertical milling
- B. Monobloc CNC machining centers for horizontal milling
- C. Gantry CNC machining centers for large-size work areas
- D. Fixed and mobile bridge CNC machining centers
- E. CNC machining centers for the eyewear industry
- F. Wind blade working systems
- G. CNC machining centers for gunstocks processing
- H. Solutions for Additive Manufacturing



## A. MONOBLOC CNC MACHINING CENTERS FOR VERTICAL MILLING

Monobloc machining centers for vertical milling, ideal for the processing of **composite materials, aluminum and metal**. The advanced design of its structures, result of CMS Advanced Materials Technology's continuous investments in research and development, and the sophisticated technological solutions adopted provide rigidity, **precision over time, speed and flexibility**, to guarantee **an exceptional level of finishing and an incomparable accuracy**. Thanks to CMS Adaptive Technology, a function integrated in the control, the operator obtains the maximum parameters of material removal on a specific surface by simply recalling the relevant mapping. CMS Adaptive Technology significantly reduces cycle times on complex surfaces, without compromising finishing quality and precision. **Every detail of these machines is designed to guarantee performances without compromise.**



CMS exclusive technology, which guarantees high rigidity structures and higher vibration absorption

### NO-LIMIT CONFIGURABILITY

These machining centers feature **large-size work areas**, to offer maximum freedom and new production opportunities. In many models, this configuration flexibility is expressed through the possibility of **pendular working** and the availability of **configurations with extractable (APC) and rotating (TR) tables**, in order to obtain the highest production flexibility.

### THE POWER OF INNOVATION

All the **electrospindles are fully designed and manufactured within the group**, and represent the result of 30 years of experience and continuous innovation. The extensive range allows our customers to always have the electrospindle with the ideal torque, power and rpm features for their processing, **maximizing the productivity of the machine**. In addition to the milling units, it is possible to add an ultrasound cutting unit, combining the two technologies for **an exceptional synergy** in machining core materials.

### THE POWER OF WATER

Some models are designed with **integrated lubrication and cooling systems**, ideal for the machining of aluminum parts. Each component is specifically designed for this function: from the base sealed with integrated steel panel, to the laminated safety glass, to the evacuation system. Each detail is designed and integrated to ensure **uncompromising performances**.



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## B. MONOBLOC CNC MACHINING CENTERS FOR HORIZONTAL MILLING

Ikon is the 5-axis machining center with **vertical table geometry** for the processing of components in composite materials and aluminum. Equipped with one or two operating units, it is able to **ensure high productivity** and guarantee **maximum visibility of work areas**. The advanced design of the monobloc structure, result of the CMS research center, and the technical solutions adopted ensure **rigidity and precision over time**.



**HDS**  
HIGH DAMPING STRUCTURE  
by CMS

CMS exclusive technology, which guarantees high rigidity structures and higher vibration absorption

### POWER AND PRECISION

Ikon is fitted with **2 vertical rotating tables** for equipping and loading/unloading of workpieces in masked time and a double 5-axis operating unit for simultaneous machining of 2 workpieces or combined machining of both units on a large-sized workpiece. **The high operating power, the geometric precision and the reliability even in the most complex machining operations** lead to a single result: producing better workpieces more quickly.

### ALL-AROUND FLEXIBILITY

The geometry of the machine, with vertical rotating tables, offers **extremely compact dimensions**, with configurations that are **41% smaller than usual**, to allow an easy and cost-effective installation in all production contexts. Moreover, the accessibility for loading/unloading outside the work area makes the operation safe and efficient, as well as **easy to integrate in highly automated contexts**.

### DUST? NO PROBLEM!

The machine includes a **full enclosure to retain the dust, chips and noise** produced during machining, for the maximum safety of the operators. A motorized belt attends to the automatic evacuation of chips, which are dropped thanks to the special geometry of the machine with vertical tables, while special suction inlets ensure the dust cleaning operation.



TECHNOLOGIES FOR THE PROCESSING OF ADVANCED MATERIALS

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## C. GANTRY CNC MACHINING CENTERS FOR LARGE-SIZE WORK AREAS

Numerically controlled machining centers designed according to CMS philosophy: these machines are the result of the experience acquired in the **automotive, aerospace, railway and marine industries**. The structure and the technical solutions adopted, together with selected components, ensure **high level of finishing, high speed of processing, reliability, structural rigidity, flexibility of use and high productivity**.



**HDS**  
HIGH DAMPING STRUCTURE  
by CMS

CMS exclusive technology, which guarantees high rigidity structures and higher vibration absorption



### PERFORMANCES WITHOUT LIMITS

Workpiece dimensions are not a problem anymore - not even those of highly challenging sectors such as aerospace, boating and wind energy. In addition, thanks to the aeronautic engineering concepts applied to the structures, CMS does not compromise in terms of performances, ensuring volumetric precisions 21% lower than the average for the sector.

### BETTER AND FASTER

The high operating power, the geometric precision and the reliability even in the most complex machining operations lead to a single result: **producing better workpieces more quickly**. These machines are designed to adapt to your productive reality and make it even more efficient and competitive.

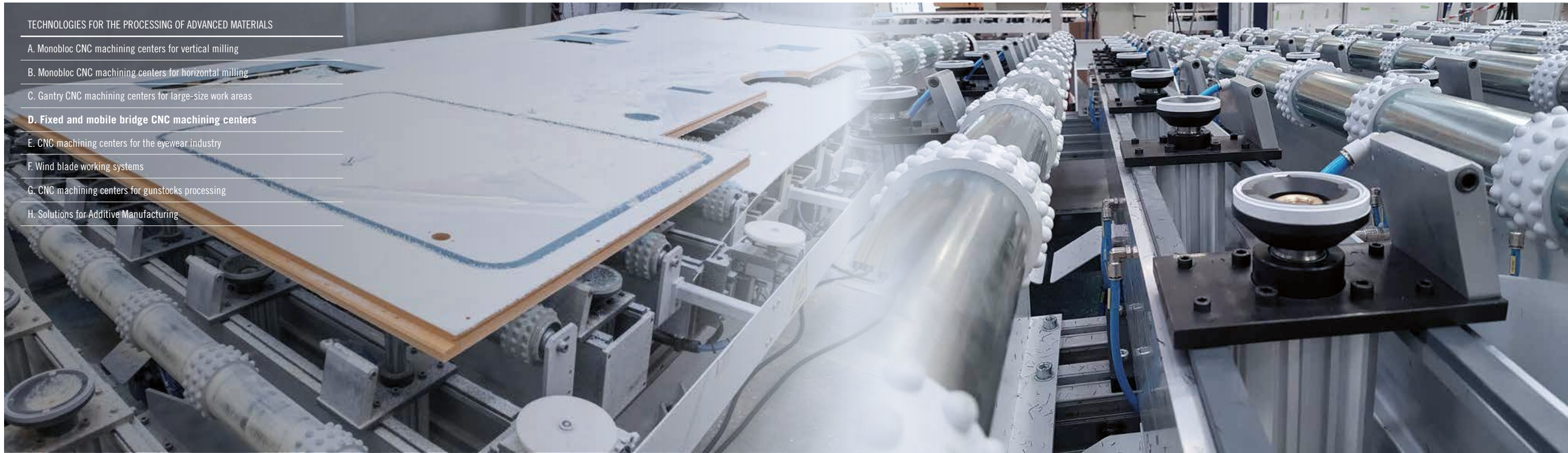
### TAILOR MADE

This type of machine allows to choose the most suitable solutions to your needs: **single or double operating unit, single or double work area, 5-axis milling unit from 12 to 32kW, 5-axis unit with waterjet technology**. With **more than 100 dimensions**, it is impossible not to find the most efficient configuration for each productive reality. Without compromise.



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## D. FIXED AND MOBILE BRIDGE CNC MACHINING CENTERS

3, 4 or 5-interpolated-axis machining centers dedicated to high speed processing of **large panels** or **long and narrow workpieces** in composite materials, aluminum or sandwich materials. Structures and mechanics (with high precision guides and racks) offer **high power, geometrical precision and reliability**, to ensure high speed even in case of heavy machining.



### IDEAL FOR THE MOTORHOME AND REFRIGERATED TRUCKS SECTORS

With more than **150 machines** installed and operating around the world, CMS Advanced Materials Technology is the reference for the **caravan/camper sector** and more. For instance, these machines have been used for successful applications even in the **refrigerated trucks** sector. This is a winning solution for customers that look for **automation, productivity and maximum reliability**.

### MAXIMUM CONFIGURABILITY

Over the years, CMS has developed several operating units that can be used, also in coupled mode, to **reduce the manufacturing time of many machining operations by 53%**. 3, 4 and 5-axis heads and new floating operating units to carry out recesses, avoiding the use of expensive aggregates requiring continuous maintenance.

### FULL INTEGRATION

This type of machines can be configured for **full integration in unmanned production lines**, where all machining phases, such as loading of the panel, alignment, and blockage, are carried out in full automatic mode. This is made possible thanks to the use of the most advanced technologies and the **extreme reliability of the machines**, which become an indispensable element in advanced production systems.



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## E. CNC MACHINING CENTERS FOR THE EYEWEAR INDUSTRY

Monofast is the evolution of CMS monoposto, **the exclusive CMS system for the production of acetate and light alloy spectacle frames**, designed and built for **the eyewear industry** and used for a long time by the most important glasses manufacturers. Monofast improves the **flexibility, ease of use** and **productivity** of a system that, starting from a drawing or sample, allows to produce a new model in only 4 hours, and then start its **highly automated** and **unmanned production**. Monofast is the most performing tool for the manufacturer that needs a constant and prompt adaptation of its collections to the rapid changes of the market.



### FULLY AUTOMATED

All is worked out in detail! **The high level of automation and the HW - SW integration** make Monofast the winning solution. Blank magazines with automatic loading and unloading, automatic tilting of the glasses to machine the 6 faces with extreme ease. **Maximum ergonomics and safety for the operator, all in a small space.**

### THE MOST ADVANCED REVOLVER ON THE MARKET

Owing to **powerful spindles** and a **16-station zero time tool changer**, flexibility and

productivity are guaranteed. The possibility of managing angular transmissions makes it possible to carry out machining operations that are impossible with traditional tools.

### CONSTANTLY EVOLVING EQUIPMENT

CMS is constantly looking for solutions to improve the production process. **More and more reliable expansible clamping devices** which, thanks to their innovative design, ensure a **better grip** and therefore a **better workpiece finishing quality**.





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## F. CNC MACHINING CENTERS FOR WIND BLADE WORKING SYSTEMS

Eos provides a **complete range of drilling and milling processes for wind blades**, with the benefits of an **automatic solution** and the architecture of a CNC machine. Thanks to its technical features, it ensures **productivity, accuracy and repeatability of the operations**. The machine structure is extremely flexible, and it adapts to the machining of several wind blade models. Easy to program and manage, it represents the evolution of the CMS technology for this kind of applications.



### LARGE-SIZE PRODUCTION WITH FLEXIBILITY

Rotor blade holder: **carriages managed by CNC**, fully integrated with the system. This ensures high productivity, accuracy and repeatability. By using the CMS machining solution, **the highest precision on the market** is ensured and, therefore, the most effective wind turbine operation.

### THE PROGRAM DEDICATED TO YOUR NEEDS

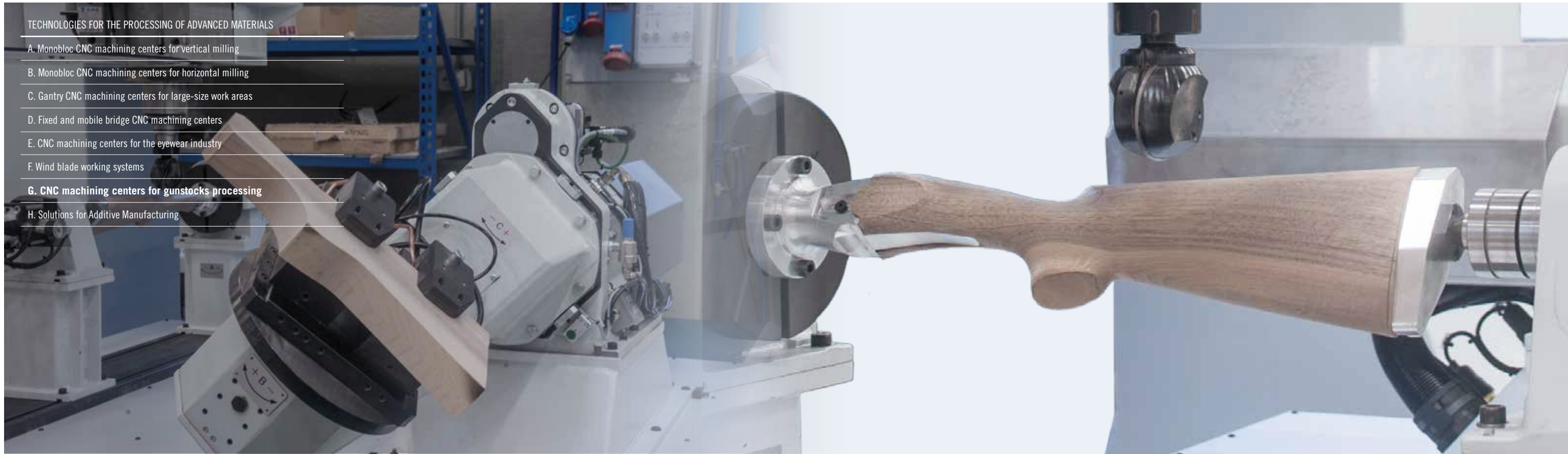
**Automatic blade alignment.** The CNC program of each blade is automatically adjusted according to the actual position of the blade. **Instant configuration** based on the different blade dimensions.

**DUST? NO PROBLEM!** Full enclosure and suction hood on each operating unit. **Extremely efficient dust suction.**



TECHNOLOGIES FOR THE PROCESSING OF ADVANCED MATERIALS

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## G. CNC MACHINING CENTERS FOR GUNSTOCKS PROCESSING

Fixed bridge and 3-4-5-interpolated-axis machining centers, **ideal for processing mechanical seats of rods, rifles, semi-automatic and over-and-under guns**, where absolute precision is required. This machine range meets all the needs: from the **first gunstock processing**, to the **manufacturing of the seats dedicated to mechanics** and the **re-processing and lathing operations** involving external surfaces. Workpieces produced with CMS technologies appear perfect in every detail and ready for the following process operations, such as smoothing and laser engraving.



**INTEGRATED AUTOMATION**  
Unmanned machining with automatic loading/unloading blank magazines. **Integral cabin enclosure, chip conveyors, suction inlets and blowers** - nothing is left to chance: do you want to integrate the machine with a robot? We can do that.

**ALWAYS BY YOUR SIDE! 24/7**  
High reliability components, integral soundproof cabin, blowers, dedicated suction points, workpiece breakage sensors, cameras and much more. Everything developed **to get the most out of your machine.**

**THE LEGEND**  
The manipulator that is now a legend. **Precision, repeatability and sturdiness** have always characterized the CMS manipulator dedicated to the world of rifles.

**NO COMPROMISE**  
The highest expression of **productivity and quality.** Machining of mechanical seats of rods, rifles, semi-automatic and over-and-under guns. Up to 4 operating units and 2 manipulators work in sync and without compromise; **cycle times reduced by up to 53%.**



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## H. SOLUTIONS FOR ADDITIVE MANUFACTURING

**CMS Kreator** is the result of the cooperation between **CMS** and the German prestigious **Fraunhofer** Institute which, in 2018, started developing a **unique LFAM solution** to improve the competitiveness of composite and other industries. This solution uses the exceptional mechanics of the CMS machining centers for vertical milling, ideal for the processing of **composite materials, aluminum, light alloys and metal**.



The hybrid system has been developed in partnership with the German prestigious **Fraunhofer Institute**, which focuses on machine tools and forging technologies.



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



- Maximum capacity = 1 ÷ 10 Kg/h



STRONG REASONS WHY

- 1 Exclusive solution, designed to integrate completely a machine tool and a large format 3D printer.
- 2 Material saving factor compared to other current manufacturing technologies: higher than 5.
- 3 Material consumption up to 5 times lower than our competitors to print the same part.
- 4 Less subparts, shorter manufacturing times, and reduced costs compared to large-size FDM.





# CMS

Digital Systems

## CMS DIGITAL SYSTEMS

**Smart software and digital services to improve the productivity of the companies working in the advanced materials sector.**

CMS accompanies its customers through the whole production process, combining machines with software solutions and digital services, with a constant attention to performance improvement in order to optimize the company productivity.

CMS software solutions are developed to allow their integrability with the company pre-existing software, in order to optimize the machine use and the whole process.



# CMS





## 1. CMS CONNECT IS THE IOT PLATFORM PERFECTLY INTEGRATED WITH THE LATEST-GENERATION CMS MACHINES

**CMS Connect** is able to offer customized 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. Real-time data collected by the machines become useful information to **increase machine productivity, reduce operational and maintenance costs and cut energy costs.**

- SMART MACHINE:** continuous monitoring of machine operation, with information on:
- STATUS:** machine status overview. It allows to check the machine availability, in order to identify potential bottlenecks in the production flow;
- MONITORING:** instantaneous, live display of the operation of the machine and its components, currently running programs and potentiometers;
- PRODUCTION:** list of machine programs run within a given time frame 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 the machine components report a potentially critical state associated with reaching a certain threshold. This way, it will be possible to intervene and schedule maintenance interventions without stopping the production.

**SMART MANAGEMENT**  
Section dedicated to KPI presentation for all the machines connected to the platform. The indicators provided assess the availability, productivity and efficiency of the machine and the product quality.

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

- ADVANTAGES**
- Optimization of production performances
  - Diagnostics to support the optimization of component warranty
  - Productivity increase and downtime reduction
  - Improvement of quality control
  - Maintenance costs cut down

## 2. CMS ACTIVE A REVOLUTIONARY INTERACTION WITH YOUR CMS MACHINE

**CMS Active** is our new interface. The operator can easily manage different machines, as the CMS Active interface software maintain the same look&feel, icons and interaction approach.

**EASE OF USE**  
The new interface has been especially designed and optimized to be immediately used via touch screen. Graphics and icons have been redesigned for an easy and comfortable navigation.

**ADVANCED ORGANIZATION OF PRODUCTION**  
CMS Active allows to configure different users with different roles and responsibilities according to the use of the machine (e.g.: operator, maintenance man, administrator...). It is also possible to define the work shifts on the machine and then survey activities, productivity and events that have occurred in each shift.








**ABSOLUTE QUALITY OF THE FINISHED WORKPIECE**  
With CMS Active, 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.





## CUSTOMER SERVICE OUR TECHNICIANS BY YOUR SIDE AROUND THE WORLD

-  Training
-  Installation
-  Remote Customer Care (RCC)
-  On-site support
-  Check up, preventive maintenance and calibrations
-  Changes and retrofitting
-  Spare parts

## WORLDWIDE PRESENCE AND DEDICATED WAREHOUSES AT THE SERVICE OF EVERY CUSTOMER

- 36,000 different codes to serve machines of all ages
- 1 central warehouse in Zogno and other 6 fully equipped warehouses in the world, in order to ensure shipping optimization and cut waiting times
- 98% of orders available in stock
- spare parts guaranteed by a scrupulous control process and validated by our in-house quality laboratory
- availability to prepare lists of recommended spare parts based on the customer's needs, in order to minimize downtime risk





## THE MOST ADVANCED EXPERTISE IN INDUSTRIAL MACHINES AND COMPONENTS

World leader in the field of technologies for the processing of a wide range of materials: wood, plastic, glass, stone, metal and composite materials. The Group companies around the world are reliable partners of well-known companies working in several product sectors: from the furniture, construction, automotive industry

to aerospace, boating and plastic materials processing. SCM Group coordinates, supports and develops a system of industrial excellence, organized in 3 highly specialized production centers, with 4,000 employees and a direct presence in 5 continents.

### INDUSTRIAL MACHINES

Standalone machines, integrated systems and services designed for processing a wide range of materials.



Technologies for wood processing



Technologies for composites, carbon fiber, aluminum, light alloys, plastic, glass, stone and metal processing



### INDUSTRIAL COMPONENTS

Technological components for machines and systems of the Group, third parties and for the mechanical industry.



Electrospindles and technological components



Electrical panels



Carpentry and mechanical machining



Iron castings

### SCM GROUP IN A NUTSHELL

**+700**  
Million/EUR  
of consolidated turnover

**+4,000**  
employees  
in Italy and abroad

**3** main  
production  
centers

**5** continents  
with direct and  
widespread presence

**7%**  
of turnover  
invested in R&D





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