

# profile / vertec mill

vertical CNC machines



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 3 large highly specialized production centers employing more than 4,000 workers and operating in all 5 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 fibre, aluminium, light alloys, plastic, glass, stone and metals. It was established in 1969 by Mr Pietro Aceti with the aim 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.

# profile / vertec mill



**CMS Glass Technology** is a leader in the field of curved and flat glass working with technologically advanced solutions such as numerically controlled machining centres, cutting benches and water-jet cutting systems. Thanks to the tradition and experience of the historic brands Brembana and Tecnocut, today **CMS Glass Technology** is an absolute protagonist in this sector for the manufacturing of innovative solutions dedicated to architecture and interior decoration.

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# APPLICATIONS



mirrors | photovoltaic | doors | ovens and hob tops



shower doors enclosures | ventilated façades and windows | stairs | tables



# PROFILE

## TECHNOLOGICAL BENEFITS

### CENTRO DI LAVORO MODULARE VERTICALE A CONTROLLO NUMERICO

Introduced by CMS in 1997, Profile is the first real “vertical” CNC working center, designed for grinding, milling and drilling glass sheets vertically. Due to over 20 years of experience, now, CMS can offer a complete machining center that completely meets any customer’s needs. According to the configuration, Profile can carry out arising, polished and industrial grinding, milling, and coaxial drilling operations with absolute accuracy, thanks to the advantages of vertical machining. Available in different sizes, it enables working small- and large-sized sheets up to 7500x3300 mm (other maximum workable dimensions on request). Profile can be installed as a stand-alone machine, in line with a drilling-milling machine or inside a double-glazing line.

- loading/unloading operations can be carried out either manually or by CMS automatic systems
- the bearing structure of the machine is made of thick steel, treated with rustproofing and ceramic paint
- maximum flexibility in the format and production batch change operations: no machine set-up operations are required
- new protection for maximum safety during machining and reduction of overall dimensions
- CMS “glass-guide” system which ensures perfect coaxiality between glass and grinding wheel



#### ELECTROSPINDLE

- 18HP power and 0÷15000 rpm
- Torque 22,6 Nm at 6000 rpm
- Collet for the release of the tool-holder cones by means of hydraulic piston
- Ceramic bearings for heavy machining and possibility to have 40HP power



#### SUCTION CUP BEAM

Guides facing upwards and insulated from water by means of a double protective cover. The transmission parts are also automatically lubricated by a centralized system to ensure long life.



#### STANDARD SUCTION CUPS

Arrangement and size of the suction cups designed to allow exceptional modularity of grip even on small workpieces.

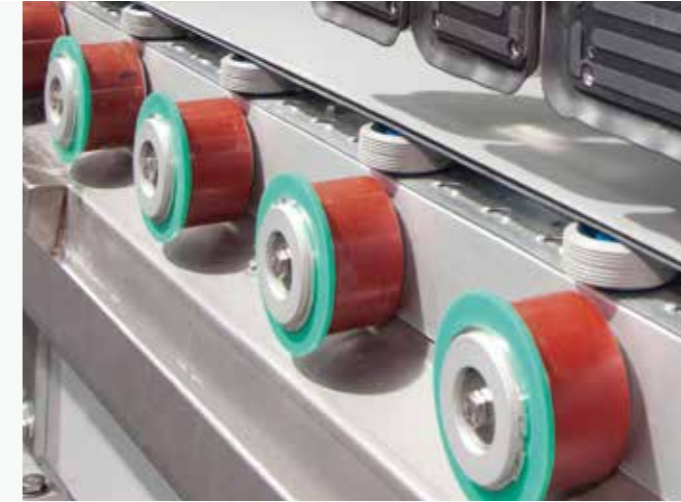
### KEY BUYER BENEFITS

- + **Unbeatable glossy:** thanks to the 18 HP of the most powerful spindle in its category and to the glass clamping system that eliminates tool vibrations, Profile polishes glasses up to 30mm with the quality of horizontal CNC machine.
- + **Productivity at the highest levels:** the second grinding spindle improves productivity by up to 43% thanks to the possibility of working two sides of glass simultaneously. Profile is the perfect machine to be inserted upstream of a double-glazing line since it can seam a square meter of glass in less than 18 seconds.
- + **Endless tools available:** 60 tool change positions combined with the management of multi-profile tools eliminate the necessity of manual tool changes. The time needed for a change, less than 20 seconds, is hidden in the glass repositioning operations without affecting the working time.
- + **Perfect glass squaring:** the matrix suction cup group is capable of supporting glass up to 1 ton. The squaring of the glass is guaranteed by the perpendicularity between the guides, reaching values of 0.15mm per meter the smaller of the vertical machines.



# ACCESSORIES

Two independent-matrix suction cup groups, are automatically managed by the software. The asymmetrical arrangement of the suction cups on each individual carriage ensures optimum grip even on small workpieces. Thanks to the stroke of more than 120 mm, it is possible to carry out any kind of work in front of the idling suction cups. The planarity of the work surface is guaranteed by a solid aluminum surface which is ground by the machine directly. The two groups, when operating simultaneously, can easily carry more than 1 ton of glass.



## CONVEYOR ROLLERS:

The glass is referred to by a mechanical system. The conveyor rollers, made of a material highly resistant to abrasion and cutting, ensure a solid base for the glass sheet support. They can support weights of up to 150 kg per linear meter and act as a glass sheet handling system. The zeroing along the other axis is guaranteed by a mechanical stop that, once referred to the glass sheet, disappears below the level of the rollers.



Rear drilling unit. The rear spindle is dedicated to drilling the glass sheet and can reach any area of the glass sheet without any limitation. The drilling unit enables using coredrills up to 50 mm in diameter; it is also equipped with a cooling system directly built in the glass sheet dragging presser. The spindle has a dedicated tool magazine that houses 6 different tools but can be extended up to 20 stations.

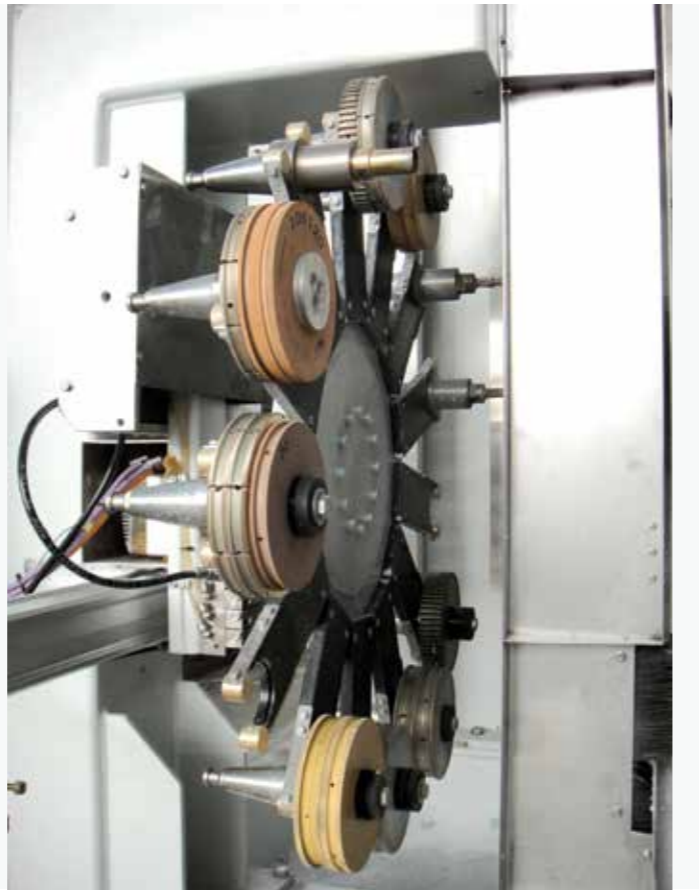


The machine is always equipped with a suction cup washing system. At each cycle start, the working carriages pass in front of nozzles that spray high pressure water on the surface of the suction cups. The accurate cleaning of the suction cups guarantees the absence of scratches on the glass sheets during the grip. It is also possible to equip the machine with a pre-washing system that cleans the glass sheet of the machining residues. In this way the glass sheet gets to the washer with the surface already cleaned, ensuring a longer life of the brushes. Pre-washing is recommended especially for machines that will work with low-e glass.



# ACCESSORIES

One or more rotary magazines can be installed on the machine to house ISO40 tool holders. Each magazine has 13 stations and each single cone can accommodate up to 50 mm of tool thickness. Multi-profile tools such as milling cutters and combined profiles are also allowed.



## PRESETTING LASER:

To ensure perfect machining quality and easy operation by the operator, the machine can be equipped with an automatic tool presetter. The choice to use a presetting laser allows no limitation when reading the tool templates and also allows the reading of the tool diameter in a dynamic way.



## CONES:

- ISO40 cone with 1/2" gas connection for cutters and coredrills
- ISO40 cone for peripheral wheels Ø 150 mm

## SECOND GRINDING SPINDLE:

In addition to the main operating spindle, a second spindle can be used to grind the underside of the glass sheet. The option is extremely useful when the machine is inserted into a line of double-glazing glass sheet: with this device you can increase productivity up to 41%. In combination with the second spindle, it is possible to install the dimensional reader for rectangular glass sheets. The system automatically detects the geometric dimensions of the workpiece and automatically creates the work program. In this way, the operator only has to load glass sheets into the machine, leaving out all programming operations.



Tool-dresser for diamond wheels and grinding tool for polishing wheels.

# VERTEC MILL

## TECHNOLOGICAL BENEFITS

### CNC VERTICAL DRILLING MACHINE

CNC vertical machine for drilling, countersinking, milling and notching operations on monolithic, laminated and Low-E glass.

- possibility to work both rectangular and shaped glass sheets (one rectilinear side required)
- two coaxial opposed electrospindles and tool cooling system with internal and external water, which enables a higher finishing and machining quality
- two 9+9 stations NC-controlled rotating tool crib installed on a carriage fixed to the electrospindle, ensure tool change operations in the shortest time
- high-pressure water cushion (patented)



The machine is equipped with two opposing pressers that are meant to stabilize the workpiece during machining.

The function of the pressers during drilling is to clamp the glass sheet and, at the same time, bring coolant to the outside of the tool. During the milling and profiling operations, the pressers are separated from the glass sheet by a few tenths and, due to the patented water cushion system, they ensure the absence of vibrations, perfect tool cooling, and uniformity of the chamfer size along the entire glass sheet.

### KEY BUYER BENEFITS

- + **Minimum tool change times:** The machine has two 9 + 9 position tool magazines fixed integrally with the vertical carriage. In this way, the tool change operation takes just 10" regardless of the processing area.
- + **Tools always at the best performance:** to ensure maximum machining precision, the machine has an automatic measurement system for core drill bits with a centesimal precision. It is also possible to revive the core bits completely automatically. This system allows having in total safety tools that always work at maximum performance.
- + **Anti scratch system:** during the milling and profiling operations, the pressers remain separated from the glass 0.2 mm and thanks to the patented water cushion system they ensure the absence of vibrations, perfect cooling of the tool and uniformity of the size of the chamfers along the entire sheet.
- + **Unmatched positioning accuracy:** the stop guarantees positioning with an accuracy of fewer than 3 tenths of a millimeter thanks to the transmission with pinion and rack. The sheet zeroing takes place without stapling the surface, in this way it is possible to process low-E glasses.



# ACCESSORIES

The two completely independent suction cup carriages, with three suction cups with separate channels, ensure the perfect movement of the glass sheet during milling operations.



The machine is equipped with two 9+9 station tool magazines fitted integrally with the vertical carriage. In this way, regardless of the position of execution of the work, the tool change operations will always be fast. The optimization of the program provides for the changing of the tool on one operating unit while the other is machining.

Electrospindle 5 HP 0÷12000 rpm



To ensure maximum machining precision, the machine is equipped with an automatic coredrill measurement system. This relieves the operator of the task of checking the tool wear. It is also possible to dress the coredrills in a fully automatic way by following a preset frequency. This fully automatic system enables having tools that always work at maximum performance in total safety.



It is possible to use tools with 1/2" gas connection with a length of 75 or 95 mm. Combined milling cutters, tapered countersinks and grinding wheels for polishing milling operations.





# PRODUCTION LINE

CMS Glass Technology vertical machining centers can be installed as stand-alone machines (ensuring maximum machining flexibility), in line (for maximum productivity) or inside a double-glazing line. They can be completed with glass loading/unloading systems, Kart or anthropomorphic robots, automatic paper-spreaders for the separation of single glass sheets and single or rotating palletization system. Due to the different solutions available, a CMS vertical machining center is the winning solution for all modern glass workshops, from small-sized ones (typically family-run) to large-sized ones (industrially managed for high production volumes).



Automatic glass sheet loading system



Automatic paper-spreader systems



Anthropomorphic robots



# PROFILE / VERTEC MILL SOFTWARE

## EASYGLASS

Easyglass is the CAD/CAM software developed on CMS Glass Technology machining center and specifically designed for the generation of glass machining programs; it runs under Windows environment.

Available at different levels, it offers the following functions:

### CAD FUNCTIONS:

- Free drawing of geometric entities
- Drawing from preset parametric models (libraries)
- Import and export of figures from and for other CAD/CAM systems with the standard current formats (DXF, IGES, ISO, CAL CSF, BYF etc.)

### CAM FUNCTIONS

- Automatic generation of paths with interactive graphic editing
- Generation of roughing, drilling, finishing, profiling, polishing, etc. cycles
- Automatic cycle generation of engraving with milling tool, notches, countersinking, etc.
- Management of multiple interpolated axes
- Computation of machining times

### ARRANGEMENT:

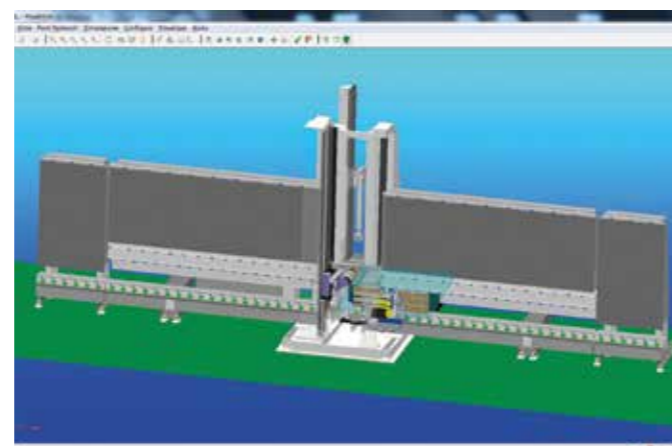
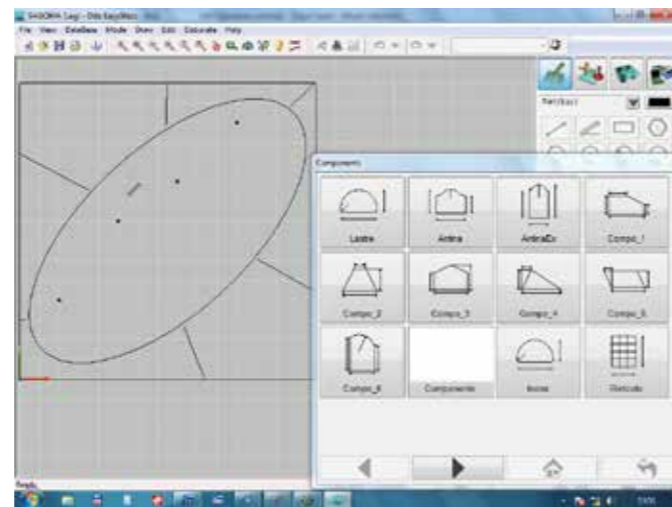
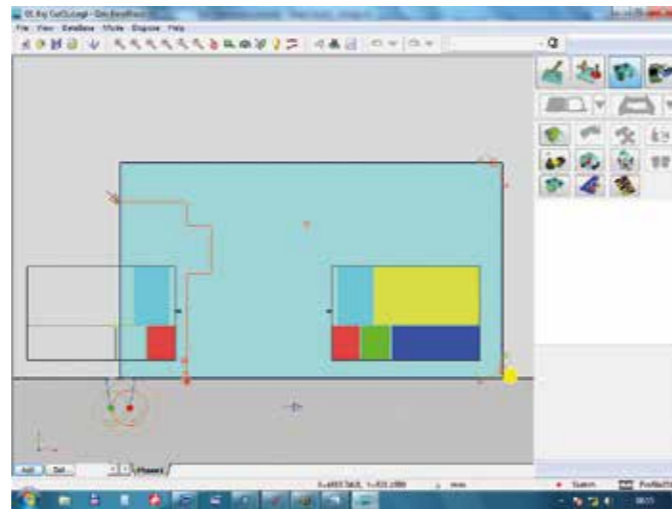
- Graphic interactive positioning of suction cups
- Automatic check of interferences

### POSTPROCESSOR:

- Transfer of machining programs to the machining center via: USB key, serial line, network

### SIMULATION:

- 3D graphic simulator of machining process



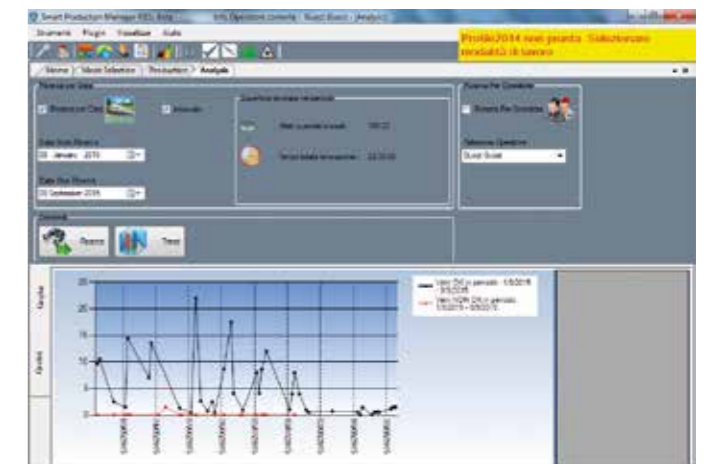
## ONLINE CUSTOMER SUPPORT

By using the remote and web-assistance platforms and the SLM (Service Lifecycle Management) system, CMS will assist you online, reducing the times requested from the first diagnosis to the intervention.



## SPM (SMART PRODUCTION MANAGER) SOFTWARE

The SPM (Smart Production Manager) software is an automatic production controller, capable of planning, organizing and managing the glass processing on vertical machines. SPM enables monitoring the whole production process and database recording each machining operation, complete with information like data and production time, machining center operator's ID, cycle time, dimensions, (completed/interrupted) machining results, operating machining center's ID and name of DXF or NC file in use. The software is available in various configurations, which enables managing the machining center automatically (with the aid of bar codes or production lists), semi-automatically (the operator selects the DXF file or NC manually) or manually (the programs are generated and transmitted manually to the machining center for a quickly carry out).



# PROFILE

## TECHNICAL DATA



### PROFILE: TECHNICAL DATA

MAXIMUM WORKABLE LENGHT	2000 - 3200 - 4500 - 6000 - 7500 mm / 79 - 126 - 177 - 236 - 295 in (Other maximum workable lenghts on request)	
MAXIMUM WORKABLE HEIGHT	1600 - 2200 - 2800 - 3300 mm / 63 - 86 - 110 - 130 in	
MINIMUM WORKABLE DIMENSION	420x270 mm / 16x10 in Other minimum workable dimension on request	
GLASS WORKABLE THICKNESS	3 ÷ 30 mm / 1/8 ÷ 5/4 in	
ELECTROSPINDLE		
POWER	13,5 KW / 18 HP (S1) 21 KW / 28 HP (S6)	30 KW / 40 HP (S1) 36 KW / 48 HP (S6)
REVOLUTION	0 ÷ 15000 rpm	0 ÷ 12000 rpm

# VERTEC MILL

## TECHNICAL DATA



### VERTEC MILL: TECHNICAL DATA

MAXIMUM WORKABLE LENGHT	3200 - 4500 - 6000 - 7500 mm / 126 - 177 - 236 - 295 in
MAXIMUM WORKABLE HEIGHT	1600 - 2220 - 2600 - 3300 mm / 63 - 86 - 102 - 130 in
MINIMUM WORKABLE DIMENSION	420x180 mm / 16x7 in
GLASS WORKABLE THICKNESS	3 ÷ 30 mm / 1/8 ÷ 5/4 in
DRILLING BITS DIAMETER	3 ÷ 70 mm / 1/8 ÷ 2,5 in
ELECTROSPINDLE	
POWER	3,7 KW / 5 HP (S1) 4,4 KW / 5,8 HP (S6)

# 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

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.

# THE RANGE OF CMS GLASS TECHNOLOGY

# FOR GLASS PROCESSING

## HORIZONTAL MACHINING CENTERS



**SPEED**

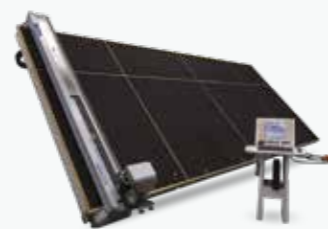


**MAXIMA**

## CUTTING TABLES AND CUTTING LINE



**AGIL**



**RUNNER**



**RUNNER LINE**

## VERTICAL MACHINING CENTERS



**VERTEC MILL**



**PROFILE**



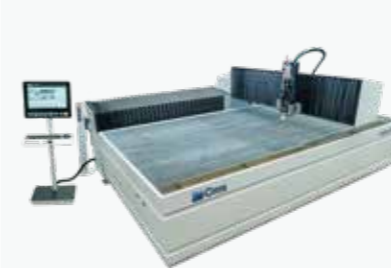
**VERTEC MILL + PROFILE**

## LOADING SYSTEMS



**KART**

## WATERJET CUTTING SYSTEMS AND PRESSURE INTENSIFIERS



**EASYLINE**



**SMARTLINE**



**MILESTONE S**



**IDROLINE S**



**AQUATEC**



**EASYPUMP**



**JET POWER EVO**



**GREENJET EVO**



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