

METAL - STONE - GLASS

# tecnocut proline

Waterjet cutting machine



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 centres 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.



**CMS Metal Technology** is the brand dedicated to the production of metalworking machines and technical articles offering a wide range of complete water-jet cutting systems, pressure intensifiers and dry or wet deburring and satin finishing machines. Since the 90's, thanks to the acquisition of Tecnocut and constant internal developments, **CMS Metal Technology** has been able to gain high international prestige, boasting more than 1,500 installations worldwide. **CMS Metal Technology** is the reliable partner of leading industries in various sectors such as automotive, aerospace, machining, furniture and industrial architecture.



# tecnocut proline

<b>APPLICATIONS</b>	4-5
<b>TECNOCUT PROLINE TECHNOLOGICAL BENEFITS</b>	6-7
<b>STANDARD ACCESSORIES</b>	8-9
<b>OPTIONAL ACCESSORIES</b>	10-13
<b>TECNOCUT GREENJET EVO PRESSURE INTENSIFIER</b>	14-15
<b>EASYJET DDX SOFTWARE</b>	16-17
<b>TECHNICAL DATA</b>	18-19
<b>CMS CONNECT</b>	20
<b>CMS ACTIVE</b>	21
<b>THE RANGE</b>	22-23

# APPLICATIONS



precision mechanics | advanced materials processing | soft materials | bulding and furnishing



intensive production of flat sheet metal | cutting of special materials and alloys | ceramics and synthetic materials | special glass for industrial use



# TECNOCUT PROLINE

## TECHNOLOGICAL BENEFITS

### HYDRO-ABRASIVE WATERJET CUTTING SYSTEM

The ultimate machine tool specifically conceived and designed with advanced technical solutions for the waterjet cutting technology, in order to achieve unmatched performance.

Tecnocut Proline is built around a stainless-steel frame ready for integration with the “Dredge”, a fully automated and maintenance free abrasive removal system, an automatic water level control for submerged cutting and rotary option for pipes processing. This innovative, easy configurable concept has not only the abrasive tank installed on-board, but also the electric servodriven high-pressure pump is integrated with the machine frame, a big saving in terms of overall layout.

The overall machine structure, especially the rugged gantry system, offers unmatched rigidity and thus consistent cutting accuracy over time, thanks also to the ground helical rack and **pinions**, combined with **high precision gearboxes**.

The linear guides are protected by the innovative “Powder free” system composed of overlapping way covers, which ensures the highest protection against moisture, dirt and dust.

- more versatility: new models and extensive supply of accessories and standard arrangements for faster, less costly retrofits
- more reliable: NC and digital drivers for full control of the cutting parameters
- more compact: accessories integrated into the base structure for easy, fast installation and re-commissioning

### KEY BUYER BENEFITS

- + - **35% of layout** with respect to previous models, thanks to the integration of the abrasive bulk and high-pressure pump.
- + It can be fitted with up to **2 electric and servo-driven pumps**, 4150 or 6200 bar available pressure, with the aim to achieve the highest throughput and cutting versatility also when working especially hard or thick materials.
- + **Machine is ready for easy integration with optional** such as the Dredge, the rotary option and the water level control for submerged cutting, to accommodate specific applications and the most demanding production requirements.
- + **± 0.035 mm of positioning accuracy** and +/- 0.025 repeatability across the entire table, to ensure unparalleled cutting quality

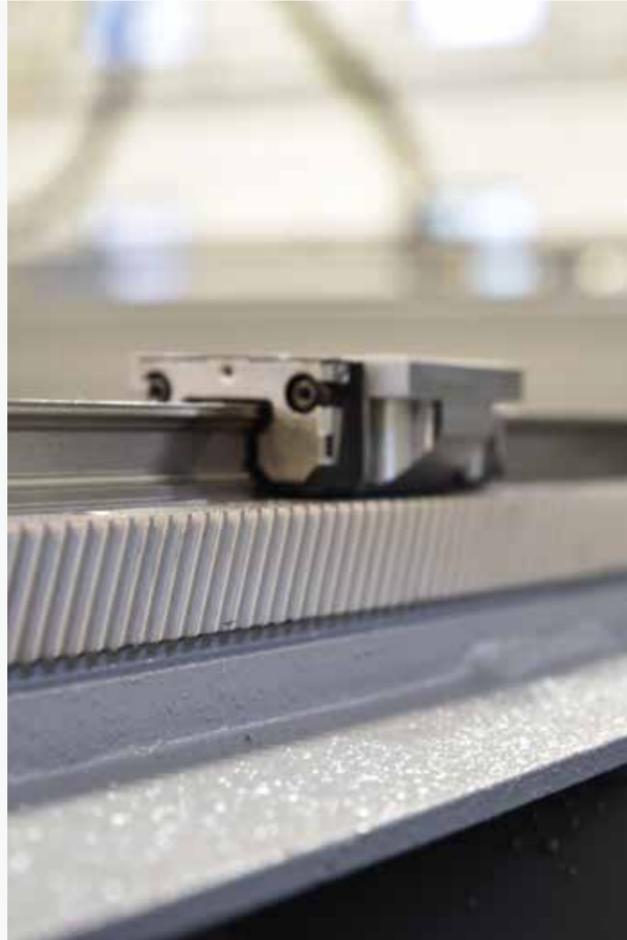


# TECNOCUT PROLINE

## STANDARD ACCESSORIES

### RACKS AND HELICOIDAL PINIONS

The X and Y axes have racks and tempered and ground helicoidal pinions to guarantee excellent dynamic performance, while maintaining high standards of positioning and repeatability, thanks also to a reduction in backlash.



### AUTOMATIC SAFETY DOORS

Front and rear doors with pneumatic movement to protect the cutting area and reduce the dispersion of water and abrasive material. This ensures a cleaner, quieter and safer work environment for the operator. The large transparent polycarbonate panels allow the cutting process to be monitored in absolute safety, while the optional "Totally Dry" kit prevents any water from escaping while machining.



### POWDER-FREE LABYRINTHS

The linear guides and the transmission kinematics are incorporated into the machine structure and protected by a bent, overlapping metal sheet system known as Powder-Free. This system provides the highest level of protection against external contamination like moisture, dirt and abrasiveness that can come into contact with the handling system. Furthermore, it avoids typical problems of wear on the bellows and makes implementing configurations easier with more separate cutting heads.



### AUTOMATIC HOSE REEL

Air and water sprayer kit, useful for cycle end clearing of cut material.

# TECNOCUT PROLINE

## STANDARD ACCESSORIES

### INTENSIFIER CHAMBER

The innovative base structure means up to two high pressure 4150 bar and 6200 bar electric actuators can be integrated which dramatically reduces plant installation times and loss of pressure typical of high-pressure traces located on the ground. The chamber can be fully removed and fitted with internal lighting to make it easier to carry out maintenance work on the high-pressure circuit. Furthermore, the presence of a control panel with touch display allows for fast and instant on-board diagnostics.



### PRESSURIZED ABRASIVE FEEDING SYSTEM 330 KG

Pressurized abrasive feeding system with two tanks: one with a 330 kg load capacity and another pressurised one for powering the cutting head (electronic doser). The structure anchored to the base eliminates installation and positioning issues, guaranteeing a fixed length of the pipe for the abrasive system for uninterrupted transportation and without a loss of pressure.

### HIGH-PRESSURE INTERFACE

Thanks to the chamber specifically for the intensifier integrated into the base, there is a considerable drop in loss of pressure and an optimisation of the high-pressure transport circuit with double strap that restricts the maximum installation height to 3900 mm (option 2980 mm).

The presence of a high-pressure filter before entering the cutting head blocks water impurities deriving from wear on the pipes and means high pressure components last longer.



### PROBE

Time controlled or continuous probe system, capable of automatically regulating the height of the cutting head keeping it equidistant compared to the surface of the piece being machined even in the case of variations in evenness of the piece itself. Available for the 3-axis and 5-axis cutting heads and with automatic stopping system in the event of a collision (optional).

# TECNOCUT PROLINE

## STANDARD ACCESSORIES

### LUBRICATION

Automatic CNC controlled lubrication with forced injection of the main X, Y and Z axes, managed by the numerical control at pre-arranged intervals without manual interventions and without stopping the machine. The presence of sensors controls the pressure and signalling of the minimum level of the tank.



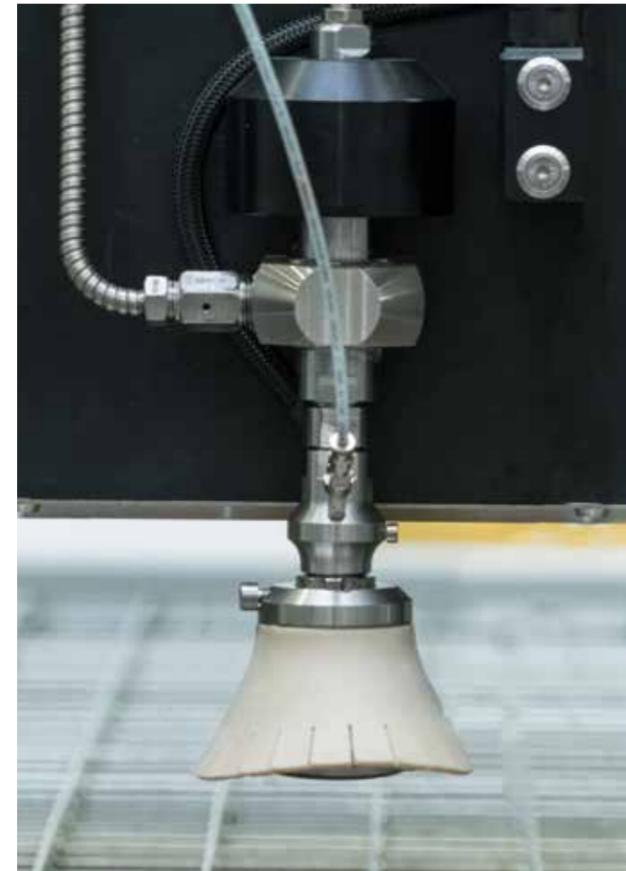
### CONTROL PANEL

Management hardware and software of the waterjet cutting system designed to offer simple, intuitive operator interface and allow for complete management of all the system's functions, including compensation of the conicity (JDC) for the 5-axis machines. The control of the system via 21.5" industrial PC Panel with touch display and HMI CMS Active interface.



### DELECTRONIC HOPPER

Electronic control hopper of the abrasive system with adjustable capacity from 100 to 1400 g/min, complete with digital pressure-vacuum switch to directly detect the vacuum in the cutting head. Clogging of the abrasive pipe, wear on the opening, mixing chamber and focaliser trigger the intervention of the sensor indicating an irregular variation in the level of the vacuum with subsequent stoppage of the machining cycle avoiding damages to the material to be processed.



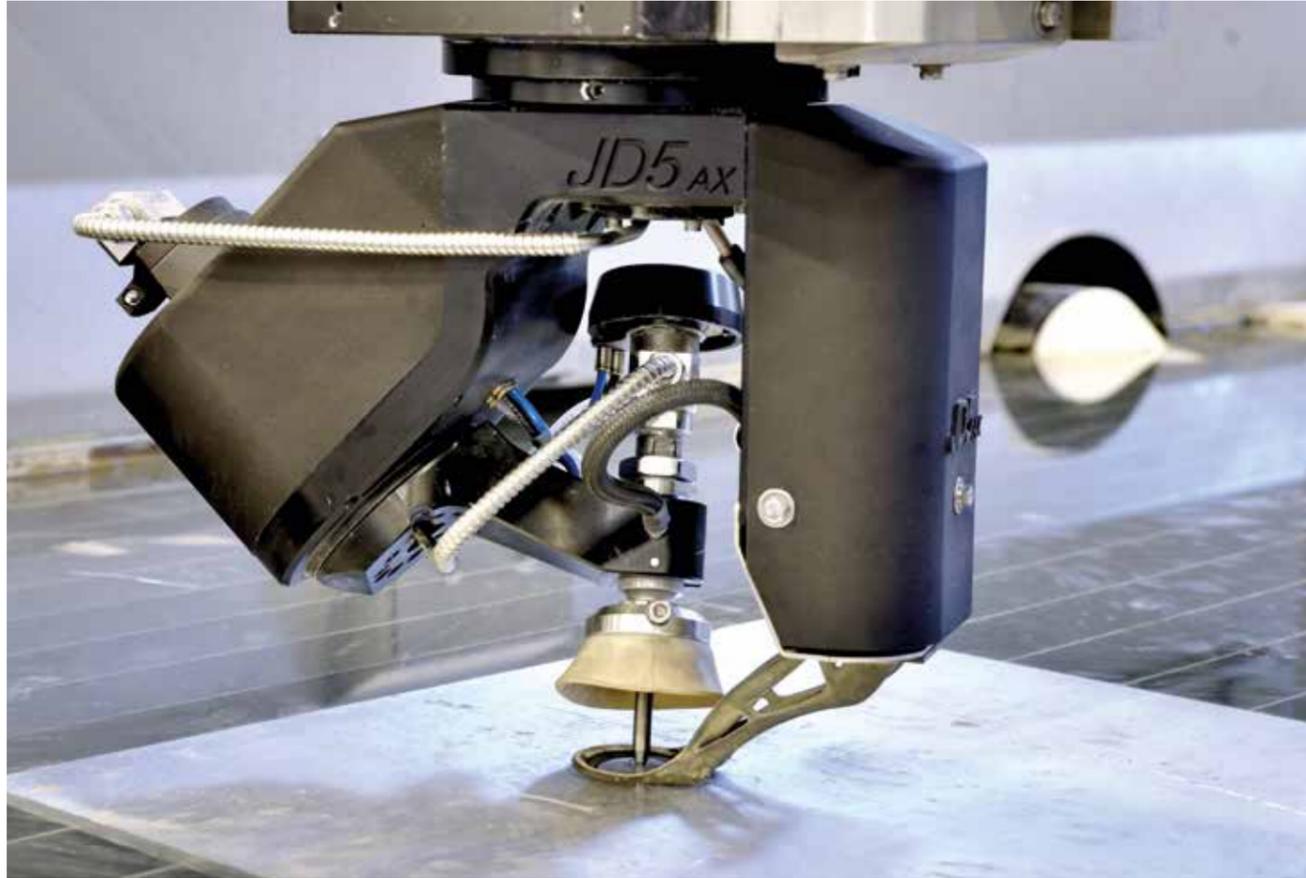
### 3-AXIS HEAD

The cutting head was designed to achieve high performance when cutting. The parts on the cutting head like the opening, wear insert and focaliser are perfectly aligned and self-centring to guarantee fast replacement. The end part of the head can be changed to cut with pure water jet or hydraulic abrasive ensuring maximum performance in both applications.

# TECNOCUT PROLINE

## OPTIONALS ACCESSORIES

### JD5AX



JD5ax's features open up new cutting opportunities on a wide range of materials, maximizing the operational flexibility of the 5-axis Waterjet CMS systems and ensuring very high standards of accuracy and quality of pieces obtained by an abrasive waterjet. With the innovative JD5ax head it's possible to get lower value of conicity, ensuring high finishing quality and size tolerance. JD5ax is made of an infinite rotation axis (C), an entirely new feature, and a tilting axis (B) up to  $\pm 62^\circ$ , all designed and produced by the CMS engineers.

#### SPECIFICATIONS

- Compact design
- Cutting from  $0^\circ$  to  $62^\circ$
- Automatic taper compensation (JDC)
- Patented abrasive injection
- New touch probe with incorporated anticollision detection
- Infinite HP joint rotation
- Compatible with the latest orifices
- Reduced mechanic components subjected to fatigue
- Monitoring of cutting components wear
- Direct drive servomotors

#### BENEFITS

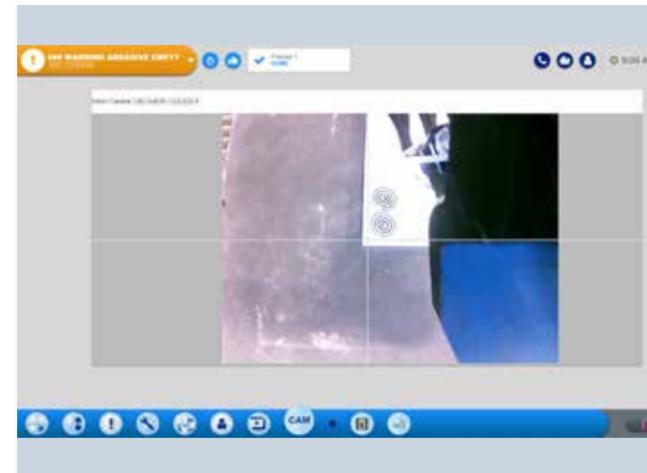
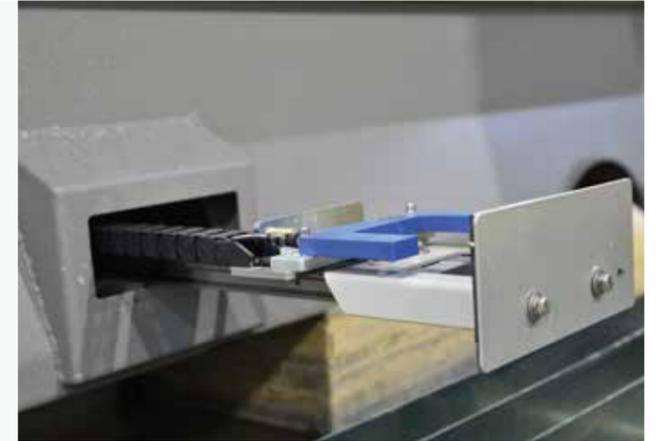
- Infinite rotation for nesting cut without breakpoints
- High positioning accuracy
- High mechanical strength
- High cutting speeds and accelerations
- Taper compensation up to  $60^\circ$  tilt angle
- 3D machining
- Possibility to carry out countersinking and chamfering for ready-to-weld profiles
- Easy maintenance

#### 5AX HEAD POSITION

Automatic laser detection system of the cutting head alignment compared to the rotation center of the C axis and B axis with the aim of:

- compensating the misalignment of the cutting head in the event of a strong collision
- accurately calculate the XY positions of the focaliser before machining with particular requirements for limited tolerances

The device is housed on a tray concealed in the base and can be removed automatically on a guides with ball screw pads to guarantee accurate, reliable measurements.



#### CAMERA

Innovative digital system to detect and capture the origin of the cutting point on the material loaded on the work table, using the camera positioned inside the operating unit capable of framing the work area around the cutting head.

The device speeds up the tooling process and preparation of the cutting process directly from the touch control panel on the machine, keeping the machine safe in the presence of an automatic door in the case of front protection photocells.

#### DRILLING UNIT

Pneumatic unit controlled by Numeric Control and with a maximum rotation of 25,000 rpm (vacuum) to also deal with the most significant applications on the composite and multi-layer materials, that easily delaminate when drilling with the high-pressure water jet.

The high revs help reduce the boring time without damaging the material, optimising the cutting cycle in combination with the machining strategies that can be set using the software.



# TECNOCUT PROLINE

## OPTIONALS ACCESSORIES

### DREDGE

Stainless steel base ready for the addition of the dredge chain system (optional) for the automatic removal of the abrasive system with innovative "maintenance-free" return unit (patent pending), eliminating machine stops to clean the tank and reducing maintenance costs by 90% compared to traditional hydrocyclone technology.

The abrasive evacuation system inside the tank is protected by both baskets to collect machining scraps and a metal cage.

The purpose of the baskets is to collect the scraps while simultaneously avoiding them falling into the bottom of the tank and damaging the dredge chain.



### ROTATING AXIS TO MACHINE PIPES

Interpolated handling to cut pipes with a circular or square base up to 400 mm max. with a sliding system of the tailstock on double guides with ball screw pads protected by bellows and lock braking system (optional).

The base in the rear area presents the machinings needed to arrange the rotating axis and a control panel for fast tooling of the job and cutting cycle.



### WATER LEVEL

Inside the tank, at the back, there is an automatic water level adjustment system. Thanks to the compressed air, the water level in the tank can be increased by up to 50 mm in order to permit the cut submerged by the material loaded onto the cutting surface, guaranteeing noise reduction and water reverberations in the work environment. A detector fitted inside the base permits an accurate positioning of the water level above the surface of the piece without an operator intervening.

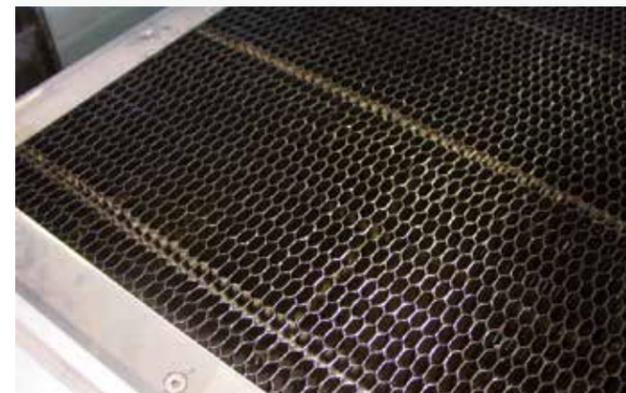
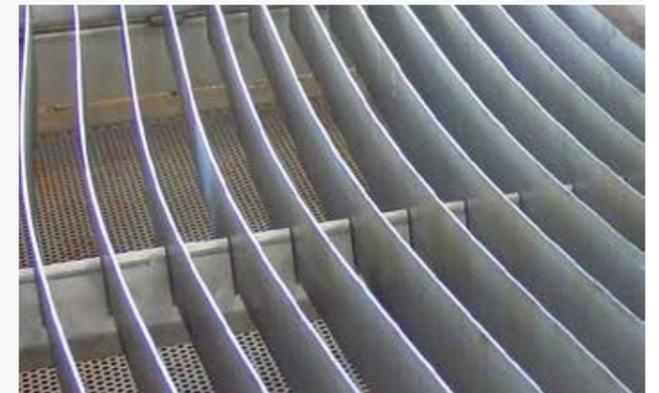


### WORKING TABLES

#### ANTI-REFLECTIVE

Cutting table with individual slats at 70 mm distance or even higher density ensuring a maximum load capacity of 1000 kg/m<sup>2</sup>.

The supporting frame structure allows for fine tuning of the planarity of the table, guaranteeing a fine alignment of the planarity of the working table over the entire work area.



#### STEEL HONEYCOMB GRID

Stainless steel honeycomb work table specifically designed for pure waterjet cutting. Thanks to its alveolar structure, it offers adequate support to expanded and soft materials, reducing the reverberation of the water when cutting.

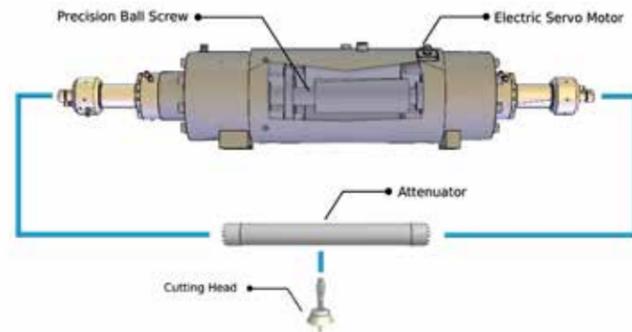
# TECNOCUT GREENJET EVO

## TECHNOLOGICAL BENEFITS

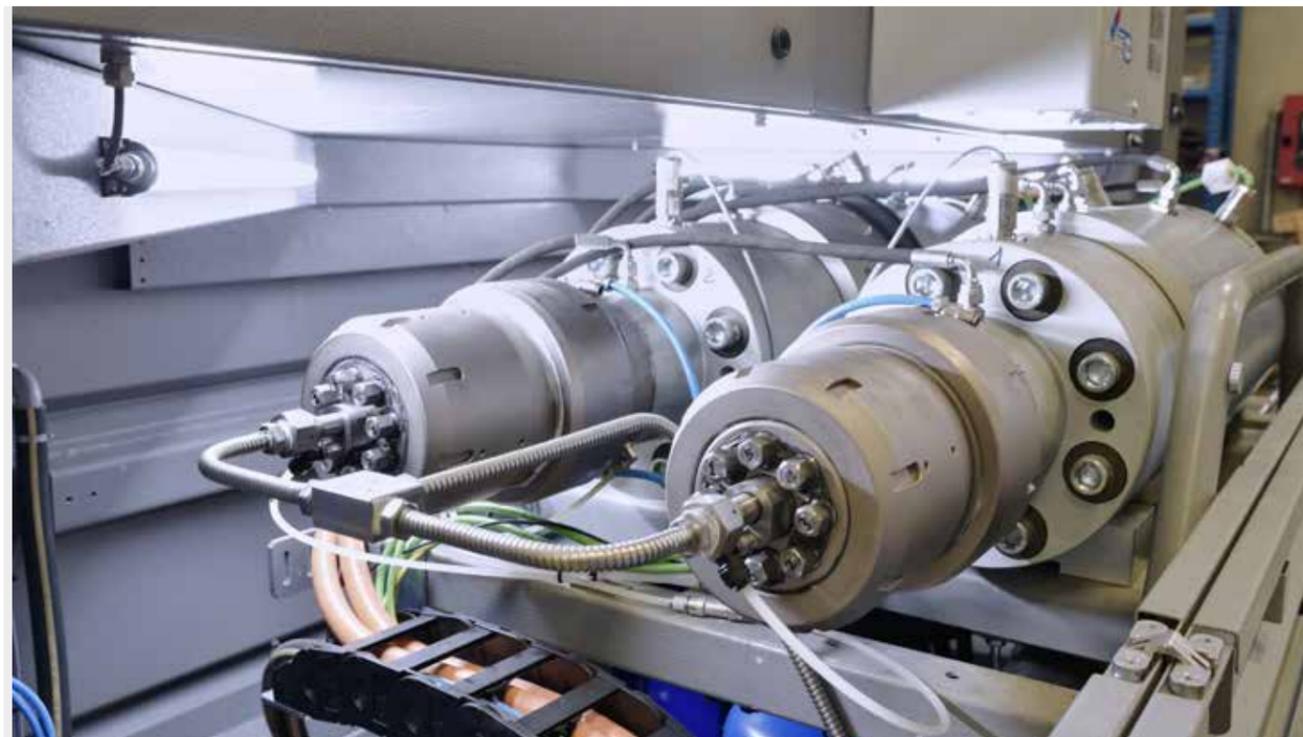
### THE HIGHEST LEVEL OF EFFICIENCY WITH MAXIMUM SAVING

Tecnocut Greenjet Evo is the revolutionary high performance electric pump; thanks to an extremely efficient servomotor torque, the pressure signal is extremely high, eliminating the hydraulic control unit and reducing its components by 80% compared to a more traditional hydraulic intensifier.

Tecnocut Greenjet Evo has been designed with the use of an electric driver actuator and two opposing high pressure cylinders. The electric driver technical solution guarantees an extremely steady pressure signal, a pressurisation cycle monitoring and an operating efficiency that is at least 30% higher compared to the hydraulic intensifiers.



Double-acting pressure multipliers, electrically driven, manufactured with materials highly resistant against mechanical stress and corrosion.



### KEY BUYER BENEFITS

- + Electric pump actuated by a brushless servomotor capable of generating a constant pressure signal with an **efficiency greater than 35% compared to traditional hydraulic intensifiers.**
- + **Reduced environmental impact:** The electric actuator generate the high pressure without the hydraulic components with the advantage to avoid the disposal of the exhausted oil typically 200 liters every 2000 h.
- + Less than 81% of hydraulic and mechanic components and 73% less intensifying cycle than a direct drive pump, with consequently **less maintenance costs and machine downtime.**
- + **33% less power consumption** than a traditional hydraulic intensifier thanks to precise power control of the motor when required and setting down near to zero when the cutting head is closed.



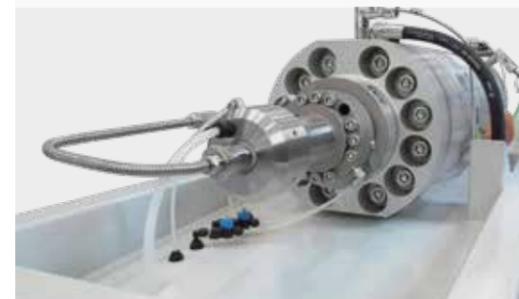
#### CONTROL PANEL

Near the electric pressure intensifiers it's available a 4.3" touch panel to set the running parameters during service operations and hydraulic and high pressure diagnostic.



#### HEAT EXCHANGER

Air/oil heat exchanger for working environments with a temperature up to 30°C. The solution allows for the consumption of water typical of water/oil cooling systems to be reduced, keeping noise levels down while operating.



#### SERVOMOTOR

The high pressure is generated by the movement of a recirculating screw driven by a female screw directly keyed on a direct drive torque motor controlled by an inverter for less wear and greater performance.



#### SUPPLYING AUTOCLAVE (OPT.)

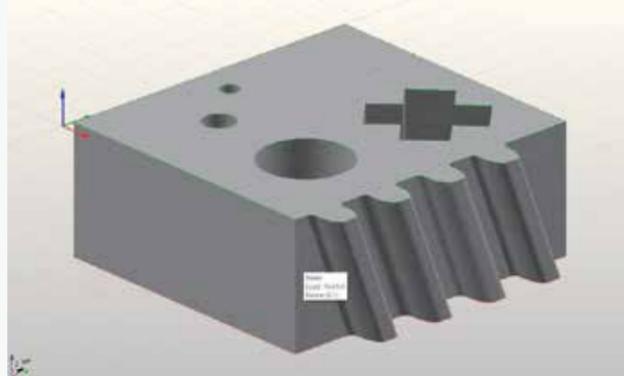
External supplying pump to ensure constant pressure and water flow to the inlet supply of the pressure intensifier.

# EASYJET DDX SOFTWARE

Easyjet is a complete CAD/CAM suite for all-round management of every aspect of the 3 and 5-axis waterjet machining, that eliminates purchasing costs, maintenance and training of further third-party software products.

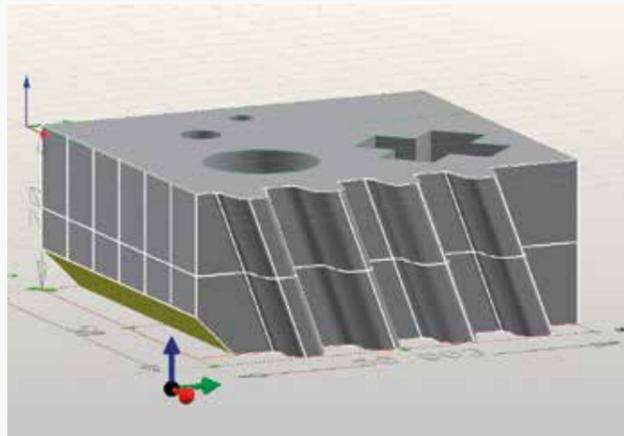
## THE GENERAL FUNCTIONS INCLUDE:

- Graphic management of the zoom and shift tools
- 3D and photo-realistic rendering of the project
- Functions to measure the profile and analysis of the individual entities
- Functions to delete and reset the most recent operations
- Option to configure the parameters database on-line to share it with numerous software stations
- Automatic e-mail management to request assistance
- Hydraulic pump with varying flows.
- Python Module and Scl included to customise software and interface with other systems



## THE CAD FUNCTIONS INCLUDE:

- Free drawing of geometrical entities like arches, lines, polylines, rectangles, squares, ellipses, circles, regular polygons, radii, clippings, nurbs, etc..
- Advanced surface drawing (loft, swept, polimesh, gordon) curve grid surface drawing
- PNT importing
- Definition of the surface using a point file elaborated by a laser scan
- Interactive change of surfaces, even complex ones, to insert chamfers, trimmings, insertion of sloping sides etc
- Definition of construction tables
- Associating different colours to each tool path
- Change and elaboration of projects (shearing, extension, sub-division, union, interpolation, duplicate, symmetrical, rotation, deletion, etc.)
- Importing DXF, ISO, IGES, STEP, PARASOLID, 3DM and STL files
- Dimensioning

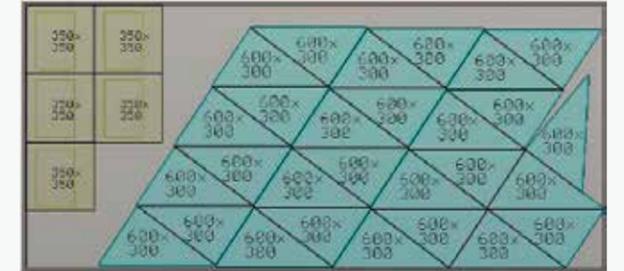


## THE CAM FUNCTIONS INCLUDE:

- Automatic generating of cutting paths with WaterJet head
- Automatic generation of input and output paths, boring included with interactive graphic change (optional)
- Continuous automatic management of the feeling cycles, at the start of the profile or the sole detection of the plate thickness
- Projection cutting management, adhesion and development for pipe machining.
- Interpolated 5-axis control + 1
- Estimating project times and costs.
- Production of the ISO program optimised for the CNC
- Cutting management in common with the different algorithms to optimise the tool path
- Cutting with semi-automatic technology in the space.
- Automatic and/or custom-designed optimisation of the machining sequence to reduce cycle times.
- Automatic and/or manual management of the micro-joints and bridges.
- Cam-Auto module to automatically and intelligently create machining technology 18



In addition, the Easyjet software has powerful, fast multiple nesting algorithms in the work area, even with entities that differ from one another, with the possibility of graphically changing the arrangement of the objects and defining customised points of origin.



The JDE plug-in is included in the package to manage the cutting technologies archived in a complete materials database. The machine program is automatically generated on the basis of the selection of the cutting quality required out of 5 options (Q1, Q2, Q3, Q4 and Q5) that establish the speed advancement and acceleration settings in the internal/external corners. The ISO program can then be transferred to the machine using the local network or via USB drive.

The correct setting of the machining parameters can be checked in advance thanks to the 3D simulation of the machining process using a 3D graphic model of the CNC that reproduces the table, handling axes, tool and pieces arranged on the table.



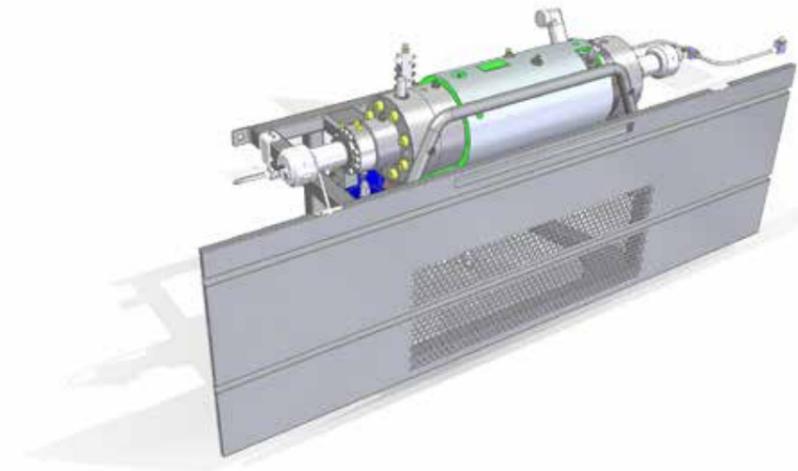
# TECNOCUT PROLINE

## TECHNICAL DATA



# TECNOCUT GREENJET EVO

## TECHNICAL DATA



### TECNOCUT PROLINE: STANDARD TECHNICAL DATA\*

X AXIS STROKE (1 HEAD)	4250 mm / 167 in
Y AXIS STROKE	2000 mm / 79 in
Z AXIS STROKE (3-AXIS HEAD)	300 mm / 12 in
Z AXIS STROKE (5-AXIS HEAD)	200 mm / 9 in
C AXIS (5 AXIS ONLY)	Infinte
B AXIS (5 AXIS ONLY)	+/- 62°
XY AXIS RAPID SPEED	40000 mm/min / 131 ft/min
WORKTABLE SIZE	4650 x 2050 mm / 183 x 81 in
WORKTABLE LOAD CAPACITY	1000 kg/m2
POSITION ACCURACY	+/- 0,035 mm
POSITION REPEATABILITY "PS"	+/- 0,025 mm
INSTALLED POWER	6 kW / 8 HP
FOOTPRINT LXPXH	8158 x 3483 x 3900 mm / 321 x 137 x 153 in
WEIGHT MAX (EMPTY)	8000 kg / 17600 lb

\* Technical data changes according to the configurations

### TECNOCUT GREENJET EVO: TECHNICAL DATA

	TECNOCUT GREENJET EVO 4139	TECNOCUT GREENJET EVO 6200
POWER	34 Kw / 45 HP	34 Kw / 45 HP
MULTIPLIERS	2	2
MAX FLOW PRESSURE	4139 bar / 60.000 psi	6200 bar / 90.000 psi
MAX WATER PRESSURE	5 L/min / 1,32 gpm	2,61 L/min / 0,32 gpm
MAX ORIFICES DIAMETER	0,4 mm / 0,016 in	0,25 mm / 0,098 in
VOLTAGE	400V +/- 5% 50-60 Hz (Different voltages and frequencies on request)	400V +/- 5% 50-60 Hz (Different voltages and frequencies on request)

# 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 to 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

- ✓ Ottimizzazione delle performance produttive
- ✓ Diagnostica a supporto dell'ottimizzazione della garanzia dei componenti
- ✓ Aumento della produttività e riduzione dei fermi macchina
- ✓ Miglioramento del controllo della qualità
- ✓ Riduzione dei costi di manutenzione

### 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 center (e.g.: operator, maintenance man, administrator, ...). It is also possible to define the work shifts on the machining center 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.

# THE RANGE OF CMS METAL TECHNOLOGY

# FOR METAL AND TECHNICAL ARTICLES PROCESSING

## WATERJET CUTTING MACHINES



**TECNO CUT SMARTLINE**



**TECNO CUT EASYLINE**



**TECNO CUT MILESTONE S**



**TECNO CUT IDROLINE S**



**TECNO CUT PROLINE**



**TECNO CUT AQUATEC**



**TECNO CUT WATERSPEEDY S**

## PRESSURE INTENSIFIERS



**TECNO CUT EASYPUMP**



**TECNO CUT JETPOWER EVO**



**TECNO CUT GREENJET EVO**

## DRY DEBURRING-FINISHING MACHINES



**DMC M950**



**DMC EUROSYSTEM**



**DMC METALSYSTEM**

## WET DEBURRING-FINISHING MACHINES



**DMC M950 WET**



**DMC TOP METAL**



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