

tecnocut smartline

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 smartline

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APPLICATIONS



fabrication | building | energy production | automotive



soft materials | transportation | furniture | foam material

Unparalleled.

New.

Innovative.

Quality.

Ultra.

Effective solutions.

The **UNIQUE** waterjet cutting machines.

Waterjet cutting machine

TECNOCUT SMARTLINE

TECHNOLOGICAL BENEFITS



3- AND 5-AXIS WATER JET CUTTING SYSTEM

Tecnocut Smartline is designed to redefine industry standards of excellence by improving operating efficiency, while maintaining CMS' renowned reputation for unparalleled construction and working quality. It includes all the safety and performance features typical of CMS Waterjet machines, in a brand new, innovative, and compact design.

- The open frame structure with electric gantry and linear guides integrated in a sturdy tank allows an easy access to the worktable. Loading and removing material is quick and easy.
- All axes' motions are carried out through hardened and ground rack and pinion.
- The thermowelded bellows provide complete protection of the guides and the rack of x-axis from water and dust. On Y-axis, instead, the protection is guaranteed by a set of sheet metal panels.
- The steel structure undergoes an anti-rust treatment through sandblasting and ceramic painting, which results in a higher resistance against corrosion.
- The tank is set up for the installation of a chain system for the exhausted removal

KEY BUYER BENEFITS

- + **Excellent access to the cutting area:** easy access on 3 sides to load and unload the material.
- + The catch tank with special anti rust ceramic painting is designed to fit the new Evo 4 chain dredge for exhausted abrasive removal even later after installation with **91% less maintenance costs**.
- + **Rapid speed up to 50 m/ min and acceleration up to 3 m/s 2 top notch performance** in the category to get maximum productivity with 3 and 5 axis configuration.
- + **High price/performance ratio** for a cutting solution configurable to satisfy every application needs based on customer s investment plan



21,5" touch screen control panel on mobile trolley.



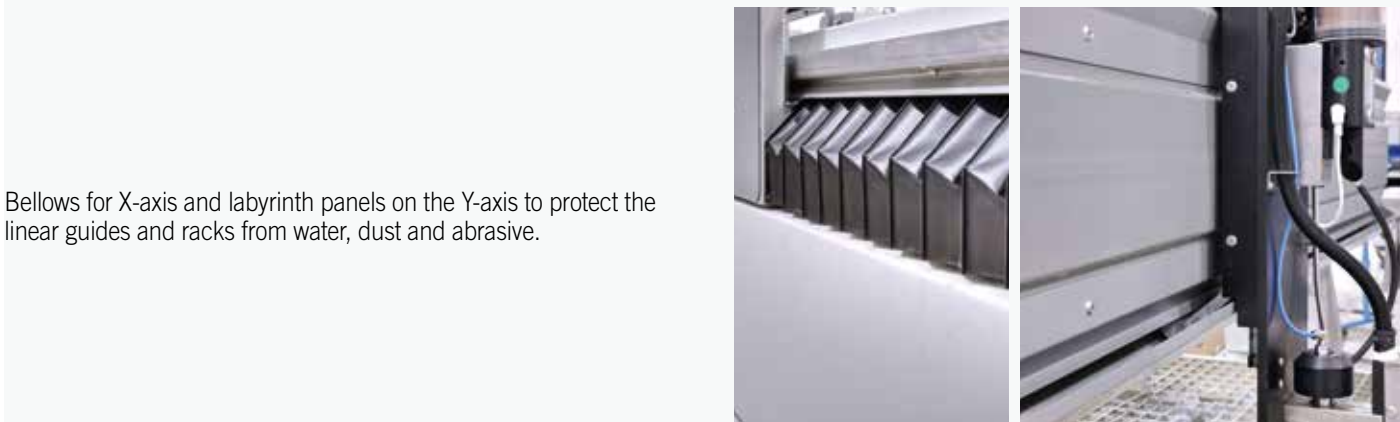
Photoelectric barriers: protection of the working area by light barriers

STANDARD ACCESSORIES

Electronic hopper that automatically controls the abrasive flow. If the abrasive flow is interrupted for chock, the system will automatically stop cutting to prevent damage and scrape material.



Bellows for X-axis and labyrinth panels on the Y-axis to protect the linear guides and racks from water, dust and abrasive.



PROBE
Probe system, continuous or periodic, available also with large ring for foam or glass cutting. It enables to maintain the same distance from the material being cut at all times even if the material is not perfectly flat.



Integrated electric cabinet in the tank frame for a reduced layout footprint

Aluminum cast uprights for electro welded steel bridge designed with reinforcement ribs to erase the vibrations during cutting and guarantee high performance.



Automatic lubrication of all axes



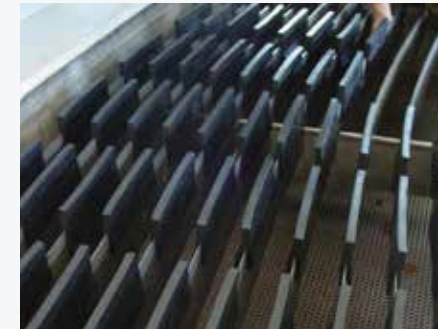
OPTIONS



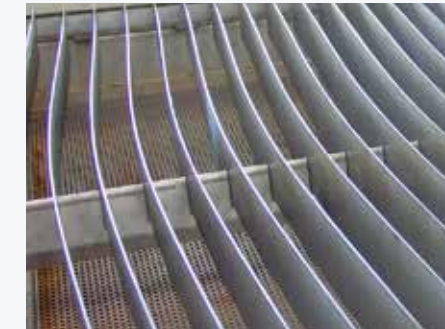
powered by
JDC

5-axis cutting head with JDC technology
- Jet Drive Compensation - Effective head management to carry out inclined cuts and check cut conicity.

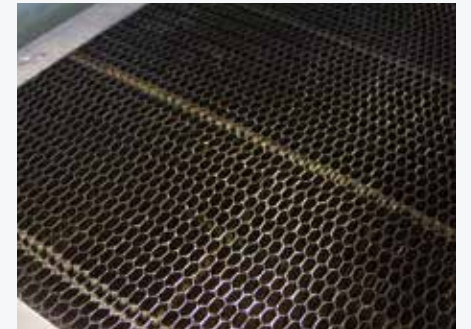
WORK TABLES INTENDED FOR DIFFERENT CUTTING APPLICATIONS



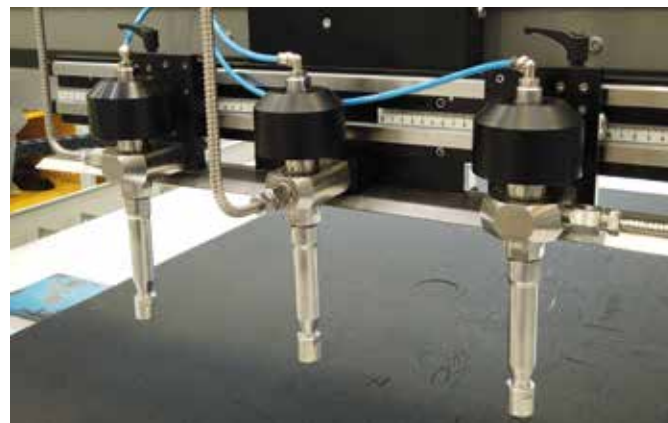
Anti-reflective table for glass



Anti-reflective surface



Honeycomb grid



MANUAL CUTTING HEAD CARRIAGE

Working unit with 3 axis cutting heads on a spread bar, with manual distance adjustment to increase the productivity on flat panels.

The unit can be easily adjusted thanks to:

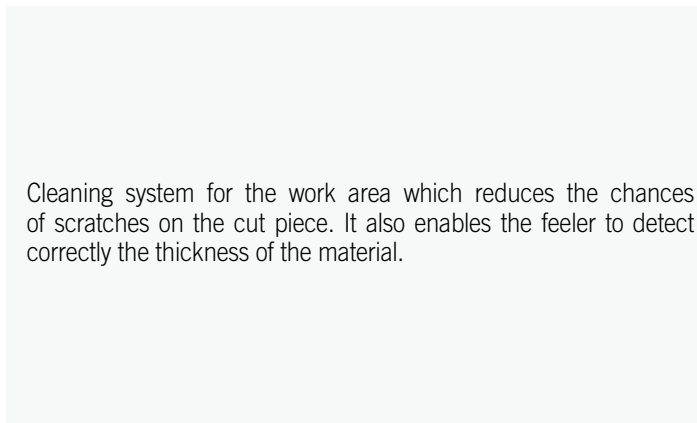
- Sliding on double linear guide and ball bearings
- Rapid lock/release system
- Millimetric ruler for accurate positioning

Available with maximum distance of 340 mm and 500 mm, while the minimum distance of 85 mm is always guaranteed.

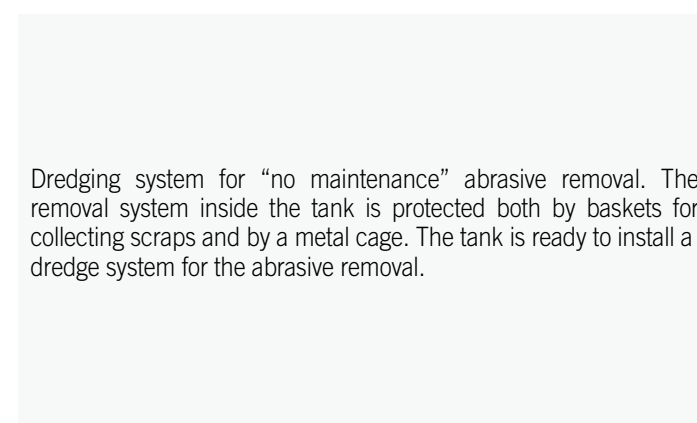


AUTOMATIC HOSE REEL

Air and water sprayer kit to clean table and material after the cut.



Cleaning system for the work area which reduces the chances of scratches on the cut piece. It also enables the feeler to detect correctly the thickness of the material.



Dredging system for “no maintenance” abrasive removal. The removal system inside the tank is protected both by baskets for collecting scraps and by a metal cage. The tank is ready to install a dredge system for the abrasive removal.



Cross Laser device for setting one or multiple starting point on the sheet positioned on the cutting table.



Air conditioning system of the machine's electrical cabinet to keep internal temperature between 35°C and 40°C.

TECNOCUT EASYPUMP

HIGH-PRESSURE INTENSIFIER



PRESSURE INTENSIFIER FULLY MADE BY CMS

CMS has developed a new concept of high-pressure intensifiers: two or three parallel, independent and electronically synchronized pressure multipliers, which deliver a constant pressure while eliminating the need of an attenuator, a typical feature of old, traditional intensifiers.

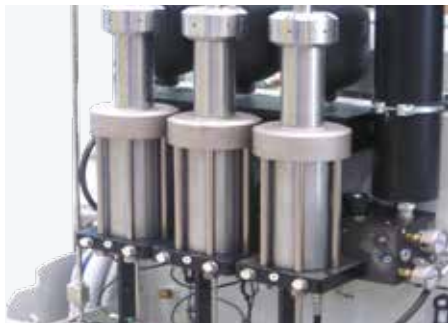
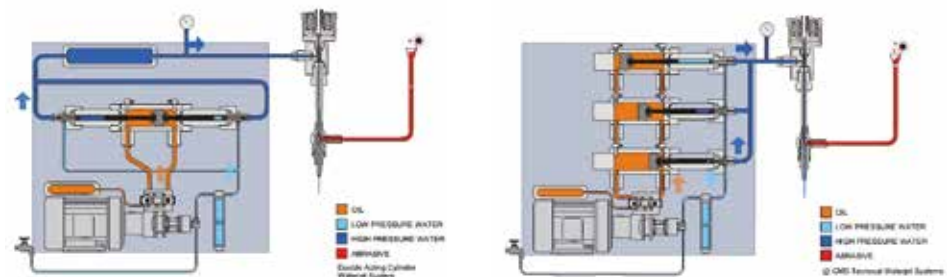
KEY BUYER BENEFITS

- + Hydraulic intensifier with 2 or 3 independent and electronically synchronized parallel cylinders to guarantee a constant **signal of output pressure without the use of attenuator.**
- + The technology with **3 independent cylinders** allows the bypass of a single cylinder that needs maintenance, while the machine is working, avoiding unnecessary downtime.
- + The parallel cylinders architecture is designed for a low cycle frequency that **reduce** the high pressure components wear and consequently **the maintenance costs.**
- + Sealed cover with soundproof panels to **guarantee high noise reduction while the intensifier is working.**

fig. 1 Traditional opposing-cylinders intensifier

Pressure

fig. 2 CMS parallel cylinders intensifier



Pressure multipliers



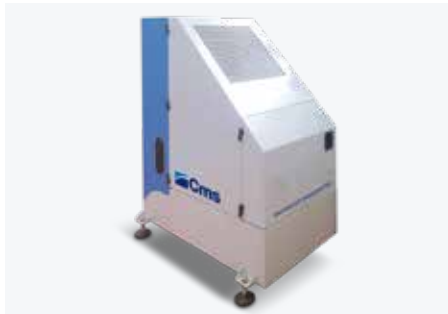
Gear hydraulic pump



Nitrogen accumulator for managing the hydraulic cylinders return circuit



Pressure check and functioning of the intensifier managed directly from the console



"Noiseless" system

TECNOCUT JETPOWER EVO

HIGH-PRESSURE INTENSIFIER



PRESSURE INTENSIFIER ENTIRELY MADE BY CMS

CMS brought about a new concept in ultrahigh pressure intensifiers, enhanced by technological solutions designed to satisfy the needs of most demanding users. This new technology is based on an intensifier equipped with several pressure multipliers independent, parallel and electronically synchronized. This innovative solution results in an everconstant pressure avoiding any drops typical of traditional opposecylinder intensifiers.

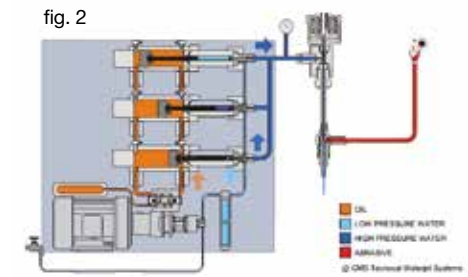
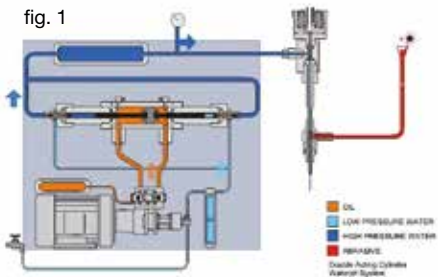
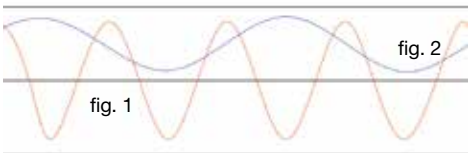
KEY BUYER BENEFITS

- + Hydraulic intensifier with 2 or 3 independent and electronically synchronized parallel cylinders to guarantee a constant signal of output pressure without the use of attenuator.
- + The technology with 3 independent cylinders allows the bypass of a single cylinder that needs maintenance, while the machine is working, avoiding unnecessary downtime.
- + The parallel cylinders architecture is designed for a low cycle frequency that reduce the high pressure components wear and consequently the maintenance costs.
- + Reduction of oil consumption and operating costs: Water flow rate up to 5 l/min to satisfy a wide range of cutting applications, adapting the oil consumption thanks to an independent variable flow pump for hydraulic circuit.

fig. 1 Traditional opposing-cylinders intensifier

fig. 2 CMS parallel cylinders intensifier

Pressure



Software-based electronic control of cutting pressure



Pressure multipliers



Hydraulic unit



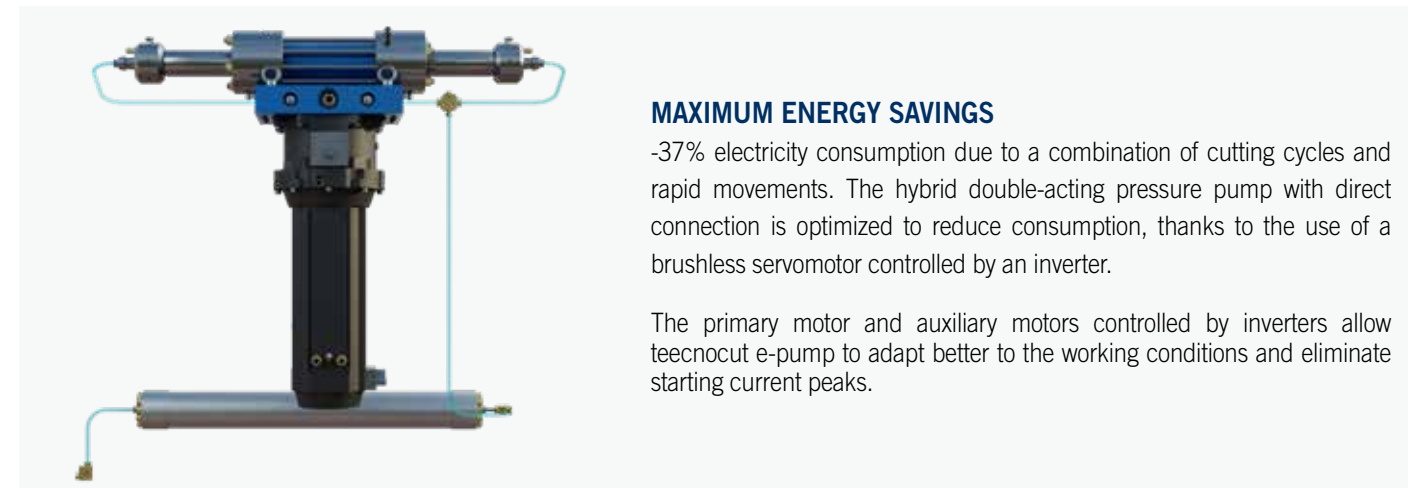
Oil/air heat exchanger

TECNOCUT E-PUMP

TECHNOLOGICAL BENEFITS

HYBRID INTENSIFIER

is the latest innovation in the range of CMS Metal Technology intensifiers created as a continuation of the quest by CMS for efficiency, performance, energy consumption and low environmental impact in the world of pressure intensifiers for waterjet cutting applications. This new project was carried out entirely in the CMS engineering department and has given rise to an innovative product that combines the power density of a hydraulic pump with the energy efficiency of a direct-drive mechanical architecture. The simplicity of the system translates into a significant reduction in components: up to 95% compared to a conventional hydraulic intensifier. Tecnocut E-pump exploits an electrohydrostatic unit connected directly to long-stroke pressure multiplier cylinders, achieving an operating efficiency of more than 31% compared to hydraulic intensifiers. The intensifier has an on-board intelligence with portable tablet (Wi-Fi) and touch display for monitoring and controlling operating parameters and performing diagnostics on hydraulic and high-pressure components. Tecnocut e-pump can be installed on any cutting table, even third-party ones.



MAXIMUM ENERGY SAVINGS

-37% electricity consumption due to a combination of cutting cycles and rapid movements. The hybrid double-acting pressure pump with direct connection is optimized to reduce consumption, thanks to the use of a brushless servomotor controlled by an inverter.

The primary motor and auxiliary motors controlled by inverters allow tecnocut e-pump to adapt better to the working conditions and eliminate starting current peaks.



KEY BUYER BENEFITS

- + High efficiency level: up to 31% more than conventional intensifiers.
- + Low maintenance, thanks to the use of 95% fewer hydraulic components.
- + Minimal use of hydraulic oil: -91% compared to conventional systems, with the benefit of lower environmental impact
- + Electricity consumption up to 37% lower due to a combination of cutting cycles and fast, closed-head movements



WI-FI TABLET WITH WEB HMI

The intensifier is controlled by an industrial PLC in the electrical cabinet in order to interface with CMS cutting tables, as well as third party ones.

The HMI control interface is accessible from the 10.4" Wi-Fi tablet and offers:

- remote diagnostics
- power management and control
- management and control of the cycle number per cylinder
- electronic cutting pressure control



CENTRAL SEAL LEAKAGE COLLECTION SYSTEM

An external manifold to collect leaks from HP seals, for easy and quick diagnostics without the need to open the covers. Depending on the location of the leak, it is possible to identify on which side it is and whether it is from static or dynamic seals. Two status green leds identify the running multiplier.



BOOSTER PUMP

Inverter-powered booster pump for the inlet water supply, to optimize consumption by adapting to the mains water flow and pressure as well as to the cutting cycle (open/closed head). It is compatible with frequencies of 50 Hz and 60 Hz.

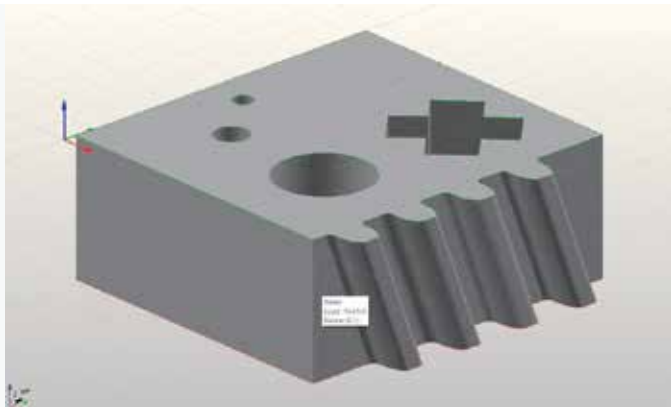


LEARN MORE

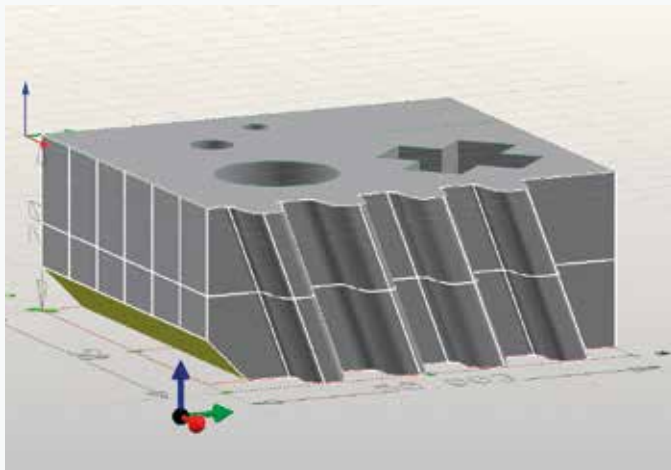
EASYJET DDX SOFTWARE

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.

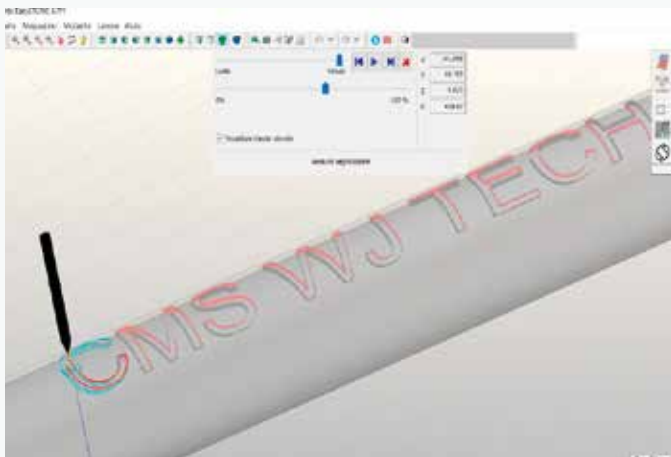
- THE GENERAL FUNCTIONS INCLUDE:**
- Graphic management of the zoom and shift tools
 - 3D and photo-realistic rendering of the project
 - Functions to measure the profile and analysis of the individual entities
 - Functions to delete and reset the most recent operations
 - Option to configure the parameters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



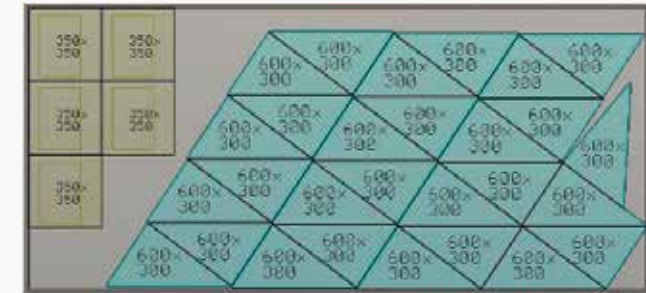
- THE CAD FUNCTIONS INCLUDE:**
- Free drawing of geometrical entities like arches, lines, polylines, rectangles, squares, ellipses, circles, regular polygons, radii, clip-pings, nurbs, etc..
 - Advanced surface drawing (loft, swept, polimesh, gordon) curve grid surface drawing
 - PNT importing
 - Definition 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



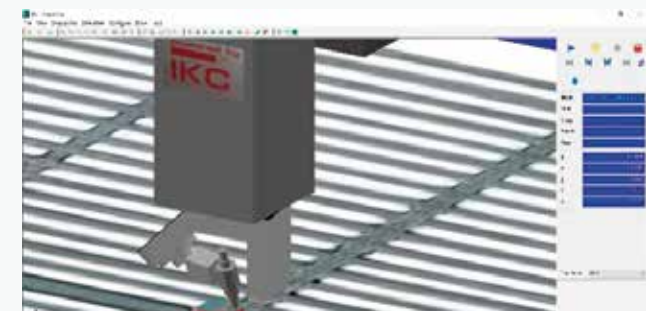
In addition, the Easyjet software has powerful, fast multiple nesting algorithms in the work area, even with entities that differ from one another, with the possibility of graphically changing the arrangement of the objects and defining customised points of origin.



Aluminum(5061)			
Cutting wheel: 2		Orifice: 25 (0.394)	Thickness: 15
Select...		Along tube: 40 (1.614)	Add thickness
		Pressure (bars): 370	Copy values
		Abrasion: 80	Remove thickness
		Head: 400	
		Abrasive flow rate (g/min):	
<div><div>Diameters</div><div>Piercing</div><div>Slowing</div><div>Exit on corner</div><div>Probing</div><div>Lead in/Lead out</div></div>			
Quality	Upper diameter	Lower diameter	Feed
Low	1.02	0.5	1039.8824
Medium low	1.1	0.55	747.8947
Medium	1.15	0.6	668.1757
Medium-high	1.2	0.65	557.0362
High	1.2	0.65	260.7415
Extra	1.25	1.00	211.4228
Radius correction			0
Taper correction			0

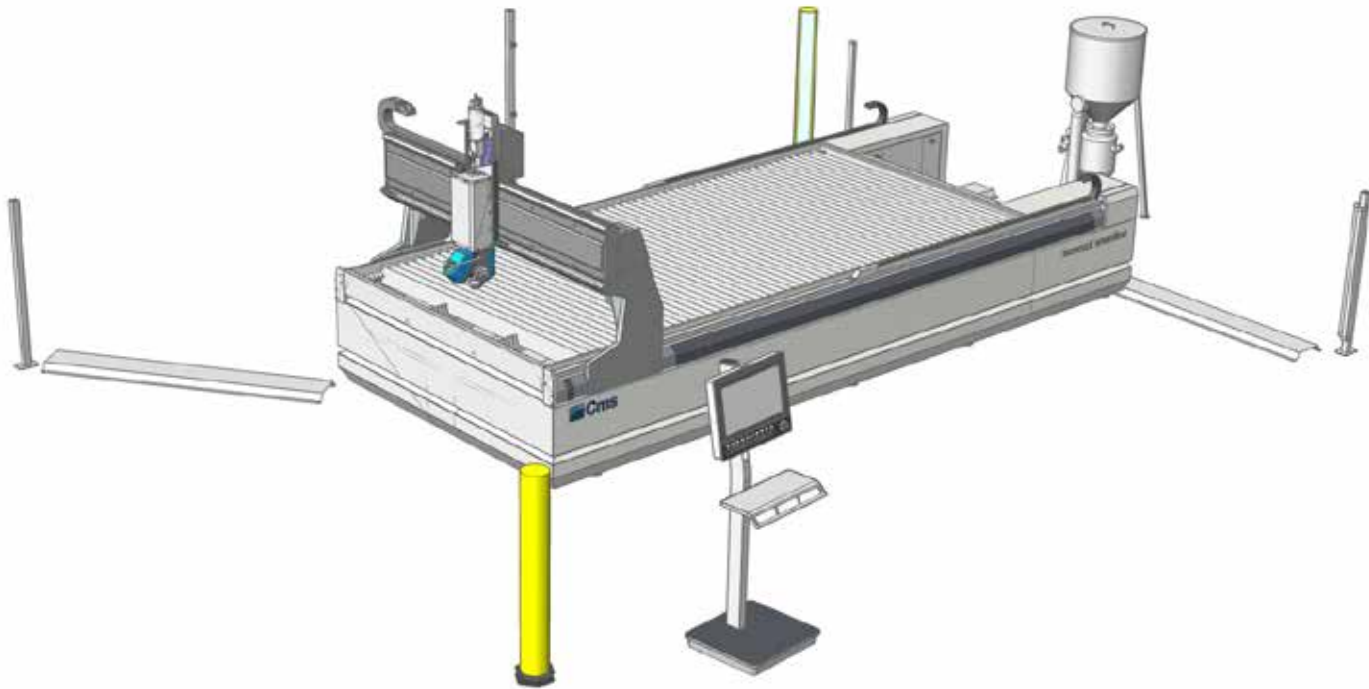
The JDE plug-in is included in the package to manage the cutting technologies archived in a complete materials database. The machine program is automatically generated on the basis of the selection of the cutting quality required out of 5 options (Q1, Q2, Q3, Q4 and Q5) that establish the speed advancement 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 SMARTLINE

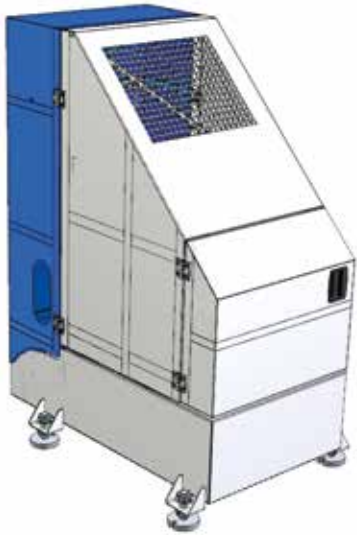
OVERALL DIMENSIONS AND TECHNICAL DATA



TECNOCUT SMARTLINE: TECHNICAL DATA			
MODEL	2030	2040	2060
X AXIS	3000 mm / 118 in	4000 mm / 157 in	6000 mm / 236 in
Y AXIS	2000 mm / 79 in	2000 mm / 79 in	2000 mm / 79 in
Z AXIS	250 mm / 9.8 in (150 mm / 5.9 in with 5-axis head)	250 mm / 9.8 in (150 mm / 5.9 in with 5-axis head)	250 mm / 9.8 in (150 mm / 5.9 in with 5-axis head)
C AXIS	Infinite	Infinite	Infinite
B AXIS	± 60°	± 60°	± 60°
BED SIZE	3330 x 2080 mm / 131 x 82 in	4150 x 2080 mm / 163 x 82 in	6610 x 2080 mm / 260 x 82 in
OVERALL DIMENSIONS WITH LIGHT BARRIERS	4560 x 6140 mm / 179 x 241 in	4560 x 7190 mm / 179 x 283 in	4560 x 10050 mm / 179 x 395 in

TECNOCUT EASYPUMP

TECHNICAL DATA



TECNOCUT EASYPUMP: TECHNICAL DATA	
MODEL	TECNOCUT EASYPUMP 30 HP
POWER	22,5 kW / 30 HP
CYLINDERS	2
MAX PRESSURE	4150 bar / 60.000 psi
MAX WATER FLOW RATE	2,3 L/min / 0.61 gpm
MAX, DIAM. ORIFICES	0,25 mm / 0.009 in
VOLTAGE	400V +/- 5% 50-60 Hz (Different voltages and frequencies on request)

TECNOCUT JETPOWER EVO

TECHNICAL DATA



TECNOCUT JETPOWER EVO: TECHNICAL DATA		
MODEL	TECNOCUT JETPOWER EVO 40 HP	TECNOCUT JETPOWER EVO 60 HP
POWER	30 kW / 40 HP	45 kW / 60 HP
MULTIPLIERS	2	3
MAX PRESSURE	4150 bar / 60.000 psi	4150 bar / 60.000 psi
MAX WATER FLOW RATE	2,7 L/min / 0.71 gpm	5 L/min / 1.32 gpm
MAX DIAM. ORIFICES	0,30 mm / 0.012 in	0,40 mm / 0.015 in
VOLTAGE	400V +/- 5% 50-60 Hz (Different voltages and frequencies on request)	

TECNOCUT E-PUMP

TECHNICAL DATA



TECNOCUT E-PUMP: TECHNICAL SPECIFICATIONS *	
POWER CONSUMPTION (0.38 ORIFICE AT 3800 BAR)	30 kW
MAXIMUM POWER CONSUMPTION WITH CLOSED HEAD	2.4 kW
MAXIMUM OPERATING PRESSURE	4130 bar
MAXIMUM WATER FLOW RATE AT 3700 BAR	5 l/min
MAXIMUM ORIFICE DIAMETER AT 3700 BAR	0.40 mm
OVERALL DIMENSIONS L X W X H	1666x906x1529 mm
WEIGHT	1400 Kg
VOLTAGE (THREE-PHASE)	400 V 50/60 Hz
OIL TANK CAPACITY	13 L
PRESSURE ATTENUATOR CAPACITY	1.15 L
CYLINDER STROKE	200 mm
REQUIRED INLET WATER TEMPERATURE (ACCEPTABLE MIN – MAX)	5 - 25 °C
NOMINAL ENVIRONMENT TEMPERATURE (ACCEPTABLE MIN – MAX)	5 - 40 °C
NOMINAL NOISE	70 db

* BFT Technology. The technical data may vary with different configurations

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.



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

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 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



TECNOCUT SMARTLINE



TECNOCUT PROLINE



TECNOCUT AQUATEC



TECNOCUT WATERSPEEDY S

PRESSURE INTENSIFIERS



TECNOCUT EASYPUMP



TECNOCUT JETPOWER EVO



TECNOCUT E-PUMP

DRY DEBURRING-FINISHING MACHINES



DMC M950



DMC EUROSYSTEM



DMC METALSYSTEM

WET DEBURRING-FINISHING MACHINES



DMC M950 WET



DMC TOP METAL



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