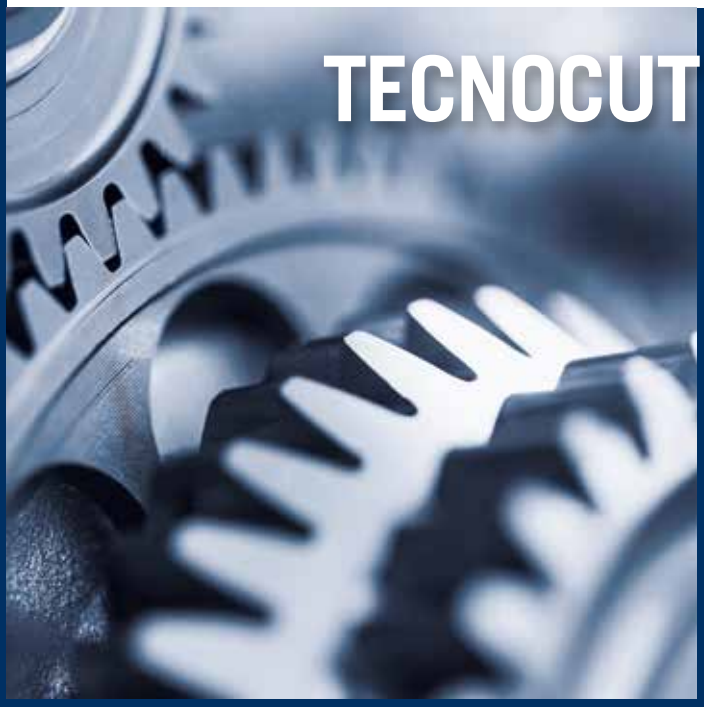
METAL - STONE - GLASS

tecnocut aquatec

Waterjet cutting machine









Cms

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

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.

scm group
Industrial Machinery and Components

Cms your technology partner



tecnocut aquatec

APPLICATIONS *4-5*

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THE RANGE *26-27*



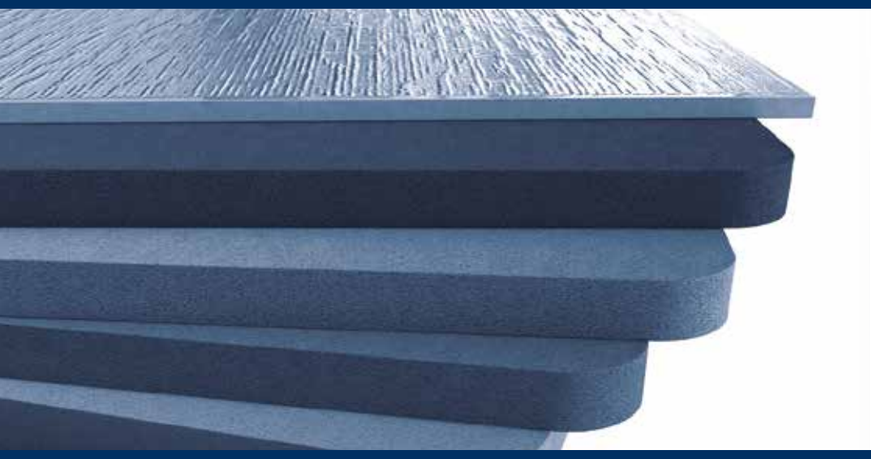
a company of scm group

APPLICATIONS






workshop machining | countertops | tables | gaskets | aerospace





foam material | façades and windows | shower enclosures | tubes | inlays and mosaics






TECNOCUT AQUATEC

TECHNOLOGICAL BENEFITS

3- AND 5-AXIS HYDRO-ABRASIVE WATERJET CUTTING SYSTEM

Tecnocut Aquatec is an advanced, versatile, high-performance abrasive waterjet cutting system, able to accommodate the most diverse production demands in different application fields, delivering highly accurate cuts. The machine consists of a mobile bridge moving along separate highthickness steel supports, fastened to the floor and providing outstanding structural rigidity. This structure delivers high performances even by the most demanding tasks.

- The motions - including the one of the cutting head - are carried out by high precision tempered ground rack, driven by brushless motors.
- Steel guards and the polyurethane bellows protect all motion components from water and powders.
- Loading and unloading the material is fast and simple thanks to 2 or 4 open sides, as well as checking the cutting process. Moreover it allows to possibly install additional equipment to handle the material.



KEY BUYER BENEFITS

+ **Unmatched cuttin performance:** the open frame structure with electric gantry on two separate thick supports on a basement anchored to the floor offer high rigidity even with rapid speed up to 54 m/ min e acceleration up to 2 m/s 2.
+ **The most compact solution on the market with infinite rotation** 33% less cuttig cycle avoiding to recover the revolutions of the C axis to align internal wires and tubes.
+ **Access of worktop from 4 sides:** excellent access to the cutting area, the large gantry and modular frame allow configurations with wide space around the catch tank for easy loading and unloading operations**.**
+ **High flexibility to maximize the productivity:** the modular structure of frame and catch tank offer high flexibility for most demanding customers looking for large format hevy duty cutting solutions.



Double tank solution for pendular working (opt)



Maximum configuration flexibility thanks to the modular design

ACCESSORIES

Control panel with real-time view of all machine parameters: consumption, electronic adjustment of the garnet flow, dredge, consumables and forecast of cutting time. (std)



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





Remote control unit for driving up to 6 axes; it allows to operate close to the cutting table and set multiple starting points.



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 (opt).

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



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



ACCESSORIES

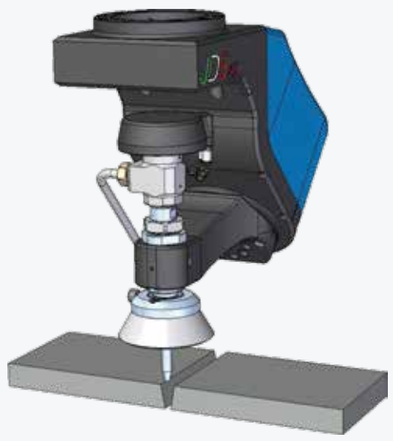
Head protection from water and powders during the cutting process. (available only for 5-axis cutting head Evo)



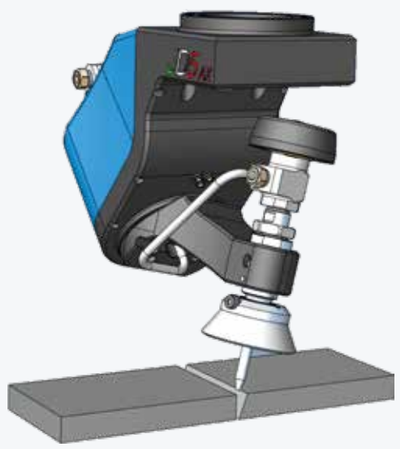


powered by JDC

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

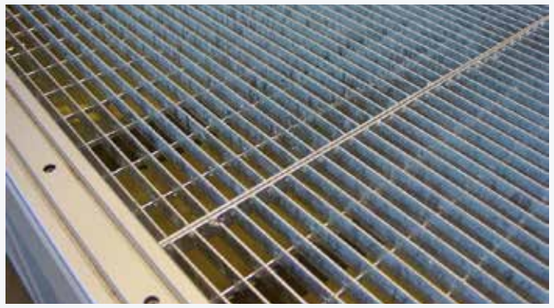


3-axis traditional machining



JDC technology

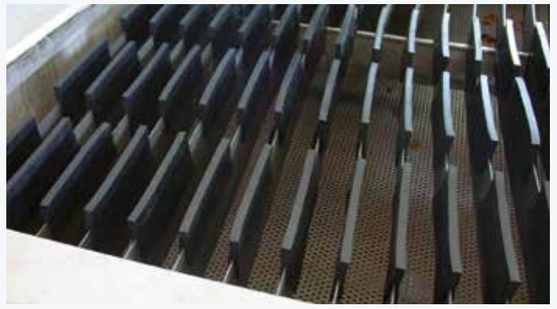
WORK TABLES INTENDED FOR DIFFERENT CUTTING APPLICATIONS



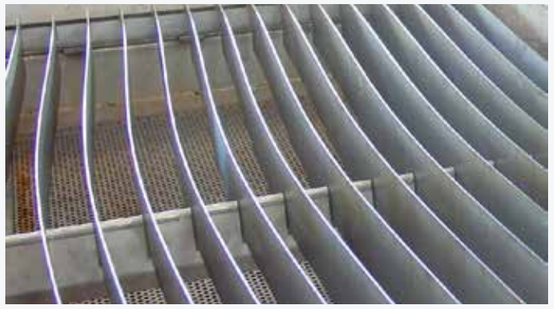
Standard Grid



High-thickness grid (opt)



Anti-reflective table for glass (opt)



Anti-reflective surface (opt)



Automatic lubrication of all axes (std)

ACCESSORIES

Pneumatically controlled drilling unit on Z axis.
It can be adjusted on the Z axis (0-30 mm) to fit different drill bits.
It can be installed on a cutting system with a single or two Z axis.





Worktable cleaning system equipped with pump removes the possible material debris left on the sheet during the cut. A washing cycle at the end of the cut cleans completely the work area before loading/unloading the material.

ELECTRONIC FEEDER
Electronic hopper for the automatic control of the abrasive flow with patented system of coaxial adduction to the high pressure circuit up to the 5-axis cutting head. If the abrasive flow is interrupted for any reason, the system will automatically stop to prevent damage to the cutting head or to the material. Besides, a vacuum sensor connected to the mixing chamber constantly detects changes in the supply of abrasive to the water jet, providing real-time information on the wear state of the cutting head.



“No maintenance” chain type dredger for exhausted 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 the dredger system at a later time. (opt)





AUTOMATIC HOSE REEL:
Air and water sprayer kit, useful for cycle end clearing of cut material (std)

Pressurized abrasive feeding system with 330 kg capacity equipped with two tanks: one with a 330 kg capacity and another – pressurized – to supply the cutting head (electronic hopper). It is also available a 2-stage abrasive feeding system with a 2000 kg capacity to complete long cutting jobs without interruptions due to a lack of abrasive.





ACCESSORIES

AUTOMATIC WATER LEVEL
Built-in water level in the tail of the tank, with pump for automatic adjustment (maximum 45 mm) of the water level for submerged cutting, eliminating the noise generated by the ultrasonic waterjet and keeping the working environment clean. (opt)





ROTATING AXIS FOR PIPE PROCESSING:
CN-Managed processing of round and square section pipes up to 800 mm with 5 axis cutting head. (opt)

3-AXIS HEAD
Hydro-abrasive waterjet cutting head positioned on the Z-axis carriage, wholly designed and assembled at CMS.



ELECTRIC INTENSIFIER ONBOARD THE CROSSBEAM
Positioning of the Greenjet actuator and high-pressure circuit directly onboard the X-axis crossbeam. The solution avoids losing about 2 bar per meter of high-pressure pipe interfacing between the intensifier on the floor and the cutting head. The solution also enables reducing the installation layout of the system. (OPT)





HIGH-PRECISION PACKAGE
X- and Y-axis transmission with rack and pinion helical gearboxes characterized by a higher accuracy class with respect to the standard gearboxes, to ensure strict positioning tolerances and repeatability

ACCESS THE LOADING PLATFORM
Possibility of rotating the tank by 90° by extending the Y-axis base travel runway modules to provide greater access space around the worktable and facilitate the loading and unloading of the material. Alternatively, it is possible to configure the machine with a crossbeam up to 6 meters cutting envelope, guaranteeing a large front loading and unloading area, simplifying material handling with forklift trucks or crane.



TECNOCUT JETPOWER EVO

HIGH-PRESSURE INTENSIFIER

PRESSURE INTENSIFIER ENTIRELY MADE BY CMS

CMS brought about a new concept in ultrahigh pressure intensifiers, enhaced 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 syncronized 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

fig. 1

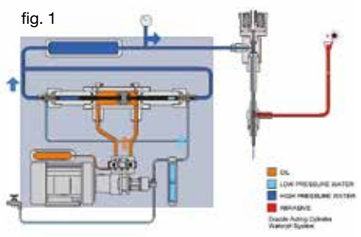
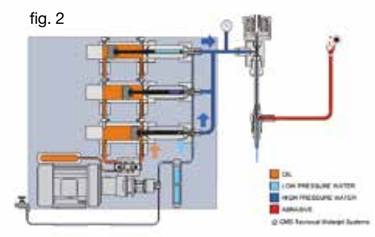


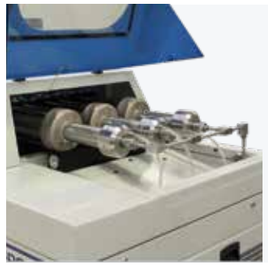
fig. 2







Software-based electronic control of cutting pressure



Pressure multipliers



Hydraulic unit



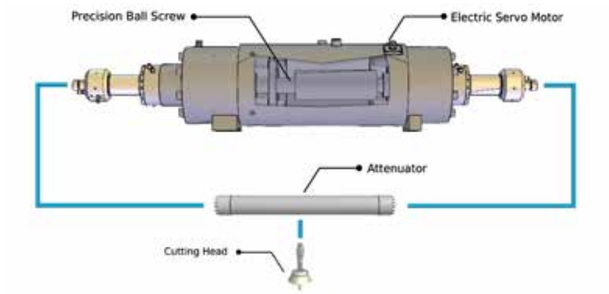
Oil/air heat exchanger

TECNOCUT GREENJET EVO

ELECTRIC PRESSURE INTENSIFIER

THE HIGHEST EFFICIENCY, THE LOWEST COSUMPTION

Tecnocut Greenjet Evo is a groundbreaking, highly efficient electric pump. A top-performance torque servomotor supplies a very high pressure level while removing the hydraulic unit and up to 80% of components compared to a traditional hydraulic intensifier. Tecnocut Greenjet Evo is equipped with one electrically driven actuator and a pair of opposed-piston high-pressure cylinders. Such a structure - electrically driven - delivers an extremely constant pressure level, a monitoring of the pressurization cycle and an efficiency at least 30% higher than 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.



Servomotor

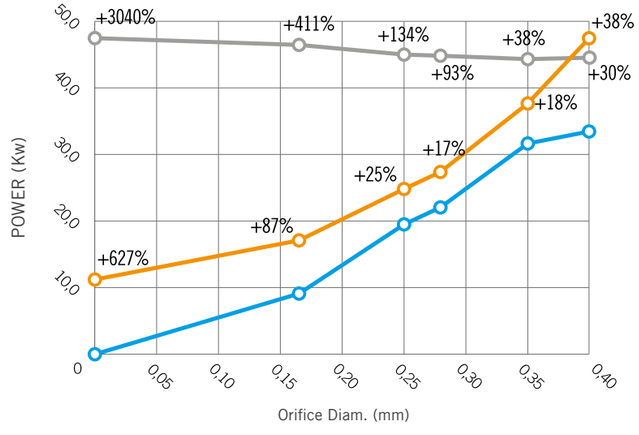


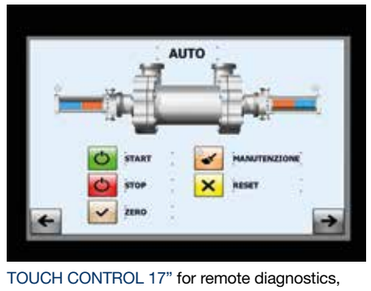
Air/oil heat exchanger (std)



Integrated boost water supplier (std)

4139 BAR INTENSIFIER CONSUMPTION: ELECTRIC VS HYDRAULIC





TOUCH CONTROL 17" for remote diagnostics, power check, cycle numbers and pressure electronic management (only on Tecnocut Greenjet Evo Stand Alone version)

SOFTWARE

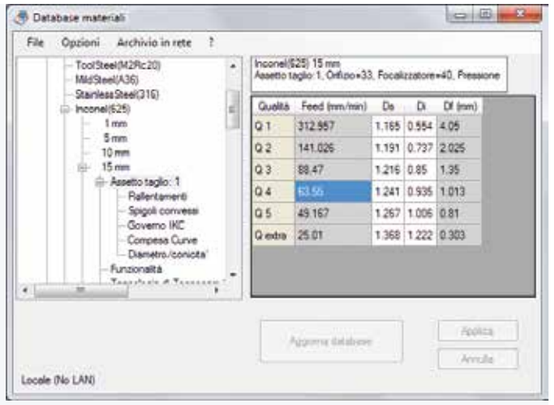
TC2020™

EASY TO USE AND EFFICIENT SOFTWARE

TC2020 is a CAM software which allows to fully manage a waterjet cutting system. Developed in Windows® environment, it originates and grows out of CMS wide experience in this industry. TC2020 is suited to work with most design software packages available on the market.

MATERIALS DATABASE

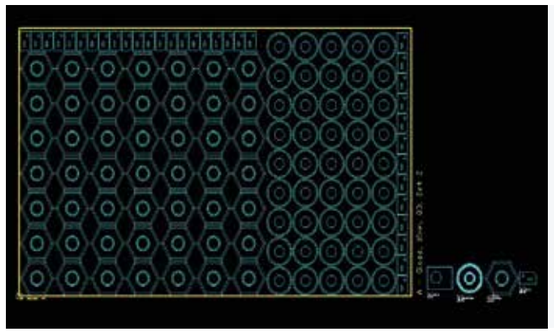
The software package is completed by a database containing the most commonly used technological parameters in waterjet cutting. It can also be customized to address specific requirements. The technical characteristics of any profiles that make up the imported shapes can be changed, in order to optimize the cutting sequence and machining.



ISO PROGRAM CREATION

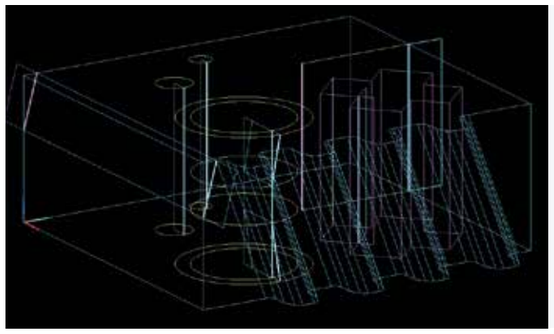
Starting from a drawing and the cutting parameters employed, TC2020 is able to create - by means of a specific module (JDE) - an ISO code for 3- and 5-axis machines, managing the varying dimension of the water jet along the cutting line as well as its deformation during the cut (due to speed, material and thickness).





OPTIMIZATION OF SLABS (NESTING FUNCTION)

The advanced nesting algorithm is able to optimize the use of the material, while managing different sheet sizes and scraps.

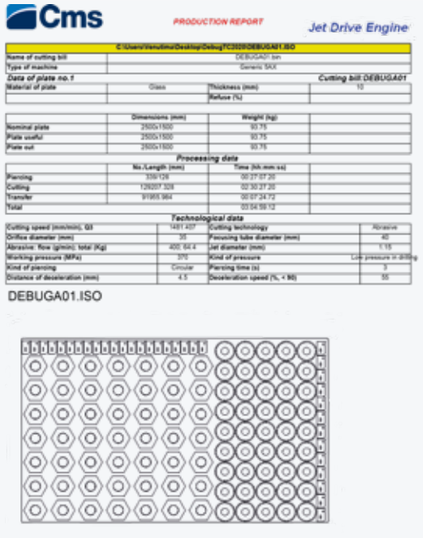


TC2020 3D AND SPECIAL MACHINES

The TC2020 3D optional module is a solid shape design software which enables to create 3D shapes easily and intuitively, by acquiring the upper and lower profiles or the desired conicity, to be used for TC2020 software functions. It also manages multi-head cutting by selecting the higher number of heads and related distance between centres, in order to minimize cutting times and maximize slab exploitation. It is also preset for the generation of ISO programs dedicated to 3- and 5-axis tube machining.

MANAGEMENT OF CUTTING LISTS AND ESTIMATES

The cutting list management is supervised by a user-friendly interface that provides information on the positioning data by means of a graphic view of the slab, on the cutting parameters and a production report, divided into cutting and material costs. After generating the ISO, the cutting path accuracy can be checked by reproducing the cuttting machine CNC.


Cms PRODUCTION REPORT Jet Drive Engine

C:\Users\Venus\Desktop\DebugTC2020\DEBUGA01.ISO

Name of cutting bill	DEBUGA01.bin		
Type of machine	Generic 5AX		
Data of plate no. 1		Cutting bill: DEBUGA01	
Material of plate	Glass	Thickness (mm)	10
		Refuse (%)	

	Dimensions (mm)	Weight (kg)
Nominal plate	2500x1500	93.75
Plate useful	2500x1500	93.75
Plate out	2500x1500	93.75

Processing data

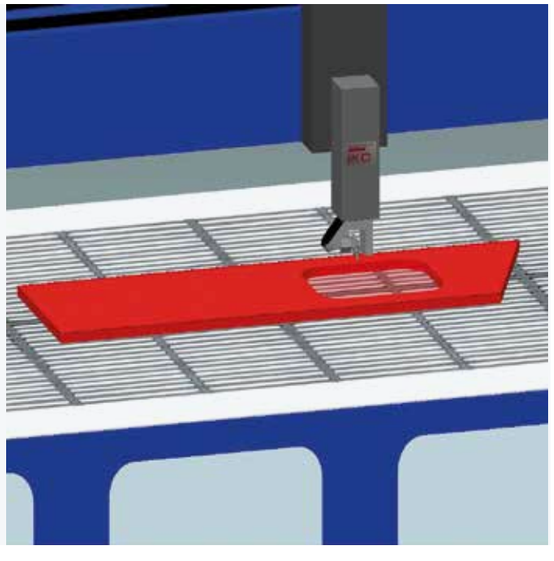
	No./Length (mm)	Time (hh:mm:ss)
Piercing	338/128	00:37:27.26
Cutting	129207.328	02:30:27.20
Transfer	91955.964	00:07:24.72
Total		03:04:59.12

Technological data

Cutting speed (mm/min), Q3	1491.407	Cutting technology	Abrasive
Orifice diameter (mm)	35	Focusing tube diameter (mm)	80
Abrasive flow (g/min); total (Kg)	400; 554.4	Jet diameter (mm)	1.15
Working pressure (MPa)	370	Kind of pressure	Low pressure in drilling
Kind of piercing	Circular	Piercing time (s)	3
Distance of deceleration (mm)	4.5	Deceleration speed (%, < 90)	55

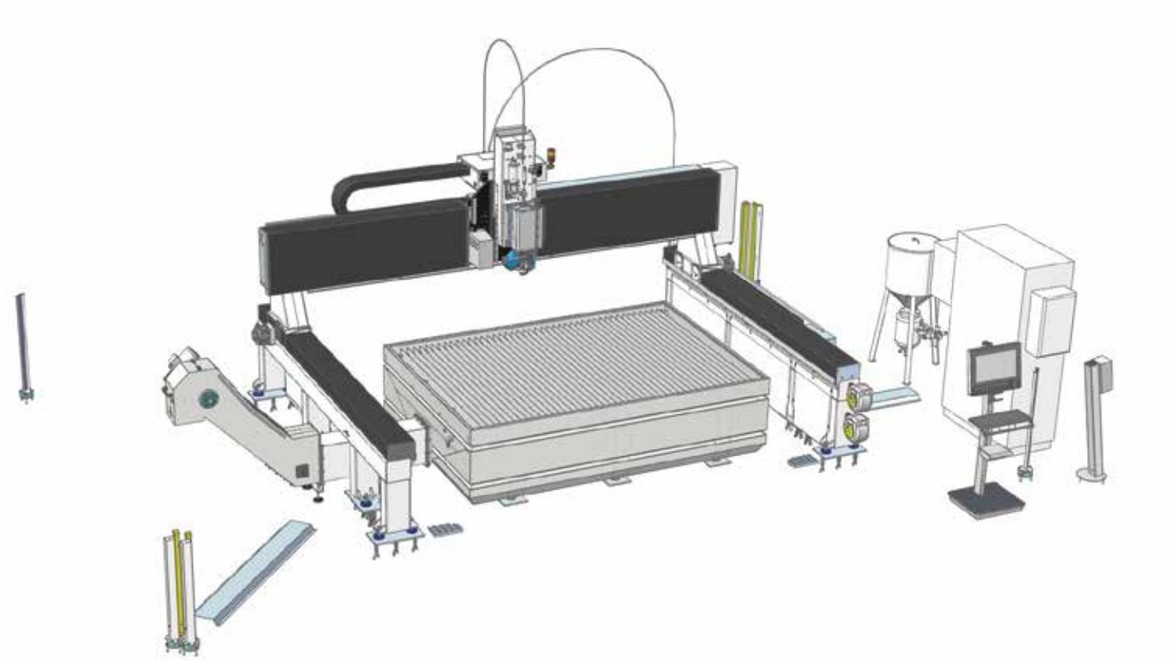
DEBUGA01.ISO

CMS machines can be equipped with software applications other than TC2020, e.g. EASYJET, a CAD/CAM software for programming cutting operations, installed also on CMS Stone Technology machining centres and bridge sawing machines.



TECNOCUT AQUATEC

OVERALL DIMENSIONS & TECHNICAL DATA



TECNOCUT AQUATEC: TECHNICAL DATA						
MODEL*	**2030**	**2040**	**2060**	**3060**	**RAPIDS**	**ACCELERATION**
X AXIS	3800 mm 149 in	4020 mm 158 in	6020 mm 237 in	6020 mm 237 in	54 m/min	2 m
Y AXIS	2650 mm 104 in	2650 mm 104 in	2650 mm 104 in	3650 mm 104 in	54 m/min	2 m
Z AXIS	530 mm 21 in	530 mm 21 in	530 mm 21 in	530 mm 21 in	12,6 m/min	1 m
B AXIS	± 60°	± 60°	± 60°	± 60°	17200 °/min	1450 °/s²
C AXIS	infinite	infinite	infinite	infinite	13400 °/min	850 °/s²
WORKABLE AREA	2000 x 3000 mm / 78x118 in	2000 x 4000 mm / 78x157 in	2000 x 6000 mm / 78x236 in	3000 x 6000 mm / 118x236 in		
OVERALL DIMENSIONS	5886 x 4039 mm / 232x159 in without light barriers	5886 x 4039 mm / 232x159 in without light barriers	7886 x 4039 mm / 310x159 in without light barriers	7886 x 5039 mm / 310x198 in without light barriers		

*Standard configuration available up 60120 (12000x6000 mm)
Dynamic precision (3-axis)
Repeatability of “ps” positioning

PRESSURE INTENSIFIERS

TECHNICAL DATA



TECNOCUT JETPOWER EVO: TECHNICAL DATA		
MODEL	**TECNOCUT JETPOWER EVO 30 HP**	**TECNOCUT JETPOWER EVO 60 HP**
POWER	22,5 kW / 30 Hp	45 kW / 60 Hp
MULTIPLIERS	2	3
MAX WATER PRESSURE	4150 bar / 60.000 psi	4150 bar / 60.000 psi
MAX WATER FLOW	2,5 L/min / 0,66 gpm	5 L/min / 1,32 gpm
MAX DIAMETER ORIFICES	0,28 mm / 0,011 in	0,40 mm / 0,016 in
VOLTAGE	400V +/- 5% 50-60 Hz (Different voltages and frequencies on request)	



TECNOCUT GREENJET EVO: TECHNICAL DATA				
MODEL	**TECNOCUT GREENJET 4139**	**TECNOCUT GREENJET 6200**	**TECNOCUT GREENJET 4139 SA**	**TECNOCUT GREENJET 6200 SA**
POWER	34 kW / 45 HP	34 kW / 45 HP	34 kW / 45 HP	34 kW / 45 HP
MULTIPLIERS	2	2	2	2
MAX PRESSURE	4139 bar / 60.000 psi	6200 bar / 90000 psi	4139 bar / 60000 psi	6200 bar / 90000 psi
MAX FLOW RATE	5 L/min / 1,32 gpm	2,61 L/min / 0,66 gpm	5 L/min / 1,32 gpm	2,61 L/min / 0,66 gpm
MAX DIAM ORIFICES	0,4 mm / 0,015 in	0,28 mm / 0,015 in	0,4 mm / 0,015 in	0,28 mm / 0,015 in
VOLTAGE	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-theart 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, maintainance 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.

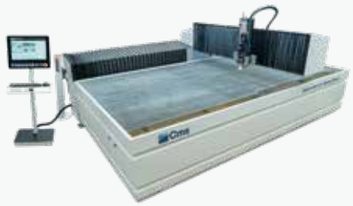
THE RANGE OF CMS METAL TECHNOLOGY

FOR METAL AND TECHNICAL ARTICLES PROCESSING

WATERJET CUTTING MACHINES



TECNOCUT SMARTLINE



TECNOCUT EASYLINE



TECNOCUT MILESTONE S



TECNOCUT IDROLINE S



TECNOCUT PROLINE



TECNOCUT AQUATEC



TECNOCUT WATERSPEEDY S

PRESSURE INTENSIFIERS



TECNOCUT EASYPUMP



TECNOCUT JETPOWER EVO



TECNOCUT GREENJET EVO

DRY DEBURRING-FINISHING MACHINES



DMC M950



DMC EUROSYSTEM



DMC METALSYSTEM

WET DEBURRING-FINISHING MACHINES



DMC M950 WET



DMC TOP METAL

TCAQUAT-0121E

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