

CNC MACHINING CENTRES WITH FLAT TABLE

morbidelli x200 cell



Routing and drilling made for you!

CNC machine with rich capacity of routing tools and drilling bits to fulfill any requirement in wood and similar materials working industry.

- **More performant**, with drilling spindles 8.000 rpm and **Ro.Ax. technology**, the more rigid spindle on the market with more than 1.000 hrs usage without maintenance required
- **Fully equipped**, a wide choice of configurations with one single worktable to satisfy all machining requirements
- **Quick and intuitive programming** with integrated cad-cam module **MAESTRO CNC**

Design & construction

The bottom supporting structure has been designed to be assembled in a cage-like shape, with all the parts electrowelded one and strongly ribbed one to the other so to reach the best rigidity possible; the particular structure, with a very wide base, grants long lasting stability and precision under all working conditions and **doesn't require the machine being fixed to the ground.**

The cage-shaped bottom structure provides also a solid support for the mobile unit on top of it: the operating units moving on the gantry support take advantage of this balanced base thus granting the highest performances in quality and precision. The mobile unit, consists of a solid structure, anchored to the base with linear recirculating ball bearings rolling over prismatic guides. The two motor powers along X axis grant very high performance even under heavy conditions.

The displacement of the mobile unit along the bottom frame (X axis) and the operating units along the mobile unit's beam (Y axis) is granted through a rack/pinion system designed with helical teeth so to allow tooth-to-tooth higher thrust thus allowing better acceleration and speed along both X and Y axis.

Helical teeth, once properly designed are able to **reduce also wear on mechanical organs and noise in operating conditions.**

The vertical Z axis is driven through a recirculating balls screw which ensures perfect balance under dynamic loads and bears very **high acceleration and deceleration values.** The routing unit is directly installed on the Z-axis slide thus granting the highest finishing quality thanks to a **complete absence of vibrations.**

The displacements along X-Y-Z axes are managed through "brushless" motors driven by static inverters which grant:

- **Reduced cycle timing** thanks to higher accelerations
- **Better precision in positioning** through high resolution encoders
- **No set-up operations** once switching on the machine thanks to absolute encoders utilization
- **No general maintenance operations** thanks to the absence of brushes, "brushless" system

The management of the axes displacement and generally the devices of the machine is assured by an industrial NC module with digital data transmission carried out through "CAN OPEN BUS" technology, able not only to reach the highest speed in communication intervals but also to be unaffected by external electromagnetical interferences.

These factors affect performances in **reducing machining times at least by 20%** and make possible performing **complex operations with the maximum precision.**

Standard operative equipment

Morbidelli is equipped with a series of standard devices able to maximize its general efficiency during daily operations:

- **BUMPERS PROTECTION (compliance with CE 2006/42 norm)**, which surrounds the operating units with a **protective cage** made up of a metal sheets construction. The front side of the cage is provided with a wide visibility window in ejection-proof material with can be opened during maintenance operations.

Sensible soft cushions equip the left and right side of the cage: in case of contact with an obstacle the sensors on the cushions stop immediately any operation on the machine which enters the “emergency” state.

The absence of safety devices on the ground floor grants the highest grade of freedom to the operator making him **take advantage on the full size of the working table in case of pendulum working**.

- **VACUUM CIRCUIT**, this plant is made up of properly dimensioned organs so to obtain the **best performances on flow capacity and vacuum values**. The machine can be equipped with pump(s) able to grant full retaining actions both on small sized parts and odd shaped ones.

- **NETCARD ON PC**, dedicated plug to allow the customer connect with a cable the PC office station to the corporate network, thus allowing a real time data transfer to/from the machine.

- The **WORK TABLE** has been designed for a practical and safe use of any device equipping it and, most of all, for a quick and easy configuration during daily operations. Built with inert material and immune to the main deformation factors it allows - through a 20x20mm grooves grid - to find always the optimal path to place the rubber gasket so to fix even the most complex pieces.
The specific design of the grooves grid allows also placing vacuum pods of different sizes in any position on the whole work table, making the machine suitable also for machining operations which require the single part be raised from the table (horizontal drilling, bottom edge rounding, bottom side machining etc.).
The work table equips a 120x120mm grid of vacuum outlets which can be opened and closed through metal "plugs". A magnetic insert on each outlet ensures a quick management of the vacuum configuration saving time while setting up the machine and granting the vacuum power to be distributed only where necessary.
The work table can be configured with **aluminum reference stops** to be placed on its four corners according to the customer's requirement.
The machine is so capable to be configured in a proper way to process both large and small sized parts with **no difficulties for the operator** to place them on the work table.

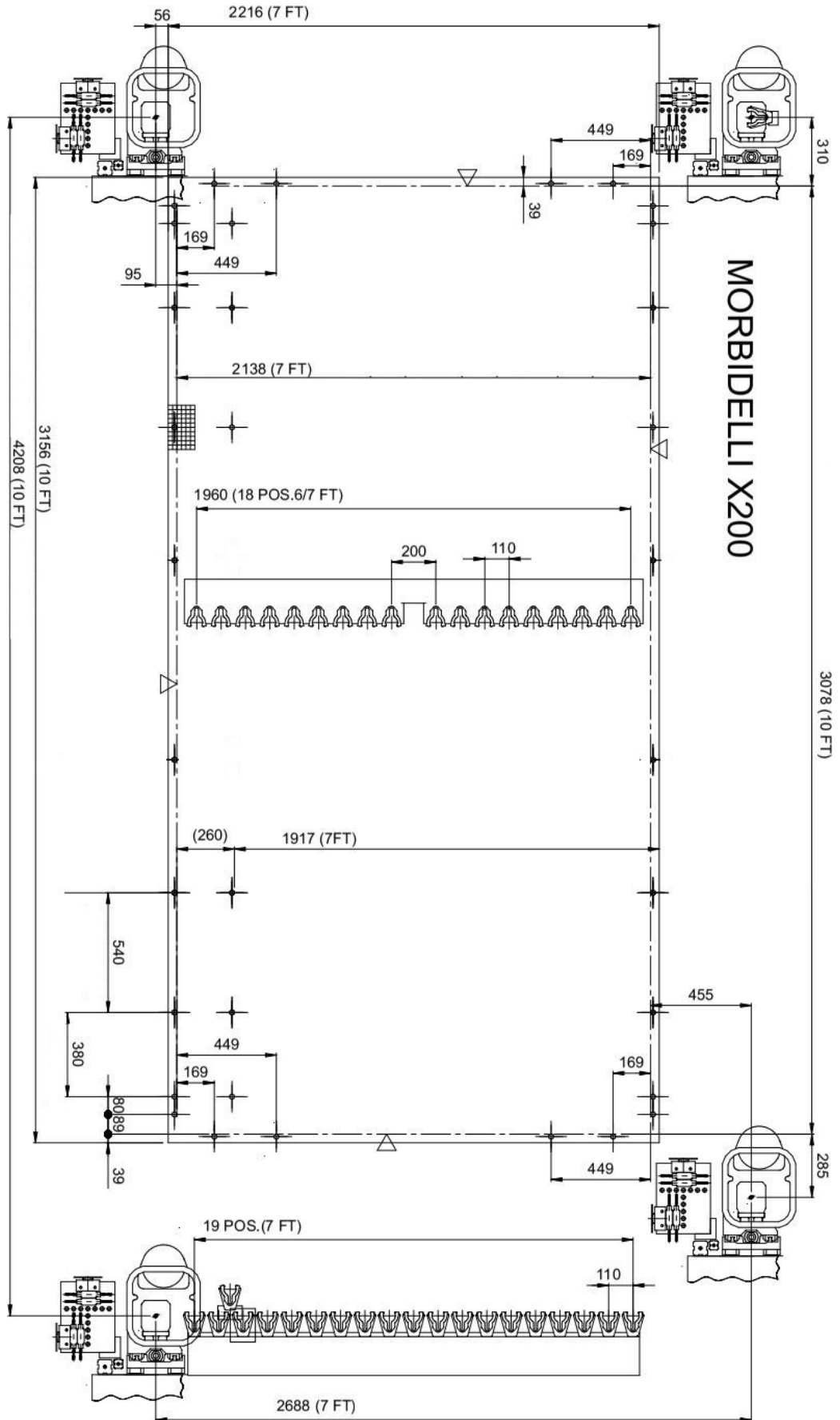
A rich choice of accessories and configurations makes the machine capable to process the most various pieces and the customer able to fulfill any type of requirement coming from the market.

Codice produttivo: X200 CELL**101490 Usa/Canada version****N. 1****R00578 morbidelli x200-2231 CELL****N. 1****TECHNICAL DATA**

		2231
WORKING TABLE		
X: inside the stop-outside the table	mm inch	3117 122
X: outside the table-outside the table	mm inch	3156 124
Y: inside the stop-outside the table	mm inch	2177 85,7
X: outside the table-outside the table	mm inch	2216 87
Panel length for alternated work process	mm inch	1073 42
No. of standard stops		5
Z panel clearance		150mm – 5,9inch
“pro-space” axes vectorial speed		84m/1' - 275ft/1'
“pro-speed” axes vectorial speed		113m/1' - 370ft/1'
STRUCTURE		
Type		mobile gantry
X motor power		double on both sides
X-Y transmission		rack
DRILLING HEADS -option-		
Vertical spindles		up to 14 – 8.000rpm
Horizontal spindles		up to 10 – 8.000rpm
ELECTROSPINDLE		
Motor power (S6) 3-4 axes		from 14kW to 15kW – 24.000rpm
INSTALLATION		
Installed motor power		according to the composition
Exhaust outlet diameter		250mm
Exhaust air consumption		4430m ³ /h - 25m/s
Compressed air pressure		6,5bar
Average compressed air consumption		400NL/min

The above mentioned sizes have to be considered as indicative since the same can be varied according to the purchased options.

Axes strokes



N.B. All measurements shown in the drawings are THEORETICAL, as they are subject to slight variations due to adjustments of the various units.

930779 Voltage 208/230/460 **N. 1**

931501 Frequency 60 hz **N. 1**

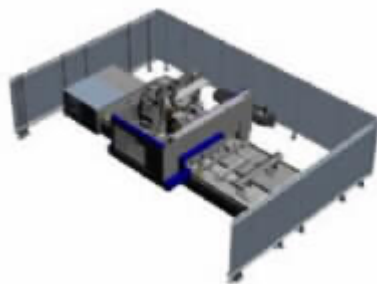
524562 PRO-SPEED security system with RFID detection devices - CELL versions **N. 1**

It allows to increase the axis speed along X over 25 m/min, by means of safety fences and photocells on the front access area. The light barrier interruption causes the speed along X axis lowering to 25 m/min. A dedicated pushbutton restores the high speed.

The machine is equipped with side and rear safety fences and a photocell to protect the front access area: once programs are running and light beam on photocell is not interrupted, X axis can run faster (see technical data) and production rate is increased.

Once the operator enters the operative area while running programs (i.e. loading/unloading parts), the interruption of light beam on photocell will cause an automatic reduction of the maximum speed along X axis to 25 m/min, granting the operator to work in safe conditions.

To restore high-speed regime the re-activation of the light barrier is required, through an ergonomic manual command.



The RFID non-contact safety sensors on the mobile supports of the machine ensures compliance with the highest quality and safety standards (imposed by recent machine regulations) and guarantees the correct functioning, avoiding those errors which are typical of traditional contact sensors.

A new rear checking system located is able to intercept the overcoming of safety support and makes the machining center easy to be used even by inexperienced operators. Being able to intercept also the accidental introduction of material inside the safety enclosures, in those spaces where the machine is moving, it also avoids potential accidental damage of the machine.



Retractable safety strip curtains

N. 1

Equipped with ON-OFF pneumatic vertical movement.
It is possible to programme the lifting during the X axis rapid movements. This system allows to reduce the impact between work piece and strip in case of delicate panels.

524613 Electrical connection with voltages other than 380/400V - 50/60Hz

N. 1

The machine is equipped with an autotransformer to convert the voltage coming from the main electrical supply to the voltage required to make the machine operative.

Instructions for a correct electrical connection to the customer power grid are included in the document (cod. 90L0635760A) which is provided with the machine.

The transformer/auto transformer is ALWAYS:

- 1) NOT included in the standard supply, but has to be integrated in the electric equipment of the customer's company
- 2) NOT integrated in the machine
- 3) Connected and checked BY THE CUSTOMER
 - *The autotransformer includes the connection of the neutral for generating 220V inside the electric panel*
 - *Allowed electricity supply networks: TN-S / TN-C*



Air conditioning on electrical cabinet

N. 1

It maintains the temperature inside the electrical cabinet within the values of a correct machine use.

This option is advisable in environment with temperatures over 35°C

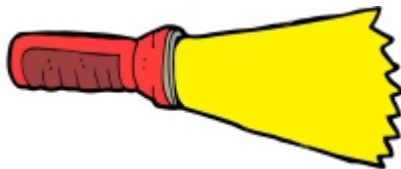


524318 Spotlight for operating units lighting

N. 1

Positioned within the operating units' protection, it allows a good internal lighting. It is advisable for those machines positioned in not well-lighted areas. The spotlight can be turned on or turned off through program, mobile control or in MDI mode.

Improving the work area lighting helps the operator during the control of machining, avoiding shadowed areas which hide tools during it. "Telecontrol" function is improved as well.



Remote machine control

N. 1

WIRED REMOTE CONTROL, practical device for the operator to carry out with him the main commands of the machine without being necessary manage them through the main console. Thanks to this device it is possible approaching the machine and command main axes X-Y-Z in a semi-automatic modality, enable/disable drilling spindles, set feeding speed etc.

It's also very **effective once checking machining operations** while being held or simply simulated so to **double-check programming** before launching an automatic production cycle.



N. 1

Centralized air conveyer

OPTIMIZED AND CENTRALIZED DUST EXTRACTION SYSTEM,

the dust hoods, one each operating unit, are conveyed to a single main hood to which connect the general aspiration system. Inside the hood a system of on-off valves, pneumatically managed by CN, opens only the dust extraction circuit relative to the unit currently working so **to maximize the cleaning action on the part and reduce air consumption and noisiness.**

Drilling head with lowered horizontal spindles

N. 1

Horizontal units with 7,8mm vertical overall dimensions, which allow to drill the center of a panel with 16mm minimum thickness, positioning it directly on the spoilboard.

524513 RO.AX F23LR drilling head

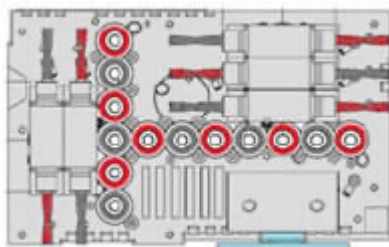
N. 1

The drilling unit is equipped with **new roto-axial technology Ro.Ax.**

Entirely developed by SCM GROUP, this project grants:

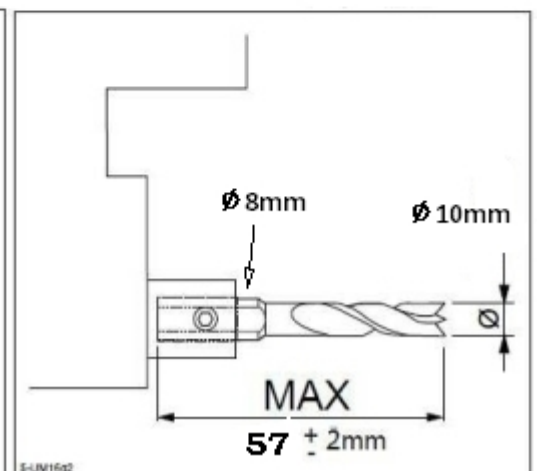
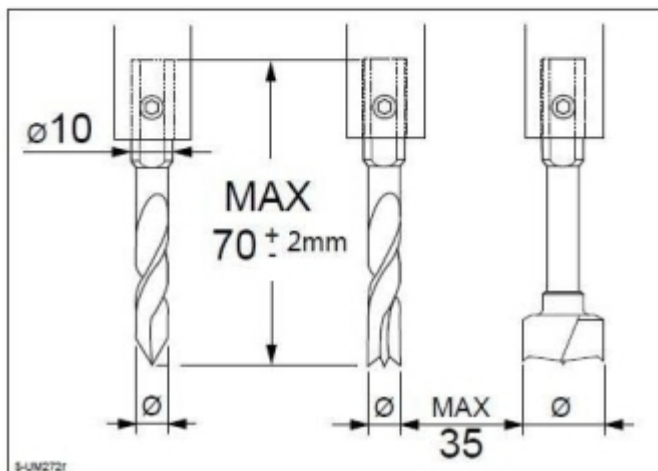
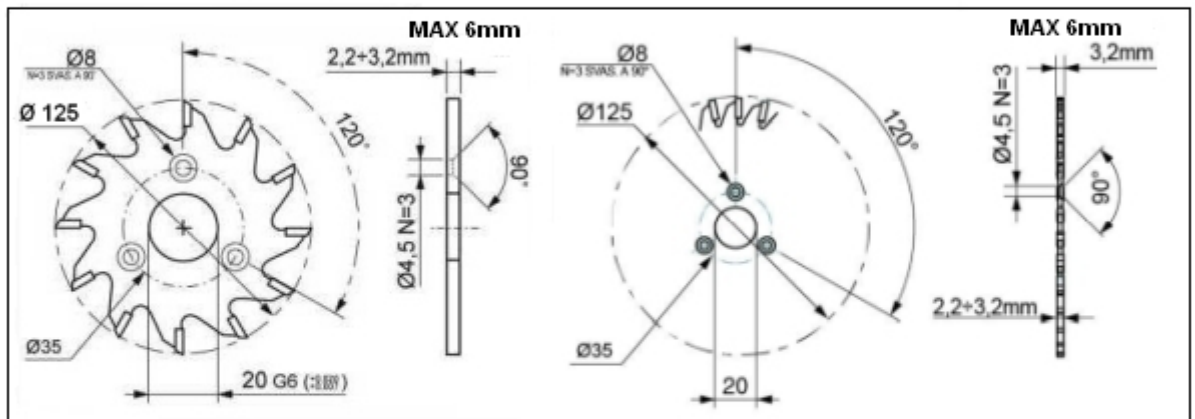
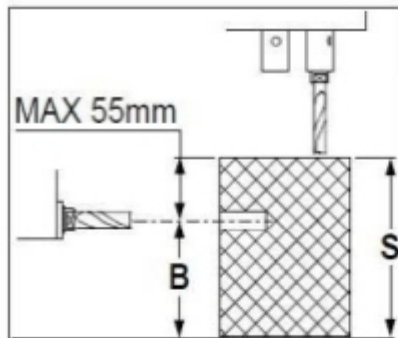
- **improving cutting quality**, thanks to the increased rigidity of the spindle (enlarged diameter of the rotating shaft and direct connection, no mechanical interfaces involved, between drilling bit and the shaft itself thanks to Weldon attachment type)
- **increasing production rate** thanks to a maximum rotation regime up to **8.000 rpm** (with optional inverter) which allows a higher penetration speed into the material
- **reducing maintenance interventions**, up to 1.000 hours without lubricating mechanical organs on the unit
- **horizontal drilling directly on the spoilboard**, starting from panel with 16 mm thickness: no more pods and long times for machine set-up

F23LR drilling unit includes:



- bits attachment on vertical spindles Ø 10mm and horizontal spindles Ø 8mm, WELDON type
- 32 mm step between adjacent spindles
- n°13 vertical spindles with independent pneumatical selection
- n°5 horizontal **lowered** drilling units with double outlet (one bit each side), 3 along **X** direction and 2 along **Y** direction
- rotation regime on drilling bits 4.200 (3000 to 8.000 rpm with optional inverter)
- n°1 integrated blade along **X** direction (max. diameter 125mm, thickness 2,2 to 6mm)
- rotation regime on integrated blade 5.000 (5000 to 10.000 rpm)

- with optional inverter)
- driving motor power rate up to 3,9 kW (5,3 hp) - [2,2 kW (3 hp) with 50 hz frequency]
- 60mm on-off pneumatical stroke on vertical spindles and blade
- 75 mm on-off pneumatical stroke on horizontal spindles
- locking system on drilling bit “quarterlock” type which allows assembling/disassembling tools through the use of single M8 screw and 90° rotation on the wrench
- compressed air circuit with high pressure to grant more than 64 kgf thrust on each drilling spindle so to perform operations on the most resistant materials



- Accessories for drilling head

Dust extraction hood for drilling head

N. 1

Positioned around whole perimeter.

Device to increase the drilling pressure

N. 1

Device for drilling support for Z-axis.

THIS DEVICE (only on drilling head) provides Ro.Ax. spindles with an **increased thrust during machining**; exceeding 64 kg, each spindle grants a full performance also on **the hardest materials** can be run.

Drilling unit managed by inverter

N. 1

The inverter managing the tools speed rotation on the router is connected also the driving motor on the drilling unit so to allow adjusting the speed rotation on bits up to 8.000 rpm and up to 10.000 rpm on the integrated saw blade.

NOTE: While executing a machining program, switching from routing to drilling operation, as well as the contrary, requires waiting for the router (or driving motor) stop before enabling driving motor (or router).



524379 Electrospindle 14kW - 19 Hp

N. 1

Vertical electrospindle equipped on a cast aluminum support with sliding on linear recirculating ball linings; NC managed.

Technical data:

- HSK 63F attachment with double referencing surface to ensure a rigid connection between the tool-holder and the electrospindle itself
- electronic rotation control on speed, from 1.500 to 24.000 rpm through static inverter, quick-stop function on rotation standardly equipped

- constant power rate (S1/**S6**) 10/**14 kW** (13,6/**19** hp) from 12.000 to 18.000 rpm
- programmable left and right rotation
- inner air blowing system to guarantee a proper fitting with tool-holder
- cooling system through forced air ventilation circuit and fan
- ceramic bearings as support on the main shaft
- compressed air circuit inside the router cage as prevention against dust pollution

NOTE: Tool-holders and clamps not supplied



Dust extraction outlet for 3-4 axis electrospindle

N. 1

with automatic ON-OFF positioning and manual stroke adjustment on 4 levels.

524145 VECTOR AXIS with digital control

N. 1

Electro-mechanical device, NC managed through Digital Drive and gears transmission, to allow angular heads be properly rotated and positioned along 360° on X-Y plane.

Through this unit it is possible **interpolate machining operations on 4 axes.**

It is provided with a pneumatic outlet for angular heads in need of an air flow (i.e. floating aggregates, horizontal routing aggregates etc.).



Variable cut off behaviour for electrospindle

N. 1

Through a monitoring system of the cutting strain made by the tool, according to a value programmable by the user, the system is

able to automatically reduce the speed of movement set in the program, and then refresh the one originally set.
This system guarantees the highest possible working speed, keeping a constant finishing without requiring supervision or operator intervention.

Features of the FAST linear tool changer

N. 1

Tool holder rack inside the protective cage, it can house tools and heads.

- max. tool diameter: 160mm
- distance between adjacent positions: min. 125mm
- max. weight for each tool: 8Kg
- max. total weight: 42Kg
- max. weight for each head: 10Kg



FAST tool change grants the best performances in terms of time during changing operations given the short distances from the router and the tool to be equipped and a dedicated software optimization managing changing sequence.

It is located inside the protective cage on the mobile unit and is able to host tools and/or angular heads (please refer to admitted dimensional limits reported on layout chapter).

Its steel frame construction grants the best rigidity possible in case the heaviest tools would be equipped on it. tool-holders housings are covered in plastics and built in aluminum providing an ideal connection between rigidity and flexibility during tools loading/unloading operations.

The rake and the tool-holders are properly protected against dust through a roof on its top.

NOTE: Tool-holders and clamps not supplied

524391 FAST18 18 positions linear tool changer (18/22xx)

N. 1

Loading station for FAST tool changer

N. 1

This device, when TRB tool changer is not installed on the machine frame, allows to automatically and easily equip the “FAST” tool changer positioned within the operating units protection.

High Efficiency (HE) multifunction aluminium worktable

N. 1

Aluminum table. Vacuum holes set at 120 mm pitch, closure by means of rapid magnetic system "patent pending". Grooves are set at 20 mm from each other for fixing of the workpiece using rubbers seals.

Automatic centralised lubrication

N. 1

The correct amount of grease on the machine's moving parts is always maintained by means of an electronically controlled pump (X-Y-Z axes).



Tool length detection device

N. 1

Electromechanical device located on the side of the bottom frame and able to detect the tool length through a dedicated software cycle.

The length just evaluated will be sent to the Numerical Control which update automatically the tool database in sight of any successive machining program (it is strongly suggested using parametric programming to take full advantage from this practical function).



Work table with threaded attachment

N. 1

A series of threaded bores on the work table makes possible the devices fixing of various type.

Furthermore the system allows the fixing of the spoil board in order to use it even if present the air system.

524468 Threaded attachments for 2231

N. 1

MDF transpirant baseboard (suitable to be routed)

N. 1

Features of the multi-areas work table

N. 1

The division of the work table in multiple vacuum areas is recommended for the machining processes of panel with dimensions which are smaller than the entire work table. The areas are chosen by an information system which allows the manual selection of the areas to be opened or closed. The operator has also the possibility to can also activate an automatism, where the control autonomously selects the vacuum area containing the dimensions of the piece.

524400 Work table divided in 20 vacuum areas (2231)

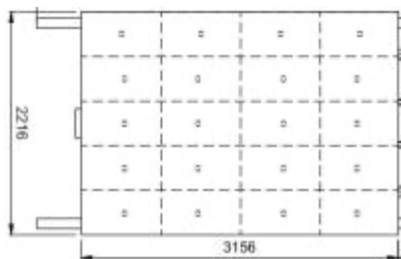
N. 1

The perfect solution for small-sized offcuts machining. The minimum surface connected to the vacuum approximately corresponds to:

- X = $\frac{1}{4}$ of the working area
- Y = $\frac{1}{5}$ of the working area

Manual or automatic selection of the areas according to workpiece dimension.

For machines with aluminum work table.



Dynamic action of the vacuum areas

N. 1

Dynamic system which concentrates the vacuum flow only in the area being processed

This device allows the machine to reach the highest performances in terms of pieces holding, increasing through a double vacuum circuit the suction action on the parts being processed only when the router bit is currently machining them.

This option is strongly suggested in case of breathable materials, thin panels or really small parts to be nested and greatly increases the usage flexibility of the CNC machine in any cutting process.

Through the control console it is possible to enable or disable the functionality.

524805 Dynamic start of the vacuum areas, for 20-zone work table N. 1

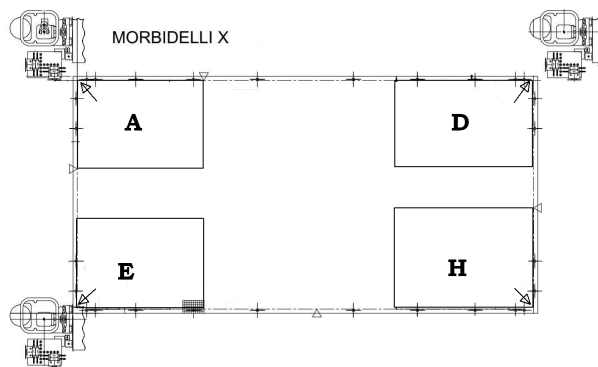
Peripheral working areas: features N. 1

Each working area consists of no.1 reference stop on the side (left or right dependently on the area itself) with 90mm vertical stroke and accordingly to the frame size the stops along the X direction can vary in quantity:

- xx24 = n°3;
- xx31 e xx36 = n°4
- xx43 = n°5

Any stop has a vertical stroke of 30mm and equips an M6 female thread on top so to install eventual extenders.

single area allows the machining of a single piece at a time and the stops can be activated from the control console.



Rear external area - LEFT "A" N. 1

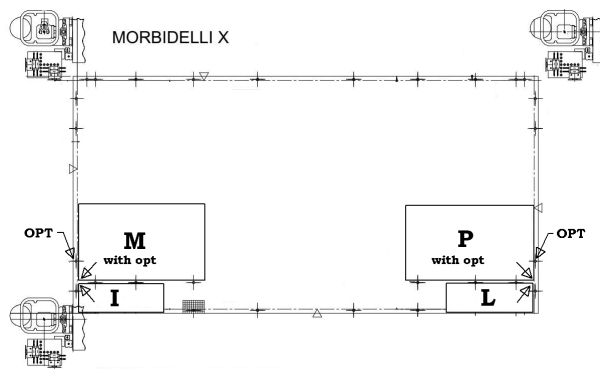
Rear external area - RIGHT "D" N. 1

Front external areas - LEFT and RIGHT "E" and "H" N. 1

524405 Central working areas "I" and "L", "M" and "P" N. 1

Each area consists of variable number of stops along X axis depending on the length of the selected version:

- xx24 = no. 2;
- xx31 e xx36 = no. 3;
- xx43 = no. 4
- Stops stroke = 90mm
- Stops with M6 attachment for extensions
- **side stops are excluded, they are necessary to have "M" e "P" areas**
- **option available for machines with aluminum worktable only**



The stops can be activated from control and each work area has its own "O" and its specific mirroring. The presence of the central areas code only will activate the "I" and "L" work areas. In case,

also the "M" and "P" work areas are required, it is necessary to have also the side stops on the left and right of the work table.

524406 No. 2 additional peripheral stop on the left side N. 1

524197 No. 2 additional peripheral stops on the right side N. 1

Cell pre-set

N. 1

Electric, pneumatic and mechanical pre-set to create a cell or create partial cells with automatic loading and unloading. This pre-set allows to easily retrofit the machine with the necessary devices to create the cell.

Cell automation: panels to be loaded

N. 1

Summary of nesting cell technical data

- *Min panel dimensions (X-Y): 1600x550 mm*
- *Max. panel dimensions (X-Y) and max. panels stack weight:*
 - * 1224 = 1270x2500mm - 2000Kg
 - * 1531 = 1570x3100mm - 2500Kg
 - * 1536 = 1570x3700mm - 3000Kg
 - * 1836 = 1870x3700mm - 3500Kg
 - * 2231 = 2200x3100mm - 3500Kg
 - * 2243 = 2200x4300mm - 4000Kg
- *Min. panel thickness: 10 mm (3mm option)*
- *Max. panel thickness: 30 mm with slightly raised workpiece loading*
 - 60 mm with dragged workpiece loading
- *Max. panel weight with lifting table: 150 kg*
- *Max panel weight without lifting table; 200 kg*
- *Max. panels stack height: 700 mm*

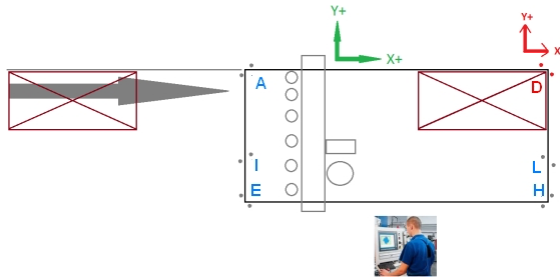
524408 Working flow from left to right direction

N. 1

Inverted working flow compared to the standard one.

Thanks to the new Maestro active, the operator has all the references as in the right to left version; the operating units are positioned to the right of the upright.

If internal stops are used, the work table will be rotated by 180° so that any internal stops are close to the operator.



524417 Panel loading pods

N. 1

This device gives the machine the ability to pick (raising and/or dragging) automatically the panel from the entrance position to the machining one on the work table.

A series of pods aligned along the Y axis, variable in quantity according to the table width, grants always the proper gripping action.

Dedicated devices make the picking system the best in terms of performance:

- “Venturi” tube system construction to grant the proper suction action also on transpirant materials and minimizing the required quantity of air.
- Air blowing circuit able to clean the top surface of the panel to be collected making the picking operation all the way efficient
- Self-enabling valves so to pick panels of different sizes in width with no manual interventions on the machine

524419 ON-OFF workpieces outfeed pusher

N. 1

Automatic device which allows the following operations:

- the unloading of the worked pieces on the table side
- the direct positioning on the spoil board
- the spoil board cleaning by means of integrated suction and blower

It is mandatory to select the pushbutton or the unloading belt.

It consists of a rigid rake (pusher) which touches the spoilboard when enabled so to avoid any adjustment once switching to different panel thickness and at the same time it allows:

- the mobile unit to push properly the cut parts – even the thinnest ones – towards the offloading station
- dust and chips on the spoilboard be properly evacuated (best hold down action, no discarded parts, maximum safety on any successive panel) thanks to the adoption of blowers and a suction

hood on the rake itself. The aspiration system is directly connected to the main dust extraction one on the machine, avoiding the addition of further tubes on the facility's aspiration system.

Best flexibility of usage thanks the ability to associate the outfeed pusher to one of these devices:

- automatic motorized belt, optional for a quick panel replacement on the work table, no operator required to collect the parts during the unloading operation
- manual offloading with pushbutton command, optional for a space saving solution, operator required to collect part by part during the unloading operation

Lower dust extraction grid between the work table and the outfeed conveyor **N. 1**

Stainless steel grid between worktable and unloading conveying belt, complete with suction connection, for the extraction of residual dust and small chips laying between the processed parts while being offloaded.

Characteristics:

- Dust extraction outlet diameter = 250mm
- Dust extraction air consumption = 2800 m³/h
- Air speed = 25 m/sec
- Automatic opening valve
- Dust extraction hose connection on the bottom side

524430 1 position upper dust extraction hood for unloading belt **N. 1**

Located above the unloading belt, it allows the cleaning of the pieces moving towards the unloading end:

- dust ext. hose diameter: 200+200 mm
- dust ext. air consumption: 2800+2800 m³/h
- air speed: 25m/s
- hand wheel for height adjustment
- anti-collision device
- automatic suction valves opening ("ON" belt, opened valves)

524432 Lower exhaust hood on the unloading belt end side **N. 1**

Dust extraction hood with dedicated connection for suction, able to intercept eventual dust and small chips still sitting on the belt conveyor.

Features:

- dust ext. hose diameter = 200mm
- dust ext. air consumption = 2800 m³/h
- air speed = 25 m/sec
- automatic opening valve
- suction hose on bottom position

524433 Device for 3mm minimum panel thickness management N. 1

This option gives the whole nesting cell the ability to manage thin panels, with 3mm minimum thickness.

The lifting table is equipped with air blowers and detaching devices so to be able to lift properly thin panels (panel picking allowed only through lifting+dragging mode).

The specific feature of the pusher allows to intercept properly thin panels.

The unloading belt conveyor is equipped with a specific sensor able to detect panels with thickness till 6mm, below this limit the operator has to activate manually a pushbutton so to recall parts to be conveyed to the unloading position.

630431 Manual label printer N. 1

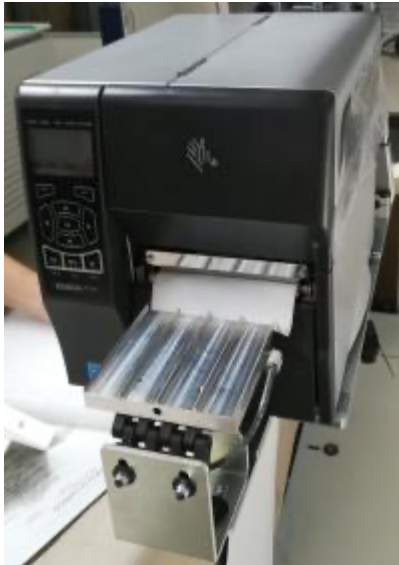
positioned on the mobile control panel, it allows the management of the labels with bar code to be manually applied on the work pieces. It is possible to locate the mobile control panel close to the unloading area

524434 Automatic label printer for lifting table N. 1

Optional device installed on the lifting table, which allows to print and apply labels automatically on the top panel of the stack while the machine is currently processing the previous panel.

Characteristics:

- average labeling time 6 secs/label
- label rotation 0° or 90° according to the labeling program.
- label application precision: ±5 mm (±0,2")
- label detecting device on applicator pad
- industrial thermal label printer
 - * integrated peel-off system



The side alignment system on the lifting table is equipped with an additional extruded aluminum cantilever which carries the applicator pad letting it covering entirely the maximum admitted size (length/width) in applying labels.

The applicator pad consists of a jointed rubber coated plate equipped with a “Venturi” compressed air system for label holding and detection system which detects the label presence and eventual anomalies occurring during the

labeling cycle:

- label not picked from the printer
- label picked but lost before application
- label applied
- label not detached from the pad after application

The label printer is located on the rear side of the lifting table.

Labels dimensions (X-Y):

- 65 x 45 mm
- 100 x 30 mm
- 100 x 80 mm
- 80 x 140 mm

524435 Side fences on the work table

N. 1

Pneumatic device which avoids the ejection of pieces out of the work table during the automatic offloading phase.

This optional is strongly suggested once the machine is equipped as an automated nesting cell and is not suitable to work as front/rear references.

- Fences vertical on-off stroke = 25m



Loading table

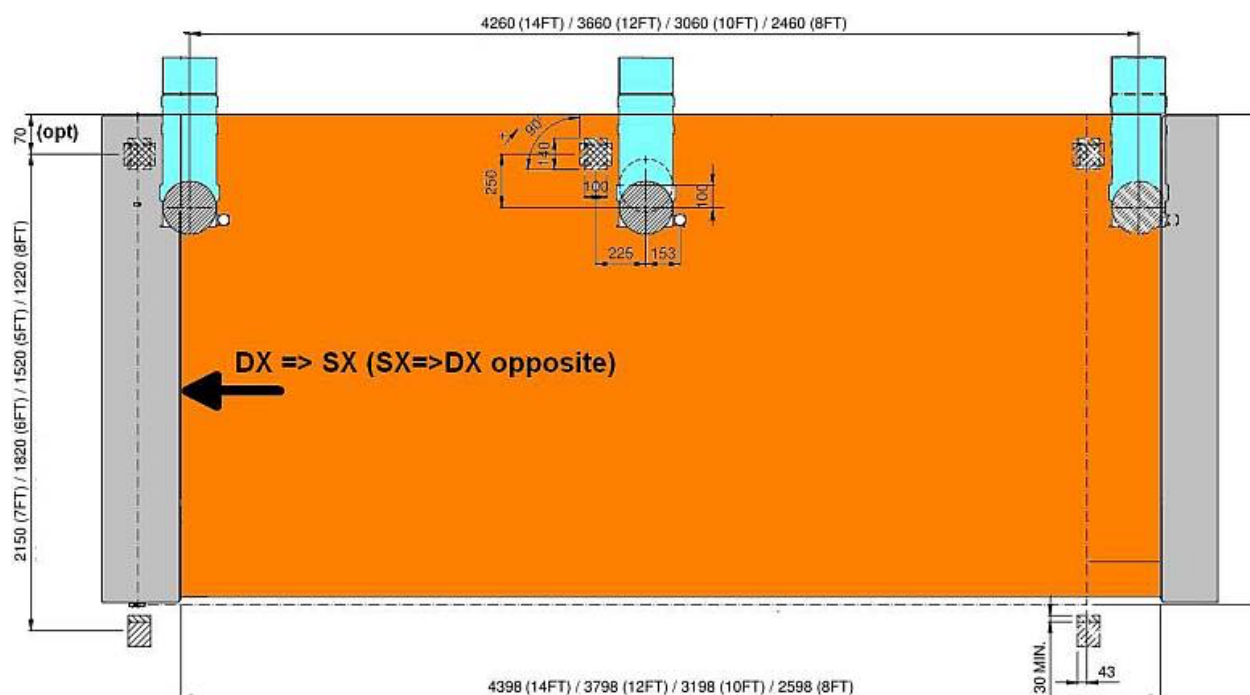
N. 1

Automatic machine equipped with the following functions:

- powered lifting table
- pneumatic side alignment device along Y axis
- controlled axis for panels introduction along X axis
- detection device along Z axis with anti-collision system
- detection device for oversized pieces

Lifting device

A motorized driving system – synchronized on its four corners – raises the loading table so to grant a planar lifting action even in case of an uneven distribution of the weight, typical in case of small sized stacks.



Side alignment device

A pod with “Venturi's tube” system grants the top panel of the stack be properly aligned to the side guide before introducing it onto the work table.

The large diameter pod grants even to the heaviest panel be properly aligned as well as if the stack has been placed not in the proper way on the lifting table, independently from the length of the panels on the stack.

Panels introduction device

Loading cycle timing reduced at the minimum thanks to this device which drives the panel to the working position with a single movement through a controlled axis by means of a brushless motor and a position detecting device: speed and reliability in any condition.

Detecting system for panel position along Z axis

The stack is always leveled at the correct vertical position before dragging the top panel onto the working table thanks to this device which grants also the loading cycle would be properly held even in case of warped/bowed panels thanks to its mechanical based construction.

Detecting system for over-sized panels

No mistakes or collisions thanks to this device which is able to detect right on the lifting table the length of the stack placed on it before starting the machining process.

524413 - Loading table 2200x3198mm - 3500Kg (22xx) N. 1

Unloading feed belt N. 1

Motorized conveyor connected to the machine and able to get the parts driven by the pusher out of the work table so to reach the unloading station where the operator can collect them in safe conditions.

The automatic start-stop system on the conveyor – through a dedicated sensor at the end of the belt – gives the operator the ability to collect part by part in a comfortable way, with no manual interventions and preventing them to fall on the ground.

524426 - Outfeed belt conveyor 2200x3190mm (22xx) N. 1

Vacuum pumps positioning N. 1

Basic machine cell models:

- the vacuum pumps are always located on the base left side, in the area below the unloading belt, even if the belt isn't present

Basic machine models without automation:

- no. vacuum pump can be accommodated below the machine base
- with 15xx, 18xx, 22xx models and rotary vane vacuum pumps it is possible to accommodate up to 2 vacuum pumps below the base
- when the savEnergy is present, the vacuum pump are always positioned on the base left side
- when the number of pumps exceeds the quantity that can be installed under the base, they will always be positioned outside the base

524169 600/720 m3/h 50/60 Hz high capacity vacuum N. 1

This system foresees no. 2 vacuum pumps and a special connecting system that provides a high air flow between work tables and the vacuum pumps. It is suggested for very porous materials.

MAESTRO ACTIVE Human-Machine interface software (HMI)

N. 1



Maestro active is the new interface software (HMI) which has been **unified across all SCM technologies.**

A single operator can easily and confidently run multiple SCM machines, reducing operator training times and facilitating entry into production.

Maestro active has been specifically designed and optimized for immediate use via touch screen. Graphics and icons have been redesigned for simple and comfortable navigation.

Maestro active cnc is the innovative software specifically addressed to SCM machining centers and drilling machines. It is characterized by the following **functions:**

- **Reporting system:** active can provide the following reports: production report, alarms, event, and maintenance reports;
- **Maintenance support:** Maestro active indicates the maintenance operations to be carried out on the machine, connecting them to the relative procedure;
- **Diagnosis system:** Maestro active detects and displays alarms and warnings; offering help to eliminate the current error;
- **User management and shifts management;**
- **Machine records;**
- **Loading of lists of programs, single programs, also through barcode;**
- **Execution of manual/semi-automatic commands (MDI);**
- **Axes calibration;**
- **Machine status management;**
- **Paddle** (command virtual keyboard);
- **Axes dimensions, feed and speed override display;**
- **Tooling for:**
 - * work tables
 - * magazines and heads without automatic tool change
 - * drilling heads
 - * edges magazine
 - * rollers magazine

Maestro active cnc, can be integrated with the Iot Maestro connect platform assuring a remote machine control in real time and a proactive maintenance management.

SCM DIGITAL SOLUTIONS: MAESTRO CONNECT

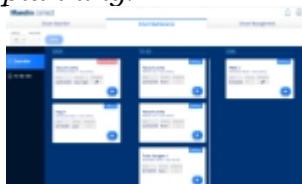
N. 1



MAIN BENEFITS

PREVENTIVE MAINTENANCE

Prevent failures through *automatic maintenance notifications and scheduling*. Automatic and periodic maintenance notifications allow timely planning and better maintenance work organization, including *service scheduling in advance and routine maintenance planning*.



REDUCTION IN PROBLEM DIAGNOSTIC TIME

Maestro Connect makes SCM machines even more valuable bringing the interaction between customer and service and service to a higher level.

Maestro Connect allows the SCM Service to have access to *real time data and health records of the machine*, so that Service can improve its performance by carrying out tasks faster.



STRONG REDUCTION IN MACHINE DOWNTIME through:

- *Everywhere and at any time information*. Immediate Instant notifications in case of alarms or downtimes allow customers to immediately take an action thus optimizing productivity.
- Functions for quick problem resolution like *spare parts*

suggestions and self healing videos.

- **FASTER SERVICE INTERVENTION.** A direct line with SCM telephone support: Click to Call allows the opening of an assistance request directly from the App. The button will call the Service number of the local country according to the service contract in place.



IMPROVE PERFORMANCE THROUGH CUSTOMER AWARENESS.

Reports and KPIs allow further analysis thus increasing Customer Knowledge about his performance and results.

Suitable tools for observing actual production data are given in order to identify any production defects and plan corrective actions. .



525250 Maestro connect: basic set-up (cabling only, for later gateway installation) N. 1

Required hardware equipment to retrofit the machine with the “connect” service.

For activating the IoT service it is mandatory to add the GATEWAY function and buy the subscription, also in case of later installation (not included in this code equipment).

524650 Maestro connect: 1-year subscription service (kit Gateway "plug&play" included) N. 1

Maestro Connect is able to offer customized services through the use of an Industrial IoT platform that supports the daily activities of the Customer, improving availability and use of machines or systems.

Maestro Connect displays, analyzes and monitors all data coming from connected machines, transforming them into useful information to increase productivity, reduce operating and maintenance costs.

The option includes:

- subscription to 1-year cloud services

- 5 simultaneous activations, i.e. the ability to create 5 users who simultaneously use the platform;
- an IoT Cloud level where data is aggregated;
- a database on Cloud (DataLake) to store and analyze the detected data;
- a *responsive web app* for *smart device* on which you can view reports on the machine operations, analyze its productivity, check the status and manage the maintenance.

Maestro Connect is accessible from a PC or *smart device* and inside it there are the following three sections:

- **Smart Machine:** for monitoring machines and main components;
- **Smart Maintenance:** for maintenance support services;
- **Smart Management:** for the control of the main performance indicators and to export historical reports

SMART MACHINE:

Section dedicated to the **continuous monitoring of machine operations**, with information about:

- **Status:** overview of machine status both *live* and historical. The provided representations allow the checking of the machine availability to identify possible bottlenecks in the production flow. It is therefore possible to obtain a detail of the *Production* and *Alarms* sections (by displaying, for example, the alarms descriptions that stopped the machine);
- **Production:** production *timeline* with the list of machine programs performed during the day: display in real time of the running programs and the potentiometers;
- **Alarms:** alarms timeline and alarms list and warning occurred during the day.
- **Components:** real time visualization of the functional parameters of the machine characteristic components

Every time an alarm occurs, the platform sends *push* notifications to the user, allowing him to take immediate actions

SMART MAINTENANCE

Section organizing and managing the following management tasks:-

- **ordinary maintenances** (maintenance tasks as prescribed and suggested in the User's manual);
- **extra maintenances** (unplanned tasks, triggered by alarms)
- **programmed maintenance** (maintenance tasks planned by the user);

Ordinary maintenance can be planned through Smart Maintenance to have a better control on the machine maintenance status. This can lead to:

- decrease in unplanned maintenance work;

- improving the product quality, monitoring that the machines and equipment operate in optimal conditions.

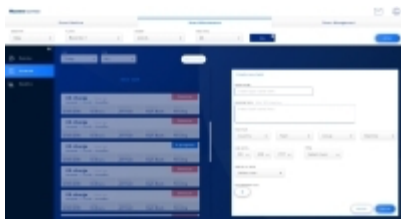
Functions available for maintenance management.

- **Maintenance check:** this section provides a scheduling of maintenance operations. Maestro connect regularly report to the customer all the deadlines and maintenance interventions related to the SCM machine.

Furthermore the user can schedule customized “programmed maintenance tasks”, linked to calendar periods (for example, basic machine cleaning every week)



- **Maintenance management:** maestro connect both schedules and allows customer to assign a maintenance intervention. Not only the maintenance operation can be scheduled. It can be also assigned to an operator responsible to carry on the task and declare it concluded (“done”) Maestro connect archives and store the entire list of maintenance performed.



- **Smart Parts, Spare Parts suggestions** and integration with **Smart Parts** e-shop. are scheduled proactively since the system provides current information on the conditions of the machine parts.



- **Video and tutorials for the support of the maintenance activities and problems resolution.** Maestro connect allows a
-
- direct access to videos and smart documents to help the operator to self-solve any issue. Documents and video clip are provided on association with any ordinary and extra maintenance action, so

that customer can take an immediate quick self-made action solving the problem and saving time.



- **Click 2 open:** automatic ticket opening function which allows the opening of an assistance request (ticket) directly from Maestro connect.



SMART MANAGEMENT

Section dedicated to the KPIs presentation for all the machines connected to the platform.

Smart management automates the generation and presentation of the key metrics and qualitative information that companies use in their reliability programs, such as:

- the machine availability;
- the machine efficiency.

This kind of automation is a surprisingly powerful improvement lever, freeing maintenance staff from the time-consuming and error-prone process of data collection and analysis.

Moreover, it supports rapid trend identification, fact-based decision-making, and timely intervention, as well as changes in equipment investment, processes, and policies.



IMPORTANT NOTE :

HIGHEST SECURITY STANDARDS

- Maestro Connect uses the standard OPC UA communication protocol, which guarantees the data encryption at the interface *Edge* level.
- Connect's Cloud and DataLake levels meet all state-of-the-art *cyber-security* requirements. Customer data is encrypted and **authenticated with password** to ensure total protection of

sensitive information.

- Maestro Connect **uses separate hardware gateway**. It benefits of the last and most effective EdgeComputing technologies: using a powerful dedicated CPU cores in the hardware gateway, it's possible to post-process data&events locally, saving money and time respect to sending everything to the Cloud. The gateway software will be continuously improved, with no impact on the machine performance and behavior: no software issues due to interference between IoT and machine, more security, save time and money.

SCM will guarantee to operate in compliance with the following guidelines:

- **Data storage and Safety:** SCM guarantees to collect and process data with the customer's exclusive authorization;
- **Transparency:** at any time the customer can request to verify the data subject to monitoring and analysis;
- **Confidentiality:** all data will remain for the exclusive Customer's and SCM's use and will not be passed on to third parties.

NOTE

- *Maestro Connect services will be automatically renewed at the current price of the subscription, unless canceled by the buyer within 30 days from its expiry.*

Maestro cnc programming software

N. 1

Minimum characteristics required for the software installation in office:

- Operating system: Windows XP Professional (SP2), Windows Vista, Windows 7 or Windows 10
- Processor: Intel compatible, 2GHz minimum; multicore processor is advisable
- Memory ram: 2GB minimum, 8GB are advisable
- Space on hard disc: 5GB
- Graphic card: Open GL compatible

MAESTRO CNC SOFTWARE SUITE – USER INTERFACE AND PROGRAMMING



Maestro is the software platform equipping all SCM CNC machines.

Maestro is a 3D graphical **CAD/CAM** suite, developed by SCM GROUP's software department, which grants an easy and quick programming, basing on the following main functionalities:

- Part machining programming
- Tool database management
- Machine configuration management: operating units, working table, tools store management
- Locking devices management (pods, rails, clamps, ...)
- Operative control and machining diagnostic

The user interface shows up with an easy-to-use graphics which utilizes the most actual tools in objects representation and follows this layout:

- Functions menu, divided in groups, top screen positioned
- Geometries drawing, in the middle of the screen
- Geometries and machining operations properties, right side positioned, with drop down menu
- List of operations, left side positioned, tree structured

CAD functions cover a wide range of choices through a sketching environment which includes basic geometries:

- **point**
- **line**
- **arch**
- **circle**
- **ellipse**
- **polyline**
- **polygon**
- **slot**
- **text**

On these basic geometries additional operations can be performed such as chamfers, fillets joints.

Aided drawing functions are also available, same than any CAD software:

- **o-snap**
- **cut**
- **copy**
- **move**
- **opposite**
- **mirror**
- **offset**
- **rotate**
- **reversed orientation on geometry**
- **editable starting point on geometry**
- **distance measuring**

Maestro CNC allows the operator create his own macros and sub-

programs, to be added to the preconfigured apps (drilling patterns, routing patterns, geometries etc.) which represent the most common construction schemes on furniture.

Parametric programming is included: parameters can be assigned on main machining program and/or sub-programs and/or macros.

Tools management

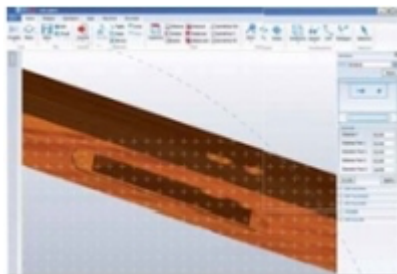
A dedicated application inside Maestro, named “**Tool Manager**”, takes care about it: this environment shows tools grouped in categories and graphically represented to grant an immediate and intuitive access to the operator.

Each tool has an identification tag so to be immediately recovered once the tool selection is required in programming mode.

Maestro APPS

A library of programming functions fully available and easy to use, developed by SCM GROUP and specific to machine furniture elements, doors, stairs, windows etc.

A simple “click” allows the operator get full access to SCM GROUP's technological know-how.



Through Maestro APPS you have the ability to choose the type of machining required and drag it on the geometries you wish it to be applied on.



Working table management

Working table set-up definition is a totally graphic operation.

The operator has the ability to:

- visualize the 3D model of the working table on his machine
- through a “drag and drop” operation equip the working table with the necessary locking devices
- drag rails/pods/clamps to the required position under the part to be machined
- use parameters to define position on locking devices, a real effective function for those who produce in “batch 1” regime
- insert a repositioning operation on rails/pods/clamps inside the same program
- check eventual collisions between machining devices and locking ones
- check aspect on finished parts
- ask the software to define automatically the best positioning on locking devices

Cycle time evaluation

Maestro is equipped with a preconfigured module which - according to the programmed operations, tool changes involved, tool paths defined etc. - is able to provide a numerical value of the timing required to execute a single program.

This function is strongly effective in:

- evaluating the productivity of your CNC machine before starting the production of a batch of parts
- comparing different versions of the same program so to optimize and reduce at the best the cycle time
- estimating the cost of a supply in terms of machining hours

NOTE: This software function provides only a simulation, the data obtained from a real processing cycle may vary in a value range by +/- 10%

Data import

Maestro CNC allows external files to be imported:

- DXF files import
a DXF file is imported, the operator may edit geometries through the drawing tools on Maestro and/or directly apply the required machining operations, exactly as they were being created through Maestro CNC
- PGM files import
PGM programs - created through previous programming suite (Xilog Plus) or external software sources - can be imported; Maestro reads and converts them into PGMX format (standard Maestro CNC format) so to be then completed with working table set-up module, cycle time evaluation module etc.

MSL Connector

MSL Connector (**Maestro Scripting Language**) is the software module developed by SCM GROUP so to **connect directly** its own CNC machines **with the main softwares on the market**.

The data coming from external sources softwares are imported into the machine which - basing on the parts dimensions and the machining operations to be executed - manages the process strategies optimizing the position of the locking devices and the tool paths.

Software protection

Maestro CNC is protected against unauthorized copy through hardware USB key.

The additional hardware key is not associated to a single user or PC so the customer can install Maestro Suite on different PC consoles and use the one more suitable in any moment simply carrying the hardware key.

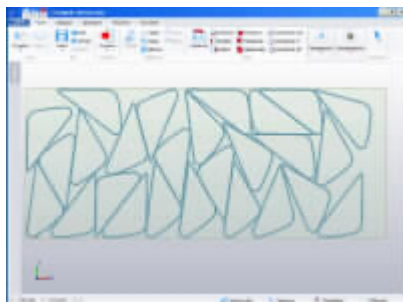
Hardware key for Maestro cnc

N. 1

523962 Advanced nesting free-form + Label module for Maestro cnc

N. 1

The Maestro Label module allows to manage the manual or automatic labeling included on the price list. The module includes: data management for label printer; label templates management; Label Manager viewer for the manual labels printing.



Maestro CNC programming software complete with advanced “rectangular” and “free-form” nesting module:

- management of material stock
- nesting import from CSV external file
- DXF / advanced DXF files import also from CSV external file
- automatic “onion skin”
- automatic offcuts management with labelling
- dust grind
- report of 5 different printings
- CU automatic optimization and paths
- manual nesting
- rectangular nesting
- free-form nesting

- tubular nesting
- approach/removal strategies
- endless panels management
- grains management
- 0-90 automatic panels rotation
- free automatic rotation of panels
- management of integrated support panel thickness
- automatic work pieces contouring
- automatic internal contouring
- cutting depth adjusting
- internals parts nesting of other geometries
- diversified management of the sheets margins
- use statistics
- extra quantity management
- automatic loading/unloading management

630359 Additional key for Maestro cnc (USB port)**N. 2**

630522 Console with integrated PC "eye-M PRO"

N. 1



Device connected to the CNC machine which allows the usage of the supplied software.

The integrated LED light bar allows the operator to check in real time the state of the machine (emergency, operative, etc.) without the need to be on the console itself.

It is equipped with an iPC with "fanless" construction and IP53 grade protection (IP65 on the front side). This robust solution grants the highest durability even in the worst environmental conditions which an industrial site may present.

The 21,5" LCD color display through a 16/9 sized touch screen grants an unbeatable easiness and efficiency in controlling the main functions of the machine, also through:

- Full HD display resolution 1920x1080
- LED lighting
- Capacitive multi-touch screen – 10 points of contact
- Wide visual angle 176° Horizontal / 160° Vertical
- "Zero Pixel Defect" quality

The processor in a boosted version and the considerable availability of RAM memory enable also the use of programs requiring a great quantity of calculations, without reducing the machine control performances.

And furthermore:

- Intel i7; 2,80-3,80GHz
- RAM 8GB – DDR4
- Hard disk: SSD 256 GB
- O.S.: Windows 10 IOT – 64bit
- QWERTY keyboard with English layout
- Wired mouse – 3 functions
- Ethernet port RJ45
- USB port 3.0 protocol supported

– Nominal operating temperature: +5°C / +35°C

Windows 10 embedded 64 bit operating system **N. 1**

Cables length of the mobile control panel 6,5 meters **N. 1**

S-N-D 3-position selector **N. 1**

Ability to select the machine dynamic when routing and drilling. Through a 3-position selector it is possible to easily change the machine dynamic even when is processing, to immediately adapt to the required use.

Placed on the paddle of the machine, it allows the following settings:

Smooth: machine with smoother movements to obtain an impeccable surface finish. Recommended for very delicate materials, it requires significant slowdowns in paths changes.

Normal: ideal compromise between machine reactivity and piece yield. Recommended for the most of the machining.

Dynamic: to turn the machine into a plotter. Ideal for routing where speed is essential, such as machining on 3D surfaces.

TELESOLVE teleservice via internet **N. 1**

Teleservice system to connect the machine pc with the service center via Internet.

Software equipment: connecting program which allows:

- operator's interface visualization
- signals diagnosis
- on-line verification and modification of the status of configurations, parameters and machine programs
- data back-up and files transfer operations
- upgrade operations for machine logics and operator's interface

N.B.

*** Internet connection at customer's charge is necessary*

*** Network cable not included*

*** Free for the duration of the warranty*



- 630394 Aggregate with 1 adjustable outlet for cutter or sawblade** **N. 1**
- HITECO (SCM) aggregate with HSK F 63 tool-holder with 1 outlet, with adjustable tilting for routing or cutting operations:
- 15.500 rpm max. rotating speed input
 - 15.500 rpm (1:1) max. rotating speed output
 - 70°C max. working temperature
 - 5,2 kg weight
 - right outlet rotation
 - connection ER 20 internal collet for cylindrical shank tools (2-13mm)
 - no.1 expansible collet, 9-10 mm diameter and nut included
 - connection for sawblades with hole, 35 mm and no.4 M5 on 54mm diameter
 - **with Vector**
 - 220 mm maximum diameter;
 - 78 mm sawblade projection;
 - 225 mm total head length
 - **without Vector**
 - 130 mm max diameter;
 - 33 mm sawblade projection;
 - 180 mm total head length
 - gradual positioning with manual adjustment from 0° to 100° on the vertical plane
 - gradual positioning with manual adjustment from 0 to 360° on the X-Y plane



- No.1 HSK 63 right tool-holder for expansible collets (ER32)** **N. 1**
- 524455 Pallet (xx31)** **N. 1**
- 080716 Additional pallet for lifting device and/or conveyer** **N. 1**

109991 Machine language: ENGLISH

N. 1

UTVF21 V. FE0221

N. 1