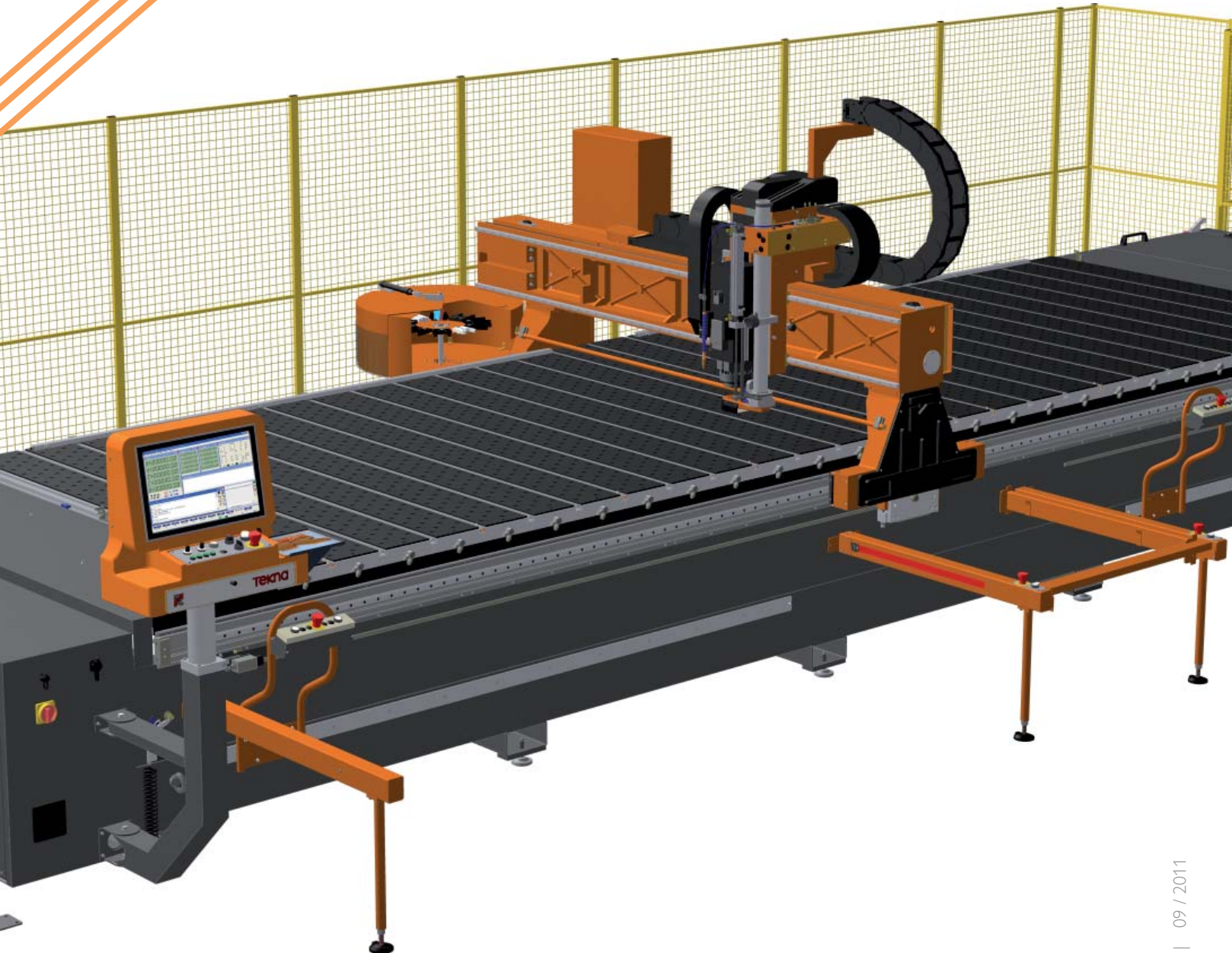


# TK 429V

Machining centres for  
composite panels



## TK 429V

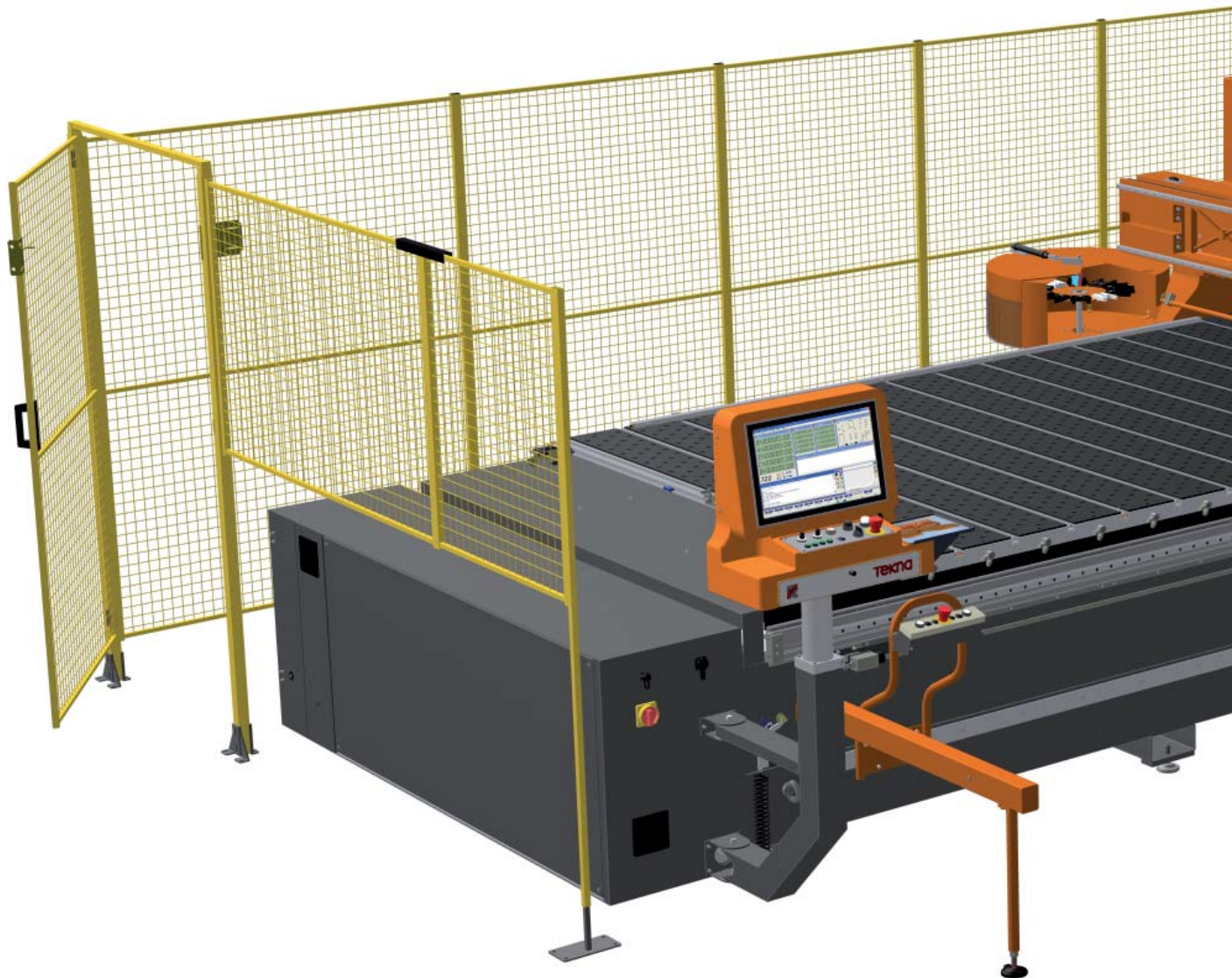
3-axis CNC vertical machining center with superior machining capability in Y (2000 mm). It features a clamping system made up of vacuum tables that allow panels and plates to be held by vacuum; this solution is useful to obtain an extremely efficient machining of thin components that could hardly be fixed by means of a traditional clamping system.

The TK 429V is equipped with a series of valves that turn on/off different areas of the machining table, thus concentrating the suction on one area and optimizing the clamping of components with limited dimensions.

This machining center is designed for drilling and interpolated milling operations on composite panels, panels and plates in aluminum, stainless steel, titanium and on aluminum profiles.

Standard versions are available in 3 machining lengths: 4000, 6500 and 8200 mm. Upon request the machining center can be manufactured in different lengths in order to meet the special needs of each customer.

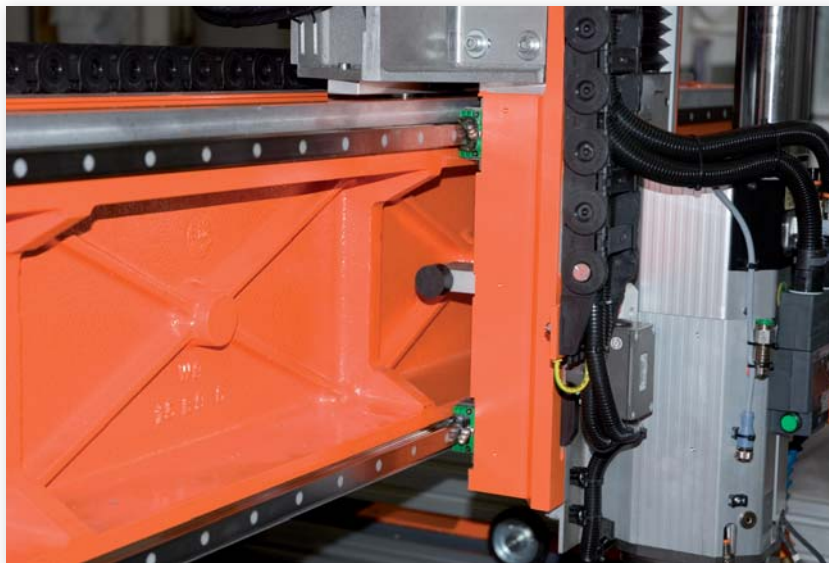
It is available also in the TK 429VF version that is equipped with 4 machining axes.





## Features

- Electrically welded steel bed frame with linear recirculating ball slideways and precision racks for X axis.
- Overhead crane in aluminum casting composed of two lateral supporting elements and a top crosspiece. This crosspiece holds the linear slide-ways with recirculating balls of Y and Z axis as well as the precision rack (Y axis) and the recirculating ball screw (Z axis).
- Machines 6500 or 8200 mm long are divided into two work areas. While the unit is machining on one side, the operator can safely load/unload the second work area..
- Valve system, managed by CNC that, by means of cams, controls the air flow within the vacuum beds.
- Electric-spindle which is equipped with an automatic tool change system with an electric cooling fan.



■ **Linear slideways with recirculating balls**

Thanks to these slide-ways, machine's components can smoothly slide along the machining axis. The ability to withstand mechanical stress while simultaneously maintaining a low coefficient of friction and a high sliding capacity enables these linear slide-ways to improve the performance of the machining center.

## TK 429V

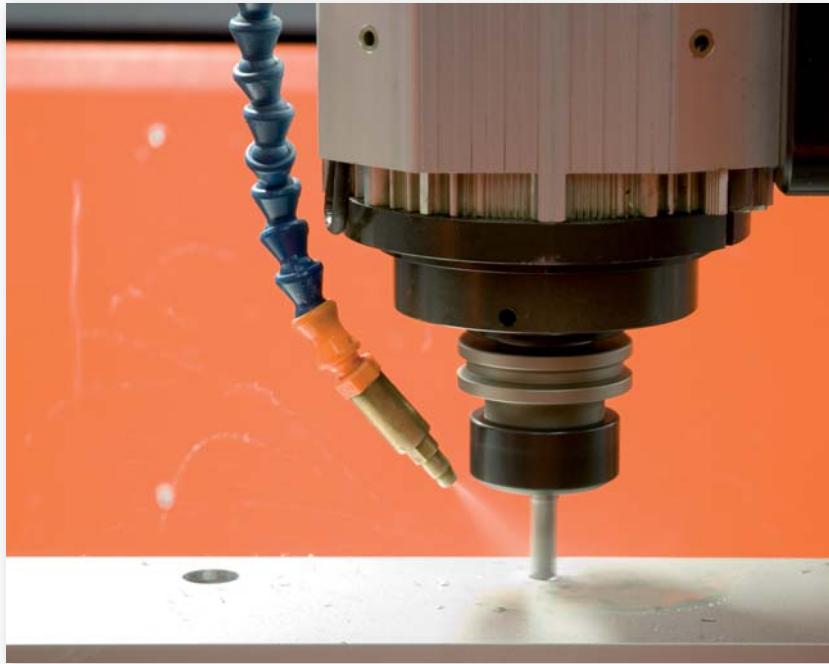
**■ Panel clamping system equipped with a vacuum base**

The vacuum base is made up of aluminum extruded beams that can automatically be activated/deactivated by opening and closing the valves. The Forex panels mounted on the beams provide an efficient suction effect on the whole surface of the table and ensure a high robustness, an excellent shock resistance, vibration damping during operation and resistance to penetration of the residual lubricating liquid.

**■ Vacuum anchoring**

The vacuum anchoring system is turned on by a suction device whose lateral channel blowers ventilate each a different machine area.

## TK 429V

**■ Micro dropped minimal lubrication**

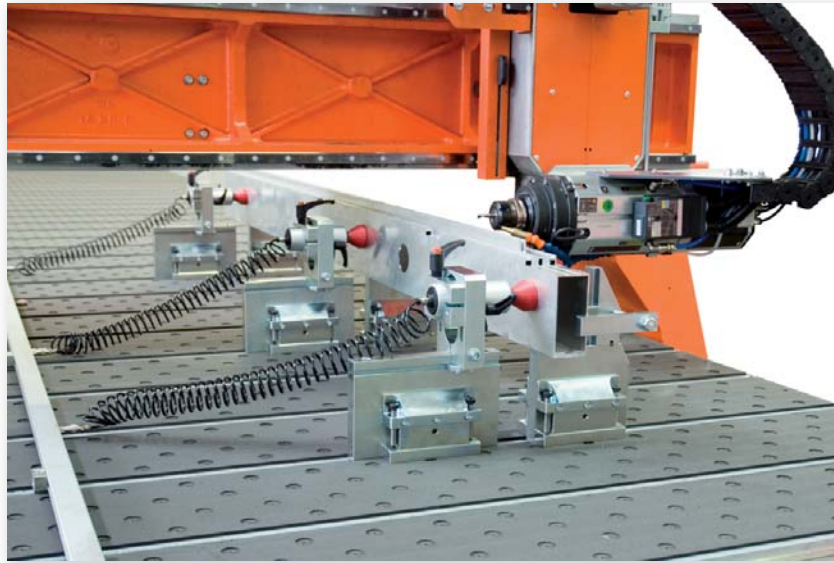
It optimizes the cooling liquid consumption during the machining; this system allows to minimize the quantity of the used product and meanwhile it guarantees a suitable cooling of the tool.

**■ Revolver type tool magazine**

Automatic revolver tool magazine that can hold 8 tools plus 2 aggregate heads and is equipped with a removable cover that protects against chips and dust formed during machining.

This head-mounted tool magazine can easily be accessed, thus reducing tool change time.

## TK 429V

**■ TK 429VF**

TK 429V further development: 4-axis CNC vertical machining center equipped with an electric spindle that can rotate around the C axis, this allows for machining on three sides of a profile with just one clamping operation.

**■ TK 850 Panel loader**

TK 850 is a traveling lift that allows to automatically load panels by means of a lifting device made up by frames equipped with suction cups. This system allows to lift and rotate the panel and to position it on the machining centre, with the surface to be machined readily accessible without moving it.

TK 850 is managed by the CNC of the TK 429V machining centre and it is an integrating component of it.

## Optional

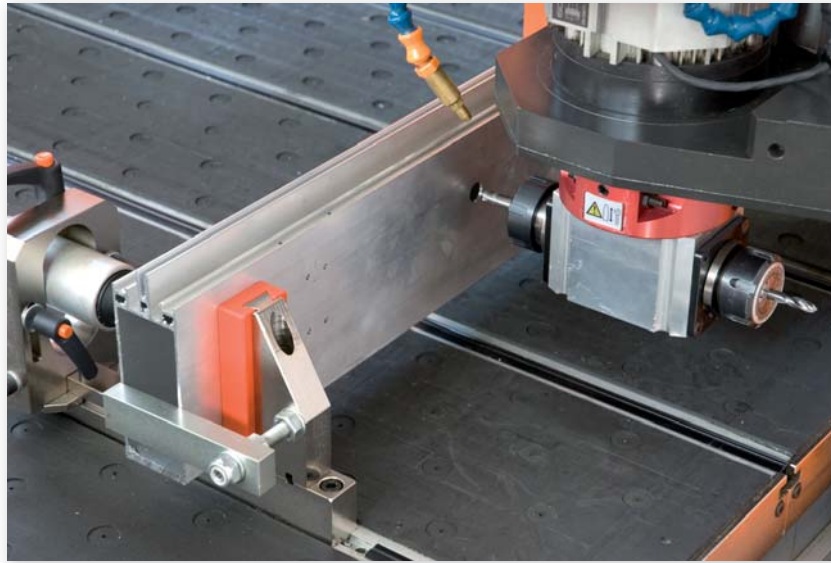
- Clamps for profile.
- Suction system.
- Exhaust fan.
- Aggregate heads.
- Axis "A".
- Auxiliary container for cooling liquid (30 liter).
- Laser detection kit .
- 3D Probe.
- Barcode reader.
- Remote controlled electronic wheel.
- Uninterruptible power supply (UPS).



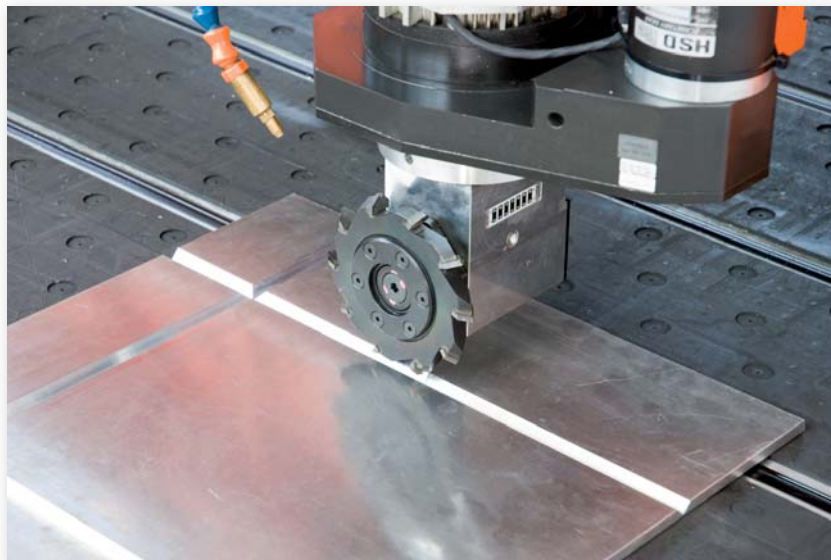
### ■ Clamps for profile

Profiles can be machined with the clamping system to be fixed on the machine.

## TK 429V

**■ Aggregate heads**

Right angle gearbox that can hold one or two tools and that is equipped with a cone (ISO 30) compatible with the tool attachment of the electric spindle.

**■ Axis "A"**

The machine can be equipped with an additional CNC-controlled "A" axis that allows for an angle of rotation between 0 and 360 degrees of the angle heads. If combined with a disk milling cutter, it enables a reduction in machining time during the V-shaped milling on stainless steel and titanium panels.

## Technical features

<b>Machinability</b>	
Axis X	4140 mm 6440 (Twin 2760 mm × 2) 8280 (Twin 3680 mm × 2)
<b>Machinability with vacuum anchorage system</b>	
Axis Y	2000 mm
Axis Z	185 mm (60 mm with blow out system)
<b>Machinability with clamping system equipped with traditional clamps</b>	
Axis Y (TK 429V)	1740 mm
Axis Z (TK 429V)	145 mm
Axis Y (TK 429VF)	1350 mm
Axis Z (TK 429VF)	205 mm
<b>Max displacement speed</b>	
Axis X	70 m/1'
Axis Y	50 m/1'
Axis Z	30 m/1'
Axis C (TK 429VF)	7000 deg/1'
<b>Movements of the electric spindle axes (TK 429VF)</b>	
Axis C	+90 deg to -90 deg in 0,01 deg increments
<b>Electric-spindle</b>	
Cone attachment	ISO 30
Max power (S1 service)	7,5 kW
Max torque (S1 service)	11,9 Nm
Max rotation speed	24.000 rpm
Cooling system	Electric cooling fan
<b>Tool magazine</b>	
Fixed	17 tools and 2 aggregate head (L=4000 mm)
Revolver type	8 tools and 2 aggregate head (L=6500 - L=8200 mm)
<b>Accuracy</b>	
Repetition on linear positioning	+/- 0,1 mm

## Software

Over the years Tekna has specialized in developing software solutions and now offers a broad range of products.

To create programs that control the machines, Tekna provides user-friendly software tools that can be used both by professional CNC programmers, who can implement the most complex solutions, and by completely inexperienced users; after a few training hours the customer will be able to operate the machining centre using a graphical programming.

Software solutions offered by Tekna result from an accurate design and from the actual customer needs analysis. The simplicity of usage of these solutions reduces the management time and costs.

All machines come with **antivirus software** preinstalled.

### ■ CN6 Numerical Control

The Numerical Control basic software controls all functionalities of the machining center through an interface based on windows that includes:

- ↳ The user graphic interface (HMI, Human Machine Interface) displays all variables of the centre, both about programming and user configuration.
- ↳ Project file: simple, intuitive and extraordinary useful function of CN6 which can be used as interface between any management program/software and the machine. In a company it ensures a communication (i.e. a unique language) between the management function and the machine operators.
- ↳ 3D machining process: it is possible to import directly the .dxf file of the profile to be machined thus displaying a 3D image of the workpiece completed with the configured machining processes.
- ↳ Clamp positioning: automatic counting managed directly by the program; it can be run in different ways (static or dynamic) depending on the features of the desired machining cycle.
- ↳ The Scheduler function runs in several modes oriented both to a mass production and to a more flexible production in small quantity.
- ↳ Integrated **Formulas Software**: you can use it to define formulas based on the default variables (for example, the profile length) and then use them as macro parameters or within the "If" function.

### ■ ISO language editor

For numeric-control machines the international programming language ISO is used. With this language you can create programs to perform every kind of machining, with linear or interpolated paths, variable speeds, tapping, parameter use etc. and for managing all functionalities of the machining center.

### ■ SLW Self-learning

With the Self-Learning SLW software the customer can easily create machining programs, selecting from a graphic menu a default number of functions (macros). The macro library generated by Tekna includes a large number of machining processes and it is possible to develop functions that increasingly simplify the man-machine interaction so that even an inexperienced user can very easily create several machining programs.

### ■ NC Tool

The NC Tool is a 2D CAD/CAM software tool that, starting from a CAD drawing, allows the operator to create CN6-compatible machining programs in ISO language by inserting information on the desired machining process.

Any changes to geometrical scales and to the dimensions of an existing drawing are automatically converted in a new updated ISO program. NC Tool can import/export .dxf and .dwg files, moreover it allows text editing and the subsequent generation of ISO codes.

### ■ Software Nesting (optional NC Tool)

2d optimization program: It enables to calculate, from the initial dimensions of the panel, the optimal distribution of the template to be machined in order to obtain the highest number of parts. It is a user-friendly application that allows to maximize the use of the materials, reducing to a minimum the number of chips.

Combined with a NC Tool this software creates a machining program in ISO language.

### ■ TK Cam

Software package that allows the creation of ISO programs using a 3D graphic programming.

With TK Cam it is possible to assign machining operation regardless of machine models and tool series and view a simulation of the running program in a 3D representation. In TK Cam it is possible to optimize tools and clamps, it provides an anti-collision function and the automatic generation of ISO codes for the program. In the TK Cam it is possible to import specific .dxf/.dwg drawings and to assign the corresponding machining operations. In addition allows the interaction with the management programs commonly used in the window and door frame manufacturing industry.

### ■ TK CadX

TK CadX is a software allowing to import 3D models and to identify the workings that can be carried out by a numeric control machine. By importing files in STEP,TK CadX formats, it independently scans any surface, it analyses them and processes the necessary data for the workings of the pieces; these data are exported in a NCX file (format read by TK Cam) for the automatic generation of ISO working programs of any single machine.

# TK 429V

## Machining centres for composite panels

### Branches

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