

MEKANIKA

EVO

MACHINE INTERFACE PRESENTATION



INTRODUCTION

INTERFACE UNIT

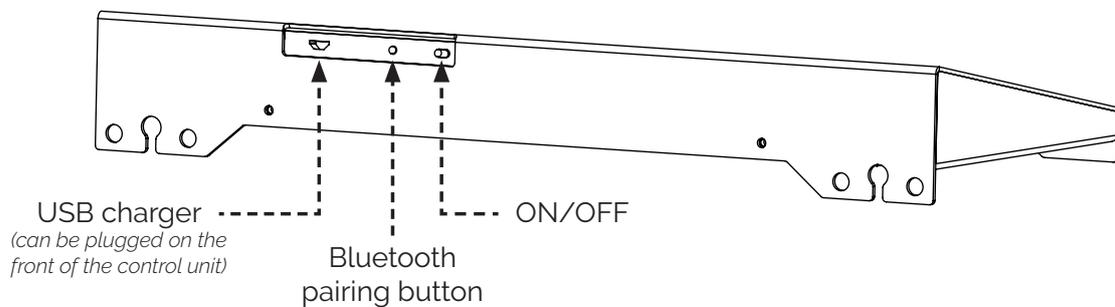
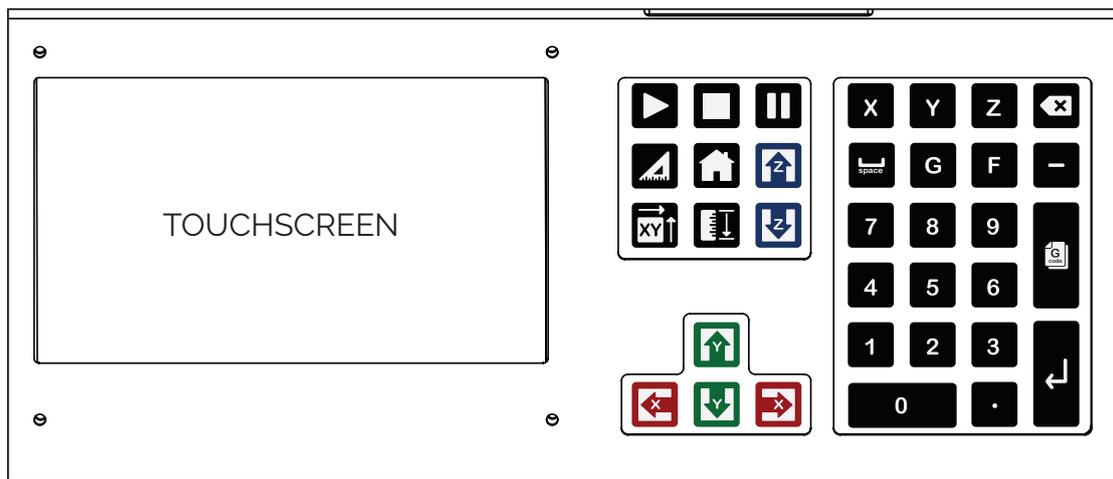
Evo comes out-of-the-box with an interface unit, which is composed of **two elements**:

- a **7 inches TFT touchscreen** ;
- a **customized Bluetooth keypad**.

The **touchscreen** will allow you to **control your machine via PlanetCNC**, but also to **navigate on the Raspberry Pi** if you need to browse your folders, edit some files, or even browse the web.

The Bluetooth **keypad** offers an alternative to handle your machine easily and intuitively: most of the keys have been **remapped to specific functionalities of PlanetCNC** and will serve as **useful shortcuts** to control it.

If you wish to use your own screen, keyboard & mouse as an interface to control the machine, it is of course possible. Simply connect your devices at the back of the control unit and change the resolution of the Raspberry Pi to fit your new screen.

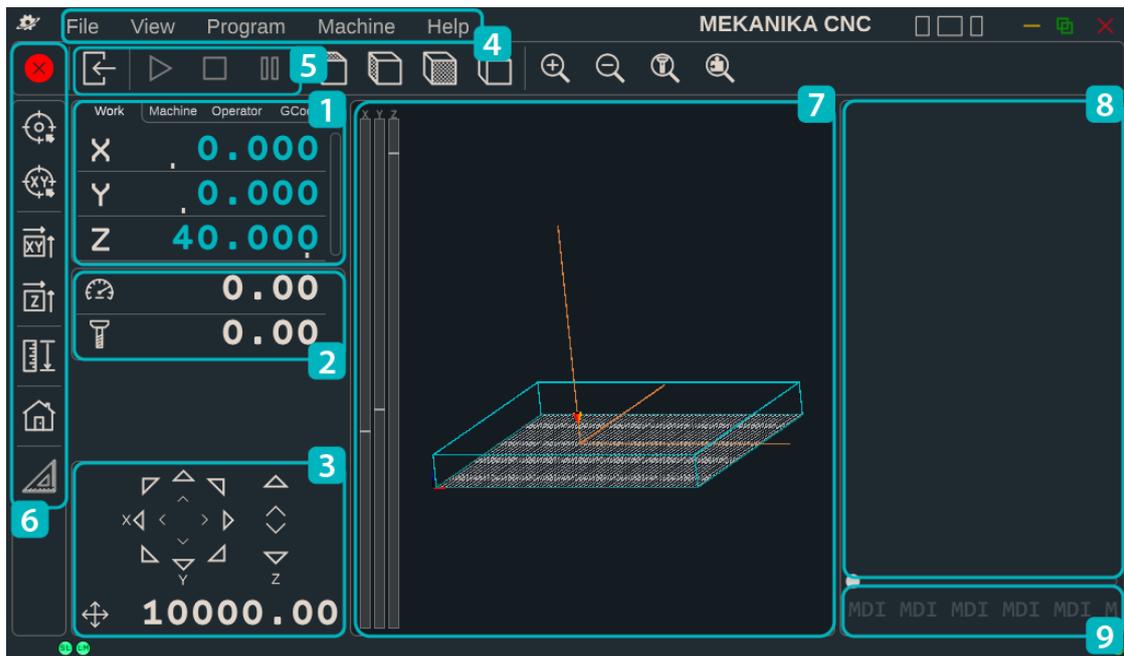


MAIN SCREEN

When you turn on the machine, PlanetCNC will automatically start after a few seconds and you will arrive on the screen shown below.

Here is an overview of the **different areas** and functionalities of the software:

1. X, Y & Z axes current position (working and absolute coordinates of the machine)
2. Real-time machine travel speed & spindle rotation speed (Feed & Speed)
3. Manual travel speed of the machine and controls (Jog)
4. General menu
5. G-code control menu (Play, Pause, Stop,...)
6. Machine actions menu (Homing, Tool measure length,...)
7. Graphical interface & 3D view
8. G-code panel (current loaded code)
9. G-code command line (MDI)



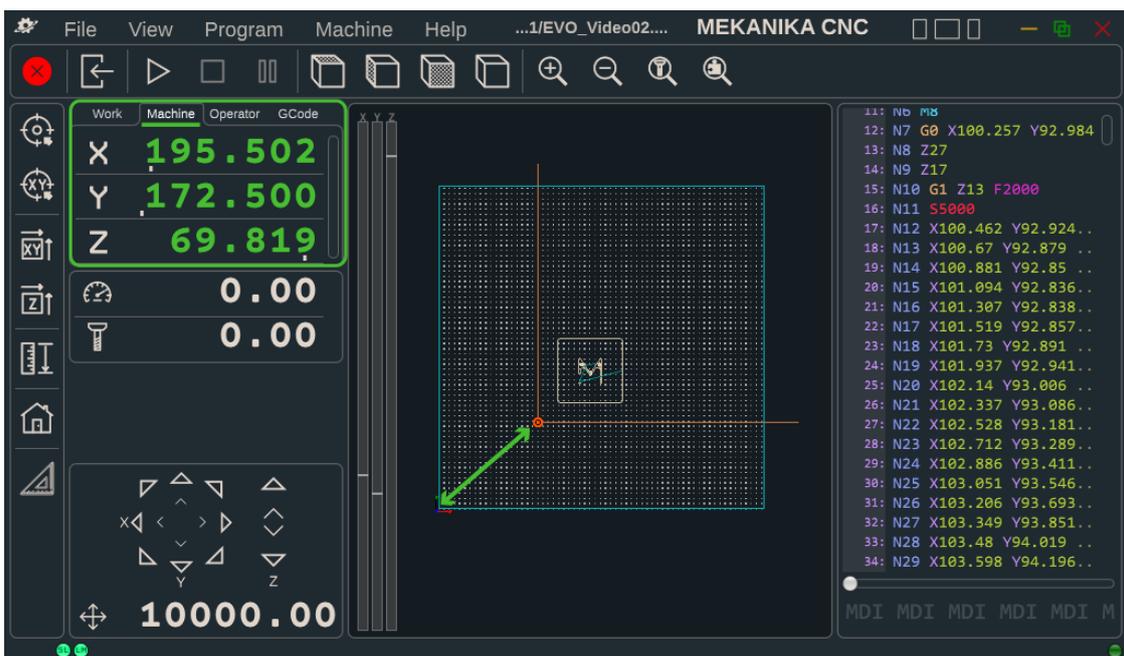
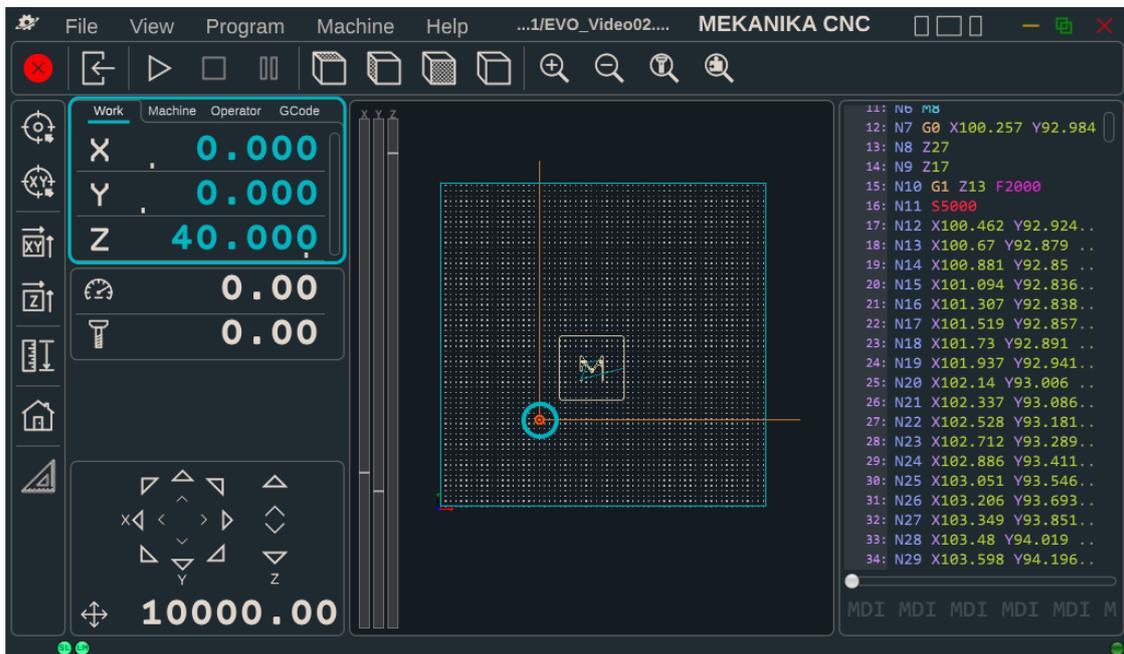
Some functionalities of PlanetCNC are only accessible using the touchscreen, but the most important ones can be quickly activated using the keypad. These functionalities share the same icons on the screen and on the keys.

AXES COORDINATES

The first section of the screen displays the **real-time coordinates of the machine**. There are **two types** of coordinates that you will use:

- **Working coordinates**, representing the position of the **tool relative to the work-piece**, displayed in blue.
- **Machine coordinates**, representing the position of the **tool relative to the machine origin**, X0 Y0 Z0 located at the front bottom left of the machine, displayed in green.

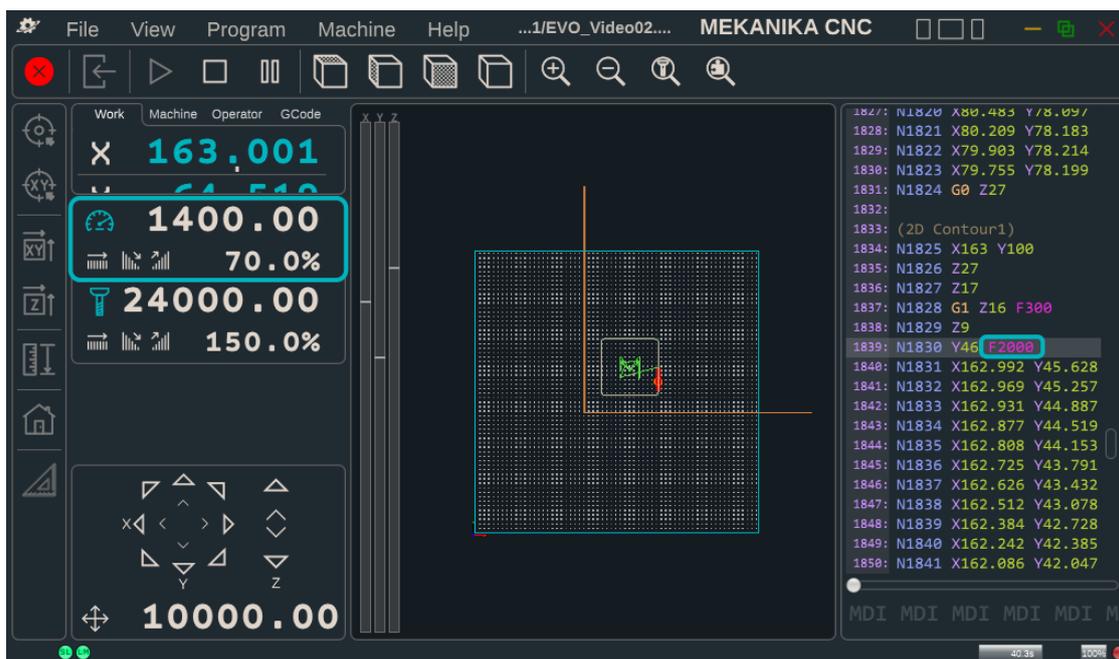
You can toggle in between the two using the tabs, as shown on the images below.



FEED & SPEED

The second section of the screen displays two values: the **current travel speed of the machine** (also called Feed) and the **rotation speed of the spindle** (also called Speed), as defined inside the G-code that is loaded in the program.

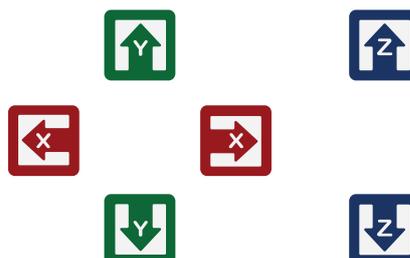
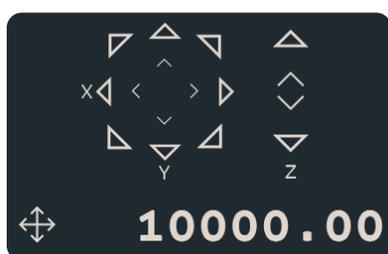
If you click on the icons, the section expands and shows new functions. They allow you to **increase/decrease the feed & speed in real-time**, while it is working and reading a G-code. For instance, on the image below, the machine is supposed to travel at a speed of 2000mm/min (Feed F2000), but the speed was decreased by 70% down to 1400mm/min.



JOG

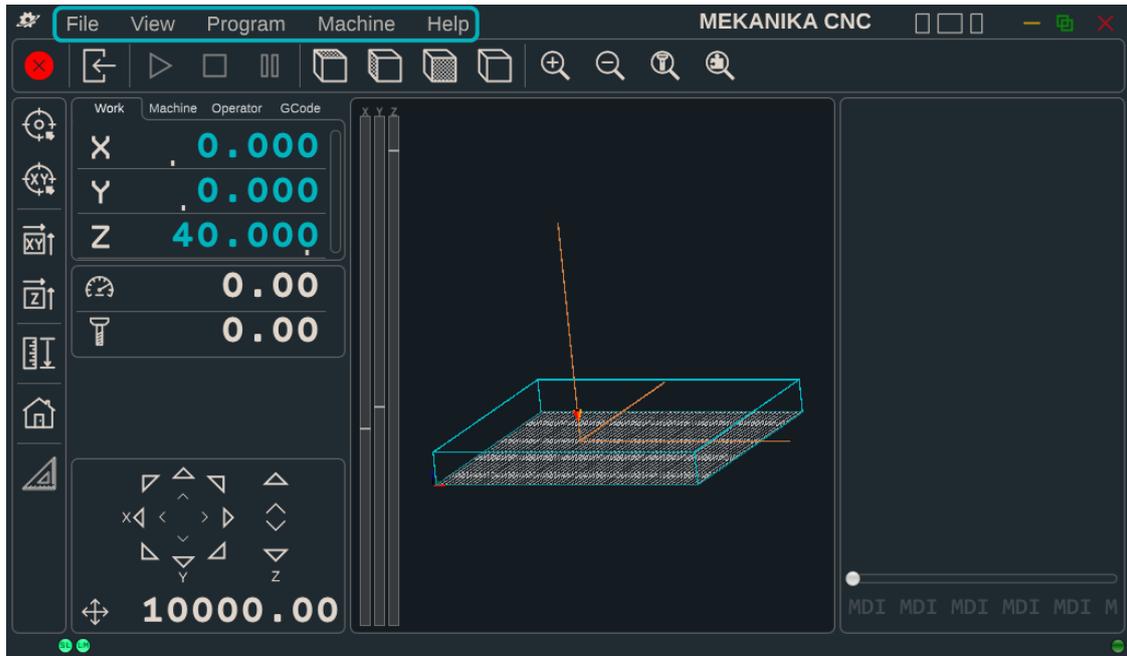
The jog section allows you to **move your machine freely**, at a certain speed. This **speed can be changed** by double-clicking on the number indicated on the image below.

To move the machine, press on the arrows with the touchscreen or use the following keys:



GENERAL MENU

The **top bar** contains shortcuts to **5 contextual menus**, in which you can find all the functionalities of PlanetCNC, including the **language preferences** and the **settings**. If you want to know more about these, you can find all the information you need inside the PlanetCNC TNG documentation, which can be downloaded on the support page of our website.



G-CODE CONTROL



These 4 buttons allow you to:



Load a G-code file into PlanetCNC



Start the loaded G-code



Temporarily stop the G-code (can be resumed)



Permanently stop the G-code (can't be resumed)

MACHINE ACTIONS

	Emergency stop. Stops all motion of the machine immediately. Please note that emergency stop should be activated using the physical push-button , not using the touchscreen.
	Go to XYZ zero. The machine will rapidly move towards the X0 Y0 Z0 working coordinates.
	Go to XY zero. The machine will rapidly move towards the X0 Y0 working coordinates.
	Define XY zero. Forces the X0 & Y0 working coordinates at the current location of the machine.
	Define Z zero. Forces the Z0 working coordinates at the current location of the machine.
	Tool measure length. The machine will slowly travel down until it touches the metal part of the probing device. It will then define the Z0 working coordinate to be perfectly aligned with the bottom surface of the device.
	Home. The machine will move along all its axes until it touches the limit switches. This function allows to reference the absolute origin of the machine.
	Square Gantry. The machine will move along the Y-axis until it touches the limit switches on both sides. This allows you to be sure that the Y-axis of the machine is perfectly perpendicular to the X-axis.

Among these 8 actions, 4 of them are available on the **keypad** as well:



For more **accurate** results, start the **tool measure length** action with the probe device **close to your workpiece**.

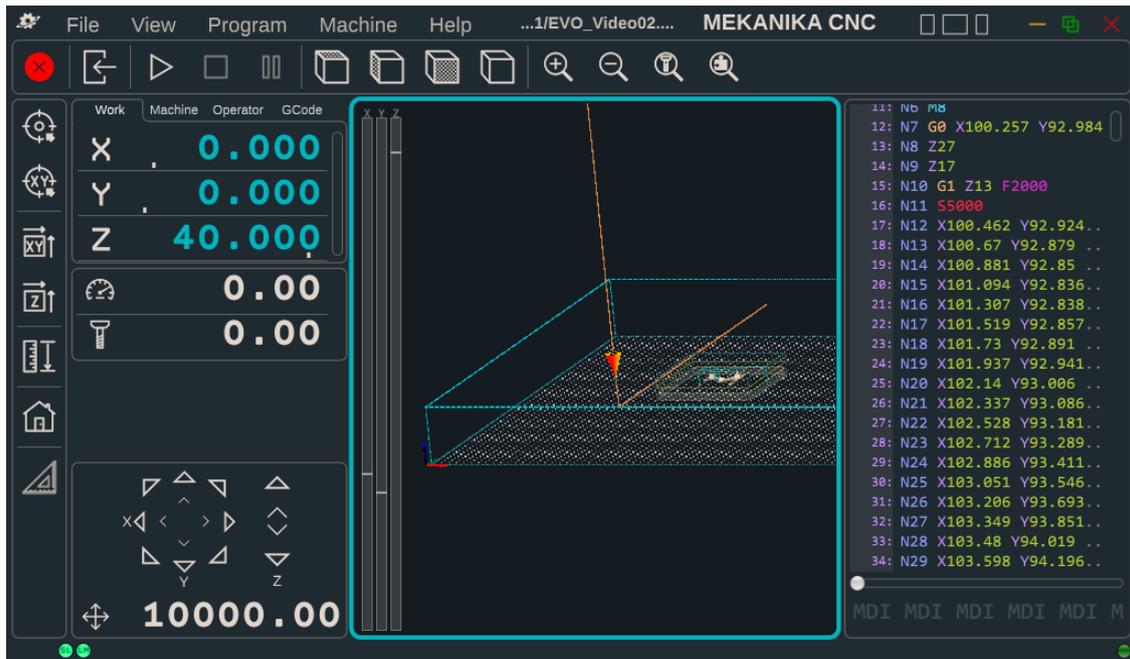


Before starting the **square gantry**, **bring the machine close to the front** since it will move slowly. **Never stop that action while it's running**, otherwise you will have to reconfigure the Y-axis output (see our [troubleshooting guide](#)).

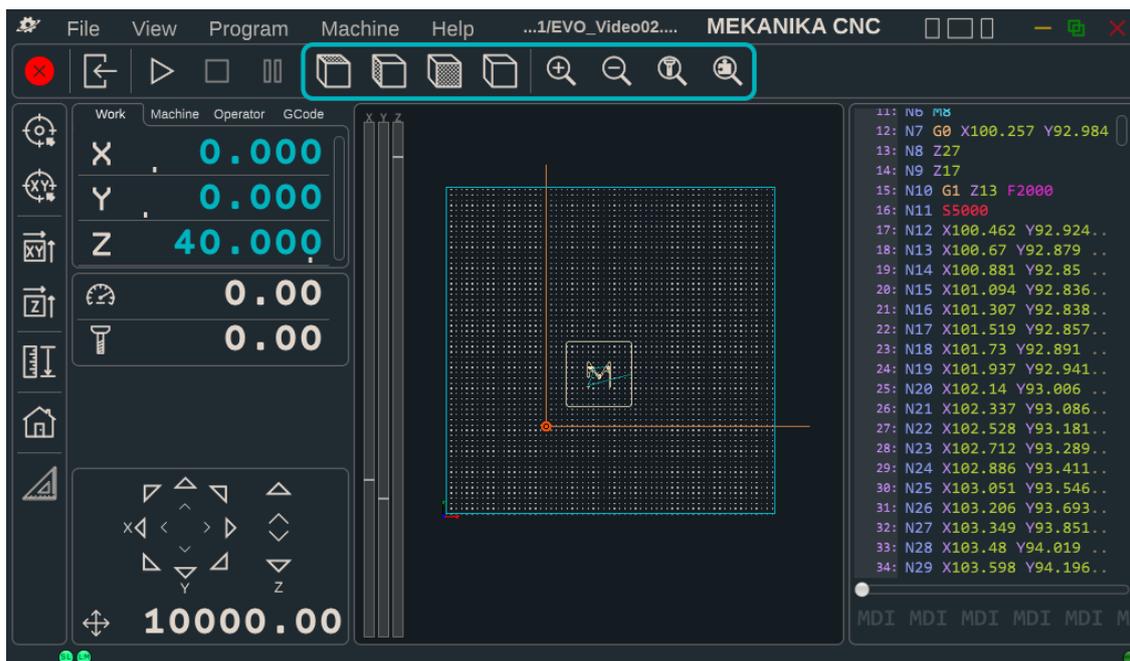
GRAPHICAL INTERFACE

In the middle of the screen, you will find a 3D view representing the **reachable XYZ working volume** of the machine. The **orange cone** represents the **tool**, so the central point of the machine from which all coordinates are calculated.

If a **G-code is loaded**, the graphical interface will also **display the toolpath** that the machine will follow to mill that part.

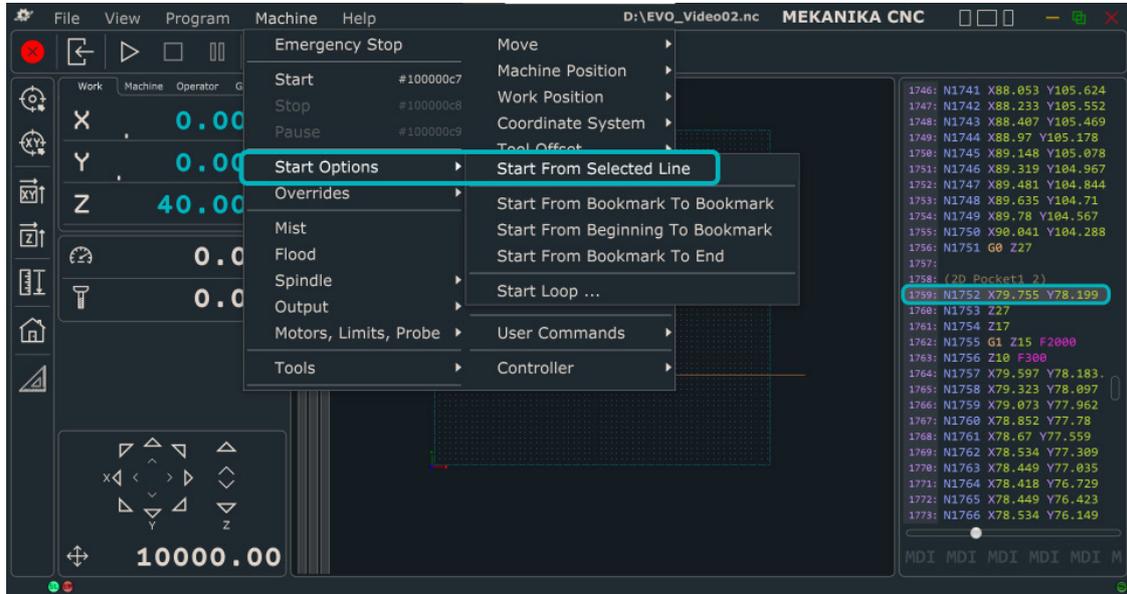


The **toolbar** located on **top** can be used to change the **views** (top, side,...), but also to **zoom** on the workpiece, on the tool, etc.

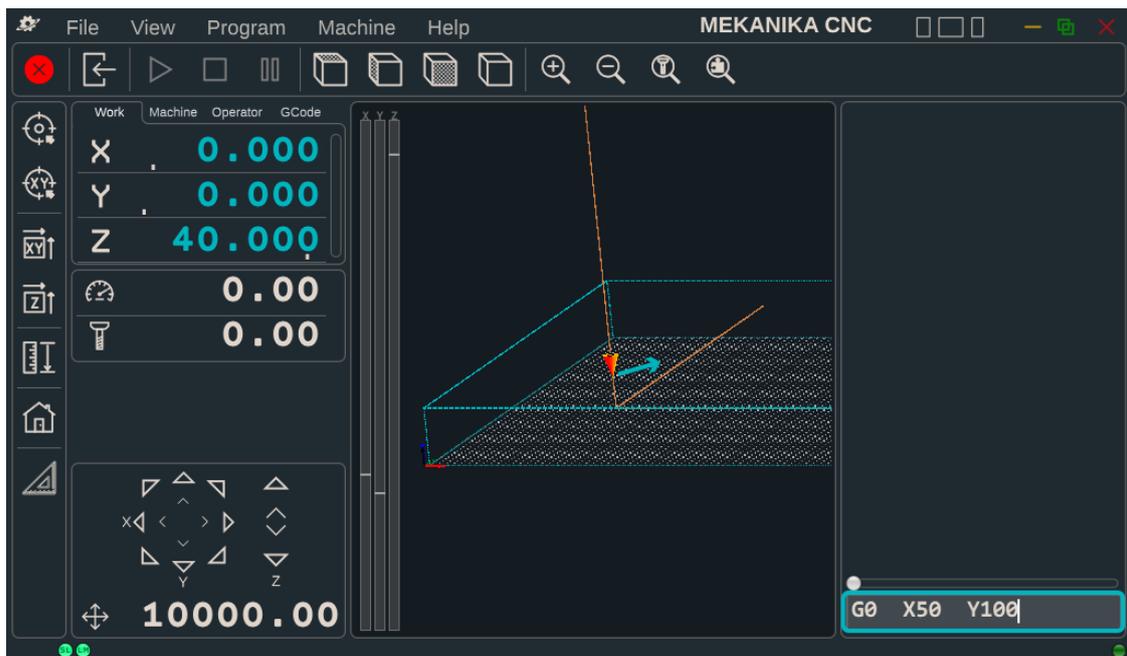


G-CODE PANEL & MDI

The last section of the screen is used to **display the loaded G-code**. You can use it to browse your code, to execute it line by line, or even to **start operations in the middle of it**, as shown on the picture below.



At the bottom of this section, you can find a **command line**, also called **MDI**, that is used to **type G-code manually and send it directly to the machine**. For instance, the command shown below will move the machine at maximal speed to the **working coordinates X50 and Y100**. If you want to know more about this, you can find all the information you need inside the PlanetCNC G-code documentation, which can be downloaded on the support page of our website.



TOUCHSCREEN USAGE

Evo runs on a **Raspberry Pi** that is **directly connected to your control interface**. It means that you can use it as you wish to organise your files, browse the web, etc. You can access the desktop by minimizing the window of PlanetCNC.



Like with a smartphone, if you want to **open a file or a program**, simply **press the icon once**. If you want to **right-click**, **press the icon longer** and the contextual menu will appear. Lastly, if you need to **type some text**, you can open the **virtual keyboard** by clicking on the taskbar icon.

