EUREKA

10.1

EUREKA ROBOT – USER MANUAL

Last revision – 01 October 2021

INDEX

1. FOLDER ORGANIZATION

1.1. TEMPLATE / WDIR STRUCTURE

TEMPLATE: folder containing the reference files, where starting the configuration of the new project.

(Write protected to prevent changes).

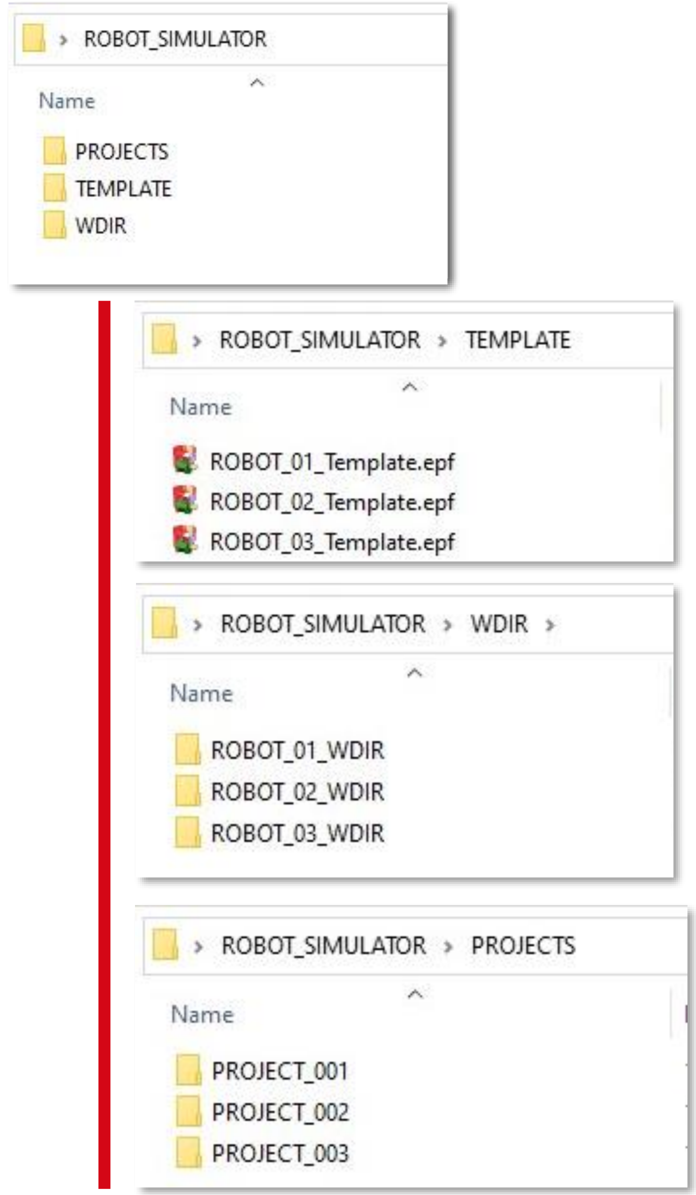
WDIR: folder containing 3D models, macros and scripts of the installed robot cells.

(Important: do not modify the content so as not to compromise the configuration of the robot cells).

PROJECTS: folder containing the saved «*.epf» projects, starting from the «Template» file.

PROS: Better long-term management, above all with more robot cells.

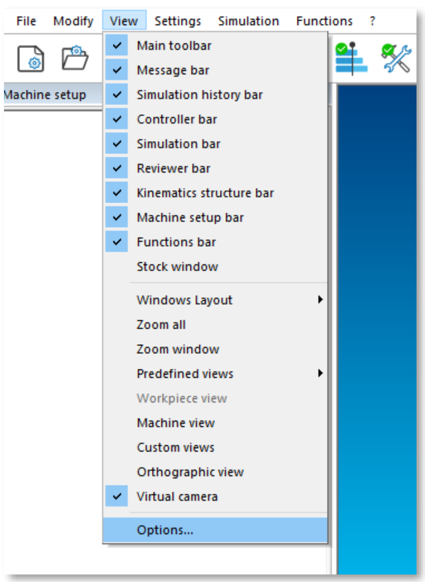
CONS: Learning the "WDIR Path" configuration procedure (following page).

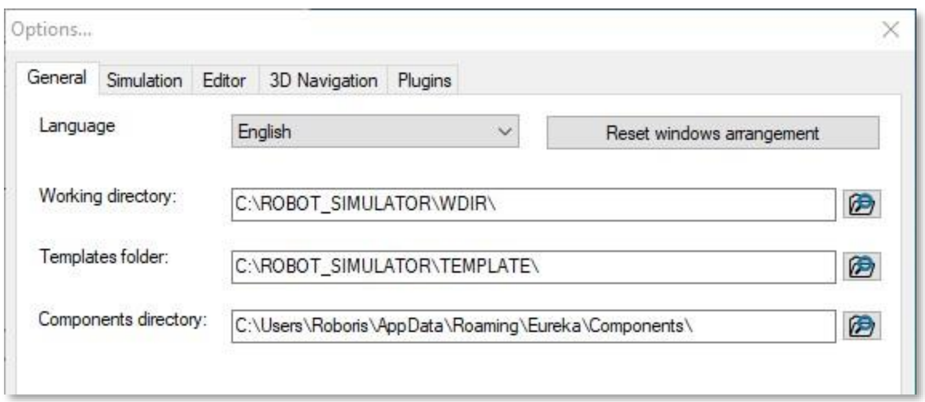


1.2. WORKING DIRECTORY PATH (WDIR)

This path will indicate to the Eureka template or project file, where the files that set up the virtual machine are located.

- Double-click on Eureka 10 icon to open an empty project.
- "View" menu > "Options".
- Click with the left mouse button on the path search icon and indicate the inside of the "WDIR" folder, described in the previous page.





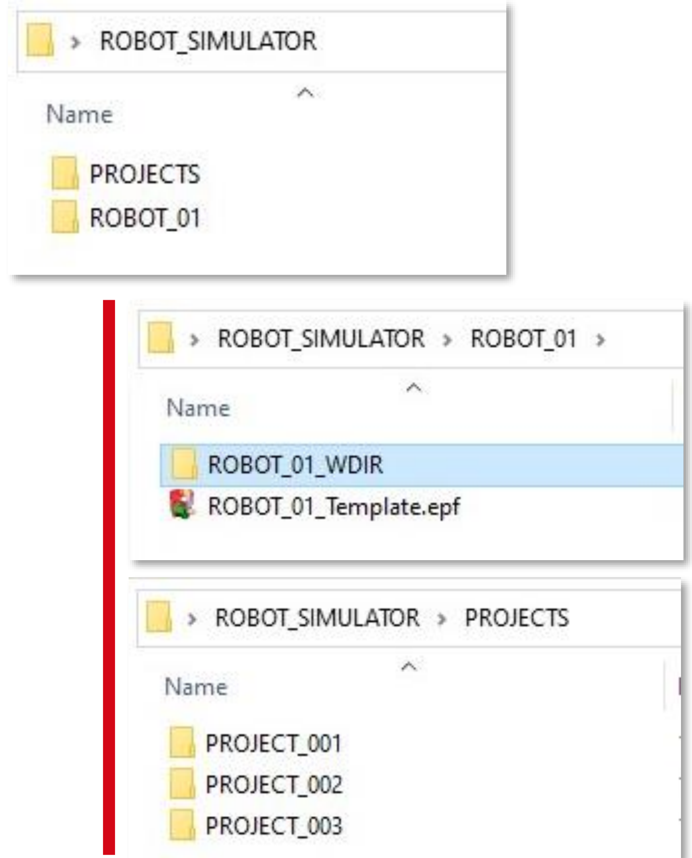
1.3. SINGLE FOLDER STRUCTURE

ROBOT_01 folder containing:

Template: reference file, where starting for the configuration of the new project.

WDIR: folder containing 3D models, macros and scripts of the installed robot cells.

PROJECTS: folder containing the saved «*.epf» projects, starting from the «Template» file.

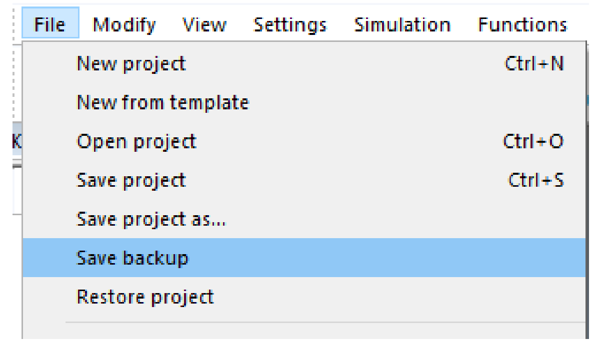


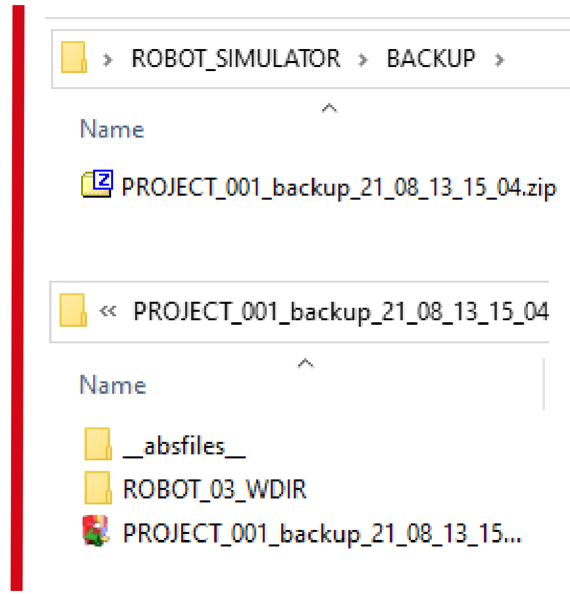
PRO: Possibility to move folders, without affecting the template file.

CONS: The accumulation of material inside this structure makes difficult technical support operations.

1.4. DOCUMENTS / SETUP / BACKUP

Depending on the needs, there may be other folders, containing manuals, installation files and a backup folder, where the versions of the delivered robot cells or the backups created to request technical support are stored.

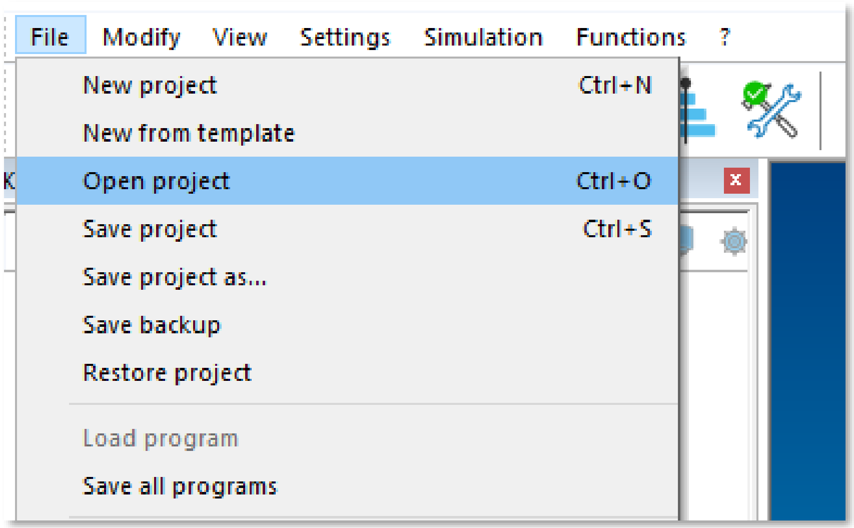


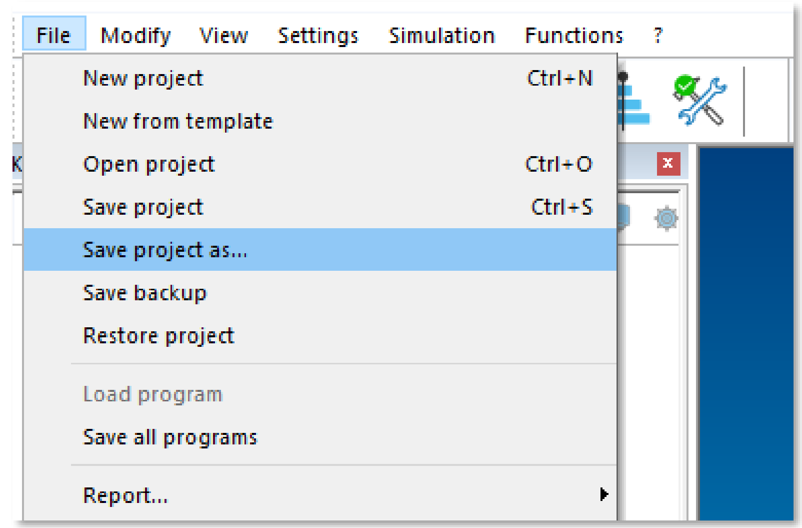


TICKET AND TECHNICAL SUPPORT:

- «File> Save backup» to generate a compressed folder containing all the information on the project currently open in Eureka.
- Send an email to "heldpdesk@roboris.it"
  - The subject of the email will be the title of the ticket.
  - Attach a backup of the processing to the email.
  - The body of the email will represent the description of the ticket.

2. NEW PROJECT





2.1. OPENING AND SAVING A NEW PROJECT

Opening a new project:

- Double-click the template file («*.epf» or «*.ept») of the machine you want to use or open Eureka, then click on «File > Open Project» and select the model file of the robot/machine you want to use.
- Check for any error or warning messages (message window) at the start.

Saving a new project:

- "File > Save project as ..." to create a new project («*.epf»), inside the PROJECTS folder.

  (Use "File > Save project" only to overwrite an old project)

2.2. FILE STORAGE

Before starting to load any type of element into the new project, it is necessary to properly storage all the files necessary for the simulation:

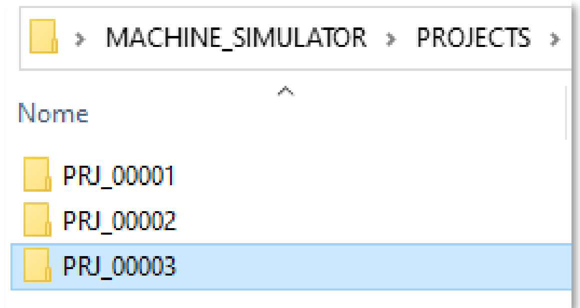
- Workpiece(s)
- Fixture(s)
- Program(s)
- Tool(s)

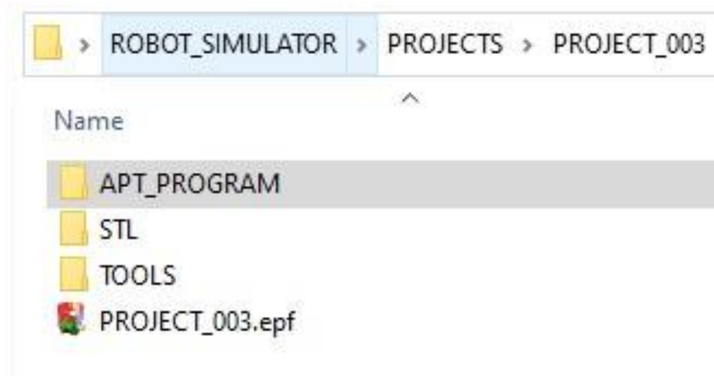
Once the files have been copied, inside the project folder, you can proceed to upload them to Eureka.

3D models: the «*.stl» format is preferable.

Thanks to external importers, it will be possible to import most of the files from CAD software (example: IGES; WRML, etc...).

Program: any file editable with a text editor.





2.2. FILE STORAGEE

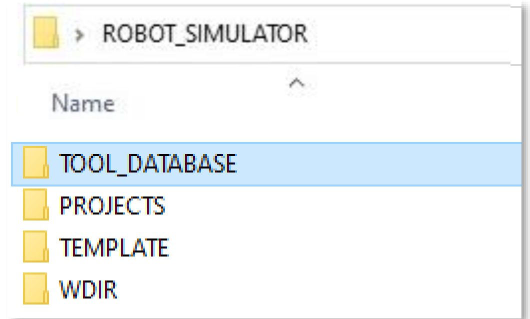
TOOL_DATABASE: folder containing the tools available within Eureka.

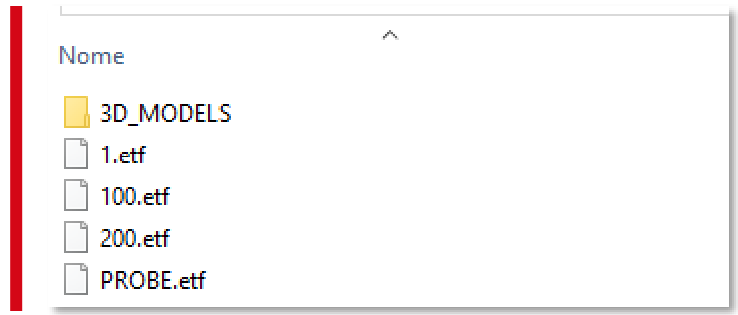
- 3D_MODELS: Folder containing the 3D models used for configuring the tools.

- «*.ETF» (Eureka tool file): file containing tool informations.

The database can be also shared between two or more projects.

Possibility of having multiple databases.





3. WINDOW ARRANGEMENT

3.1. MAIN WINDOWS

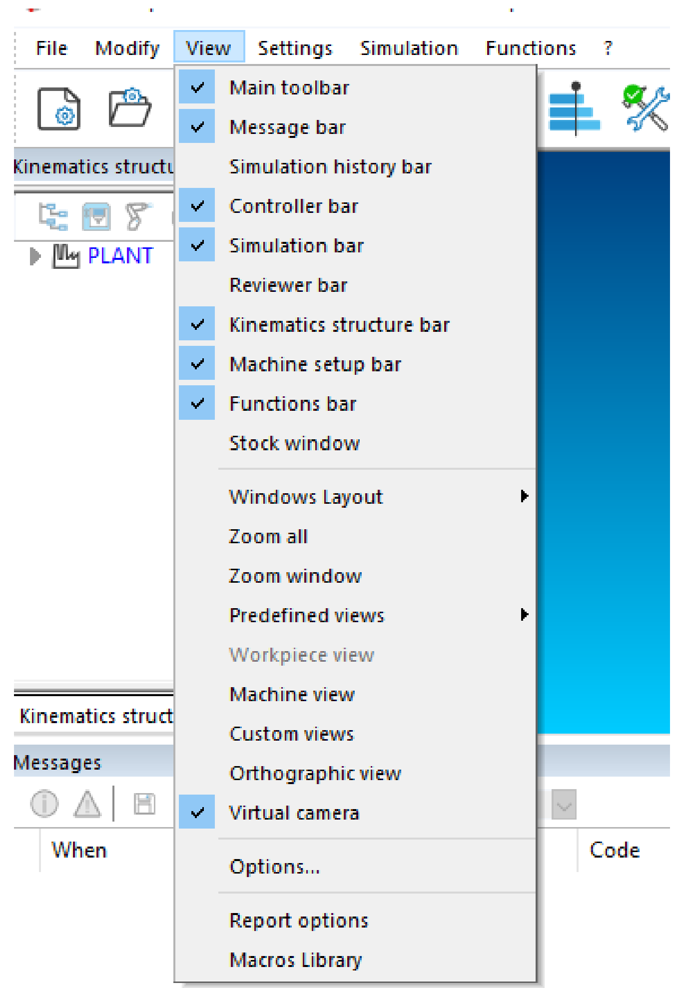
Click on «View» and check the following items:

- Main Toolbar
- Message bar
- Controller bar
- Simulation bar
- Kinematics structure bar
- Machine setup bar
- Function bar

Drag the title bar of the listed windows to view the **anchor points**.

Move the mouse over the anchor point to constrain the window and compose your work environment.

At any time, it will be possible to detach the windows and change their arrangement.

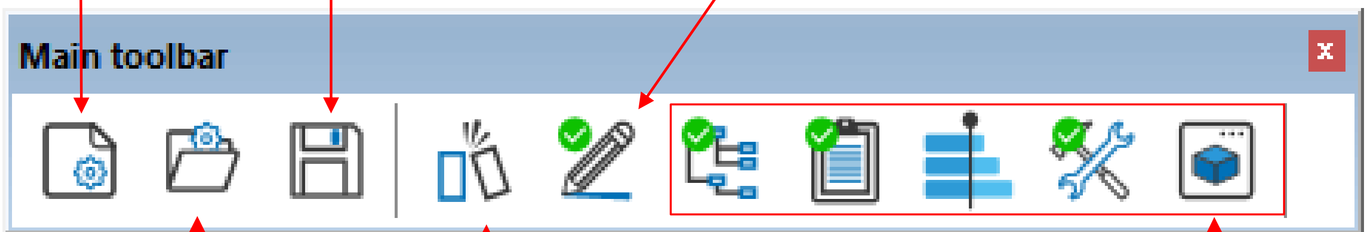


3.2. MAIN TOOLBAR

«**New**»: open a void template.

«**Save**»: save the current opened project.

«**Show/Hide toolpath traces**»: show/hide tool trajectory during the simulation. Green check symbol for "show".



«**Enable/Disable collision detection**»: green check symbol for "enable".

«**Show/Hide...**»: show/hide toolbar as in View menu. Green check symbol for "show".

«**Open**»: open an existing project.

3.3. MESSAGE BAR

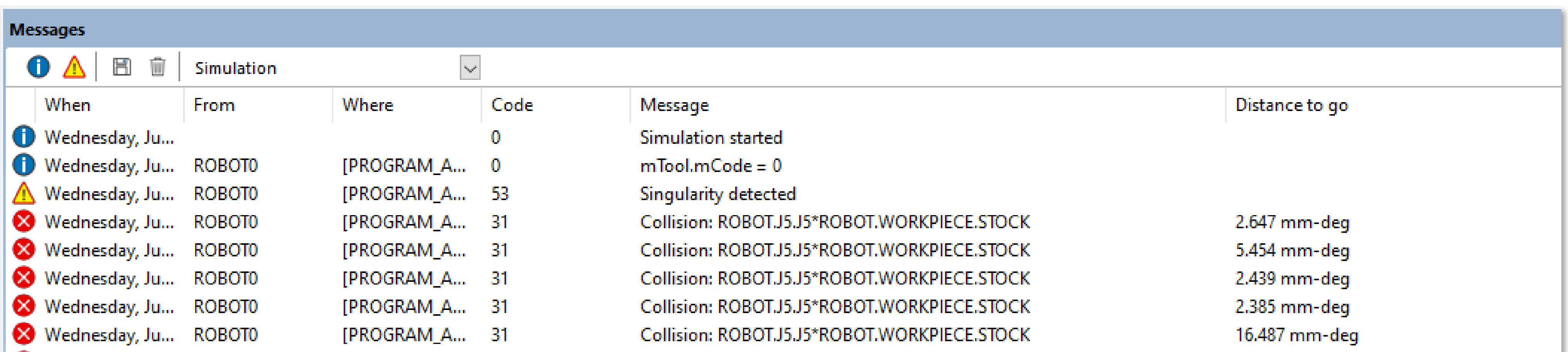
Show a report of the simulation status.

«***Message info***»: informations about the machining.

«**Warning**»: non-critical message (missing subprograms, collision detection disabled, etc…).

«**Error**»: critical error (out of limits, collisions, syntax error).

Double-click any message to view the APT program line that generated it.



3.4. CONTOLLER BAR

«**Show the program window**»: open the program editor window.

«**JOG**»: open the JOG window to manipulate robot position.

«**Load program**»: load the APT program file in the current project.

«**Tools Database**»: open the current tool library window to add/edit/remove tools to the current project.

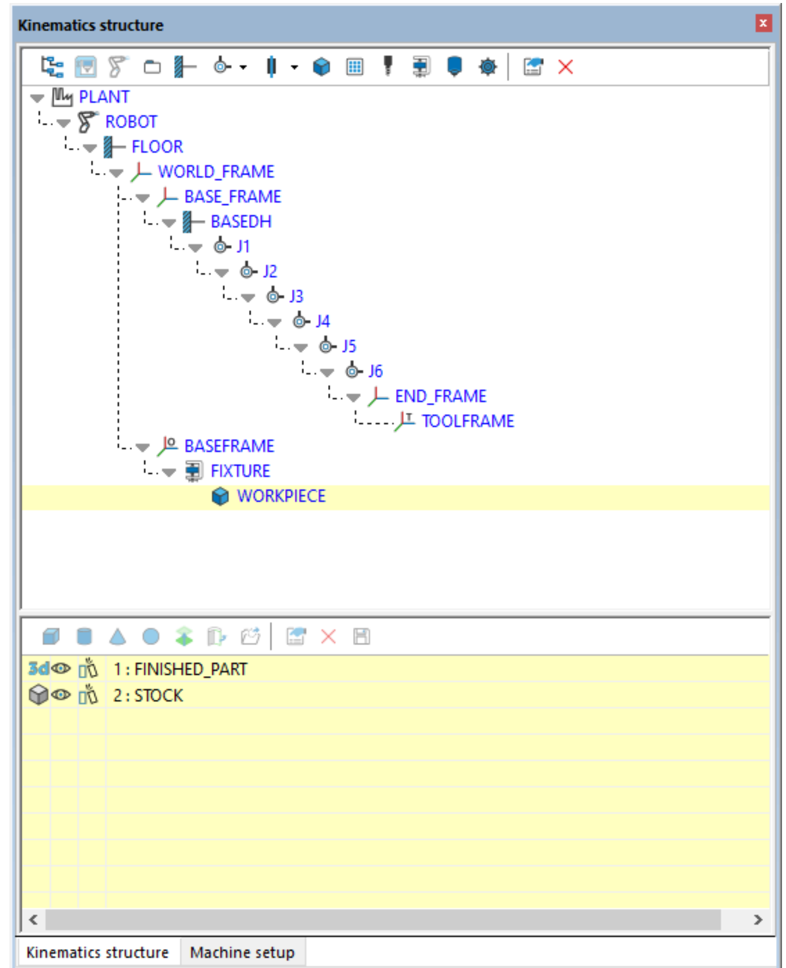
«**Macro list**»: open the macro list window to add/edit/remove subprograms to the robot cell.

«**Save postprocessor output**»: at the end of the simulation allow, if there are no errors, to generate the robot program.

3.5. KINEMATICS STRUCTURE BAR

The kinematics structure bar shows only all the nodes that make up the robot cell in Eureka.

- Robot cell
- Axis node
- Robot Frames
- Tools node
- Workpiece
- Fixture

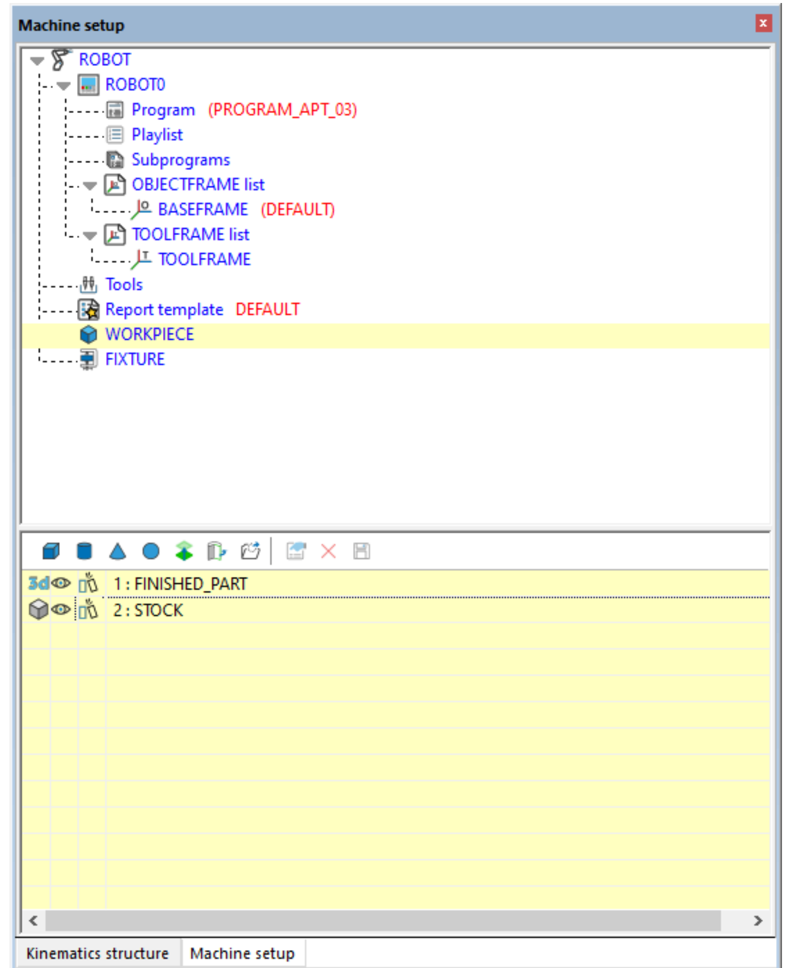


Standard users should not modify the kinematics structure.

3.6. MACHINE SETUP BAR

The machine setup bar shows only the nodes that the standard Eureka user can modify.

- Program
- Playlist
- Subprograms
- OBJECTFRAME list
- TOOLFRAME list
- Tools
- Workpiece
- Fixture



In the early stages of configuration, it is advisable to keep this window superimposed.

3.7. NAVIGATION COMMANDS

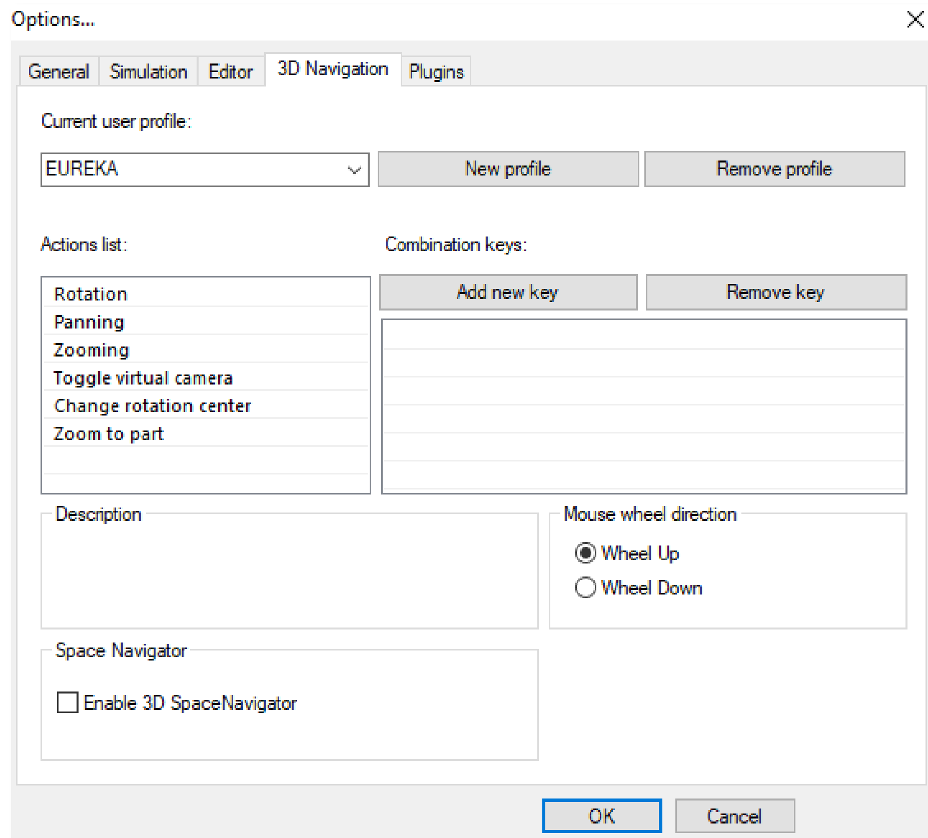
In the 3D view, you can switch from "Selection" mode to "Navigation" mode by clicking the right mouse button.

- SELECTION: allows you to select elements and acquire vertices on the mesh (path measurement or capture commands).

- NAVIGATION: Rotate, translate, zoom in/out.

CUSTOMIZE NAVIGATION COMMANDS:

- «View > Options»
- "3D Navigation" window
- Create a new profile and change the available actions, to customize navigation in Eureka.



4. ROBOT CELL SETUP

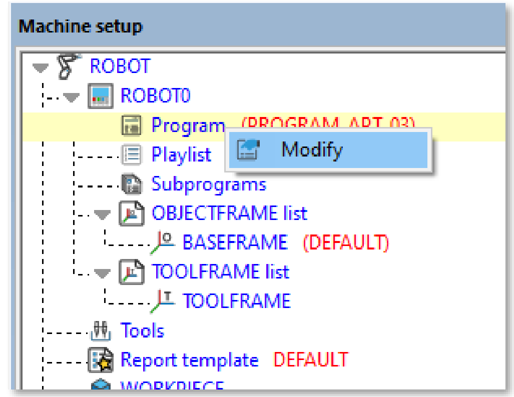
4.1. PROGRAM

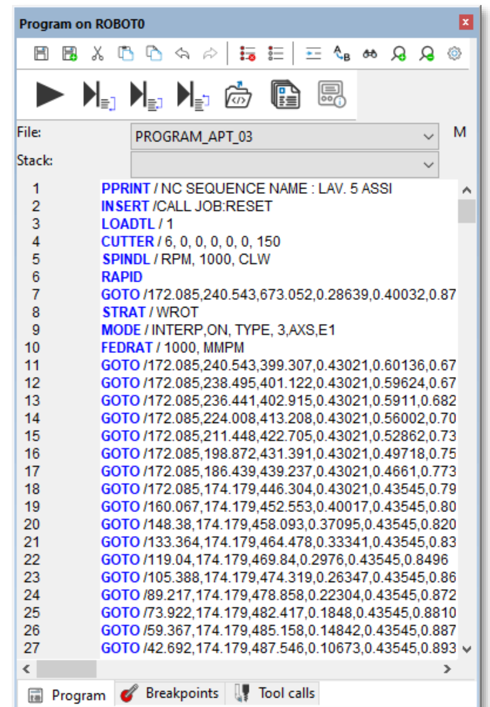
Make sure you have clicked on the "Terminate simulation" button.

- Right click on "Program".
- "Modify”.
- Select the APT file you want to use as the main program.
- When the upload is complete, the program window will appear.

The program window allows you to edit the previously loaded file, using many of the features commonly found in text editors (copy, paste, cut, find/replace and other).

As the other toolbar it is possible drag the program window by the title bar to the working enviroment.





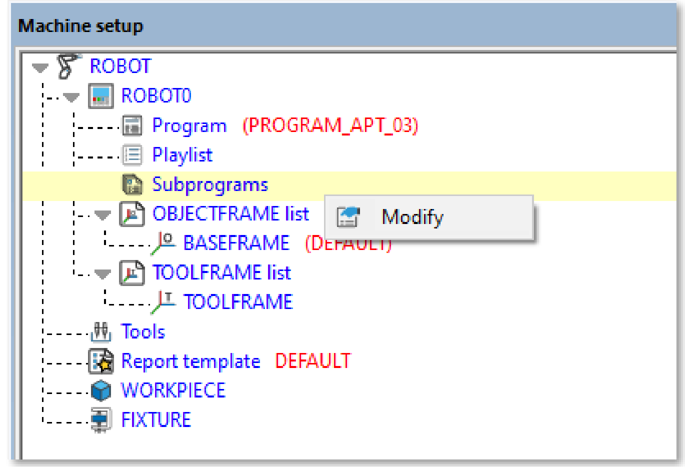
4.2. SUBPROGRAMS

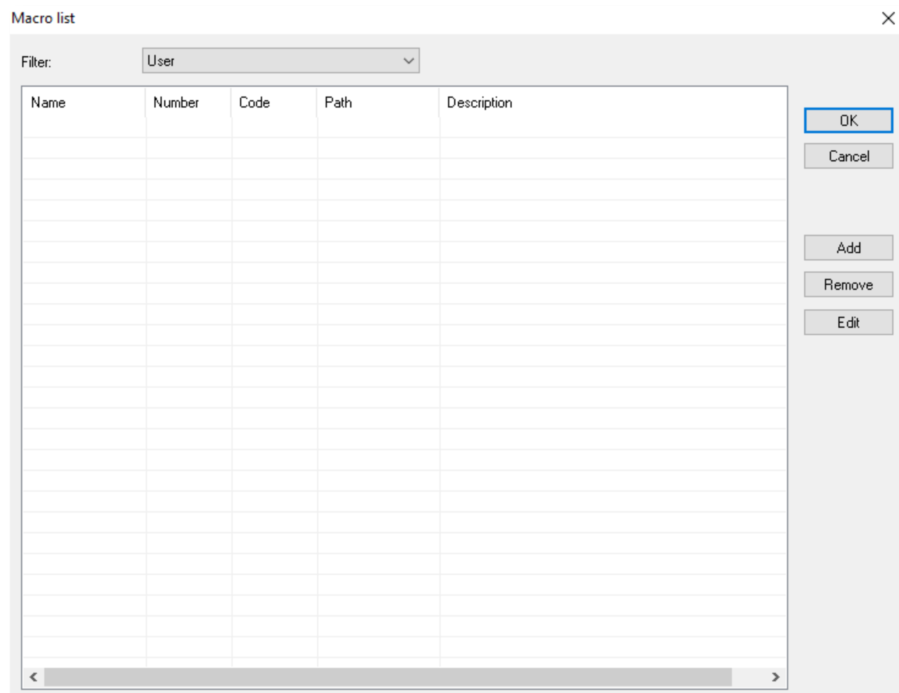
Make sure you have clicked on the "Terminate simulation" button.

- Right click on "Subprograms".
- "Modify".
- "Add" command to load a specific macro or subroutine for the project used.
- The latter will be shown in the list of available macros / subroutines.

In the program window, click on "File" to see the contents of the available macros.

In case of new macros, used for **any future project**, it will be necessary to contact your technical reference to modify the template file of the machine.

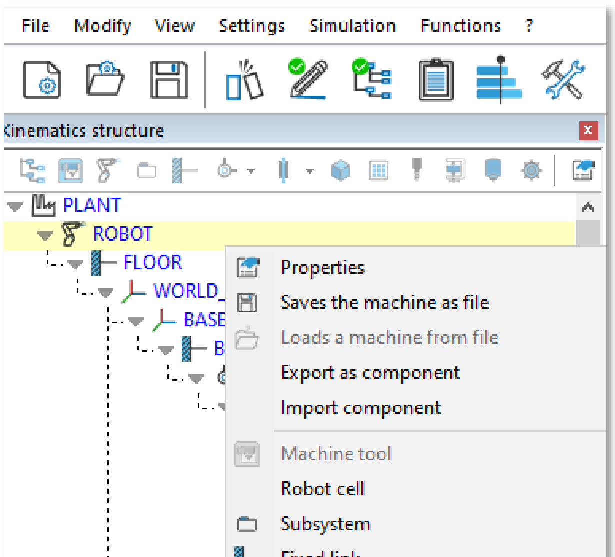


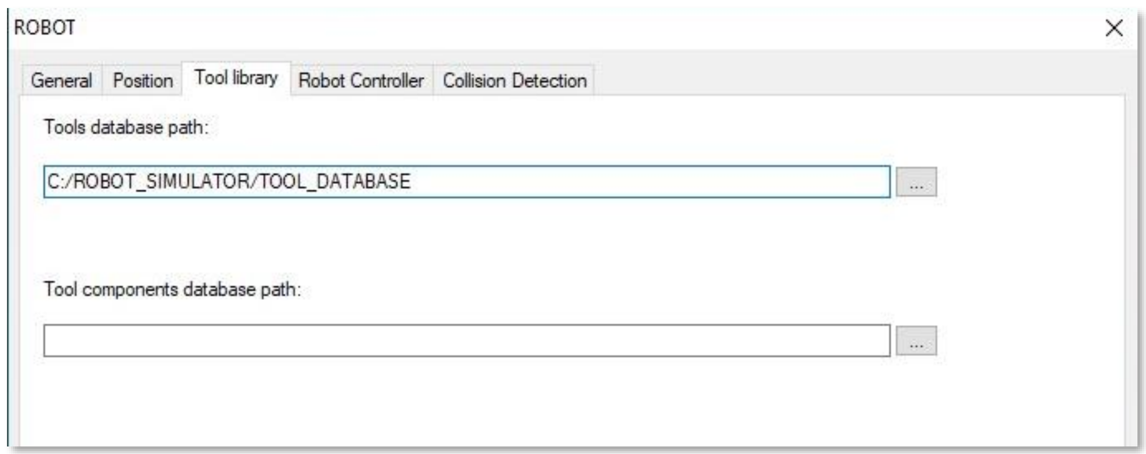


4.3. TOOL DATABASE PATH

This path will indicate to the Eureka template or project, where the folder containing the virtual tools is located.

- Double-click the template file («*.epf» or «*.ept») and open one of the available machines.
- “Right click > Properties" on the robot node, in the kinematics window.
- Choose the "Tool Library" page and click the search icon. Indicates the inside of the "TOOL_DATABASE" folder.
- At the end of this operation the tool library icon will be enabled.



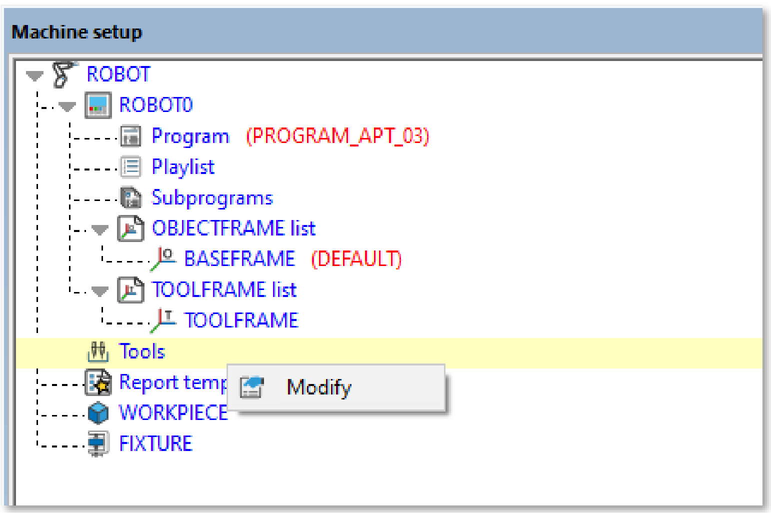


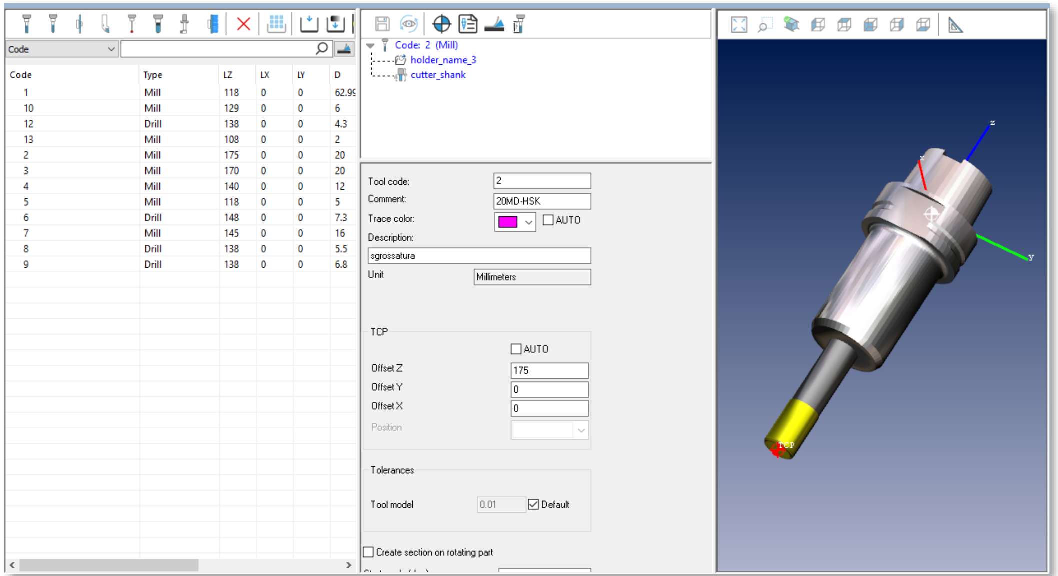
4.4. TOOL DATABASE

- Right click on "Tools".
- "Modify".

The geometry of the cutting and non-cutting parts can be recreated in Eureka, thanks to parametric shapes and/or «*.stl» models.

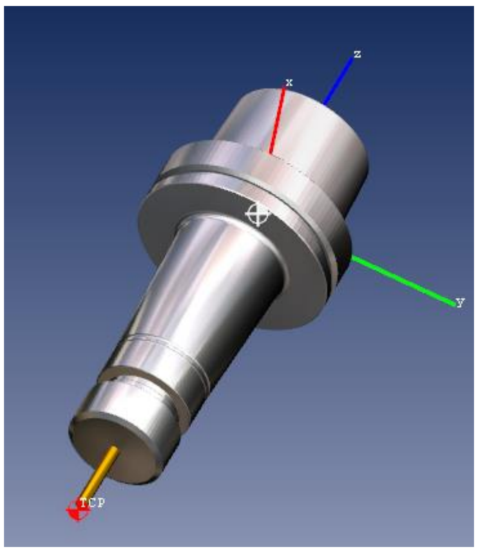
(In terms of performance, parametric shapes return the best result)

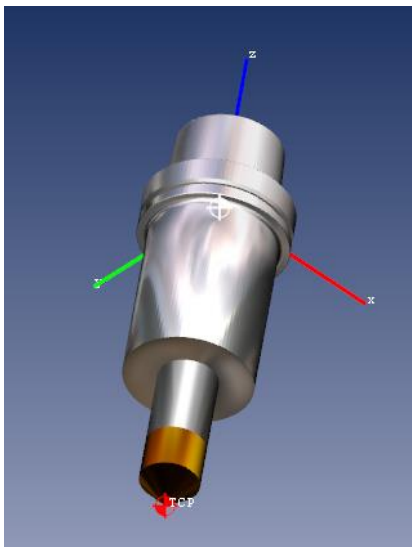


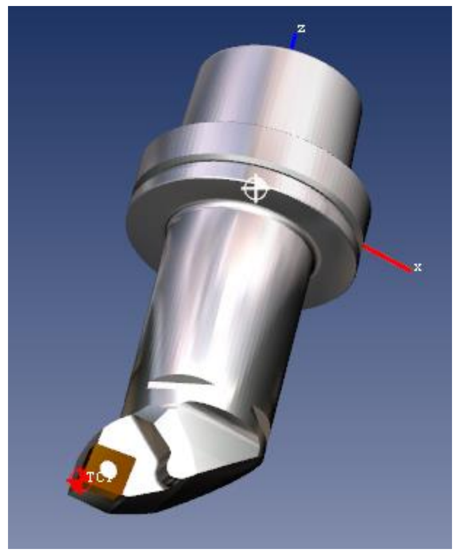


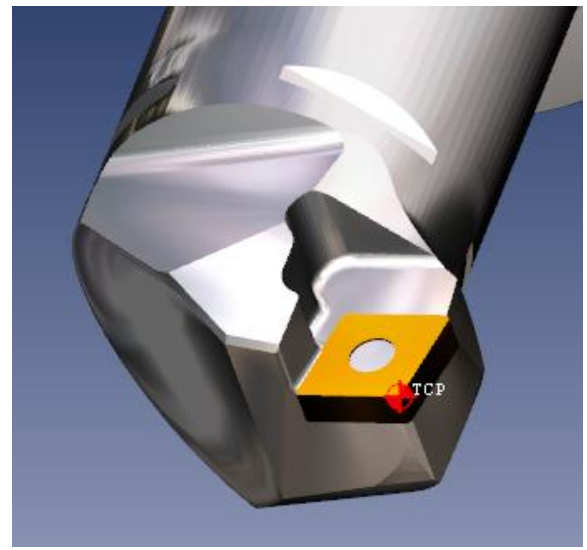
4.4. TOOL DATABASE

Check the document «**Eureka10_TOOL_DATABASE_eng**» for further information on the creation of parametric tools, from 2D profiles, 3D models or revolve and extrusion.









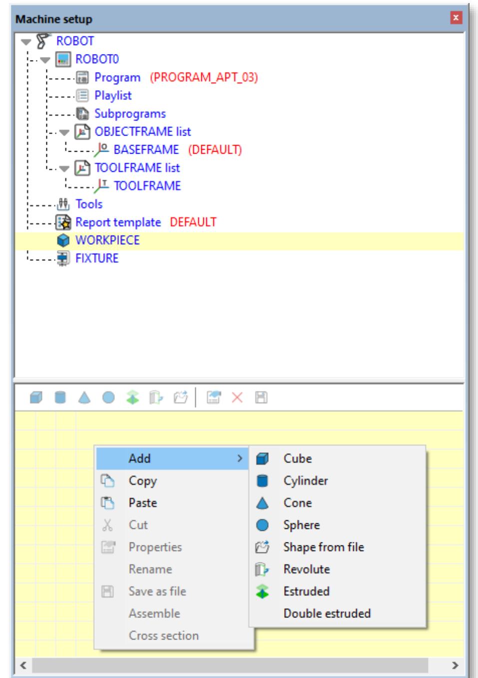
4.5. WORKPIECE

Make sure you have clicked on the "Terminate simulation" button.

- *Left-click on "WORKPIECE".*
- *Right-click in the window under the "Machine setup bar" (yellow window).*
- *"Add > Shape from file" to load a 3D model (preferably in «*.stl» format) previously exported from CAD or CAM.*

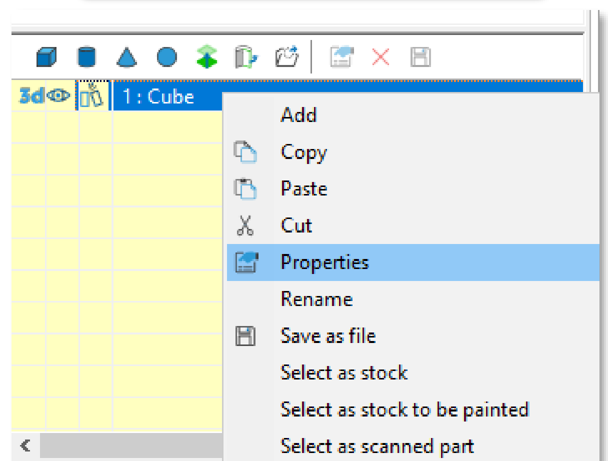
or

- *"Add" and select one of the available parametric shapes.*



***PROPERTIES OF THE LOADED 3D MODEL**:*

- *Right-click on the name of the newly imported shape*
  - ***"Select as stock"**: once you click on "Restart", the graphic shape will be converted into a stock model on which to remove the material.*
  - ***"Properties"**: the properties window will be displayed to modify the position, scale, color and transparency of the 3D model.*



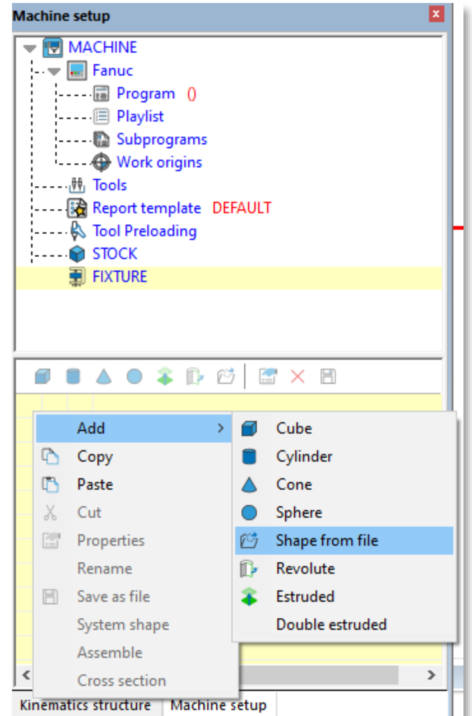
4.6. FIXTURE

Make sure you have clicked on the "Terminate simulation" button.

- *Left-click on "FIXTURE".*
- *Right-click in the window under the "Machine setup bar" (yellow window)*
- *"Add > Shape from file", to load a 3D model (preferably in «*.stl» format) previously exported from CAD / CAM.*

or

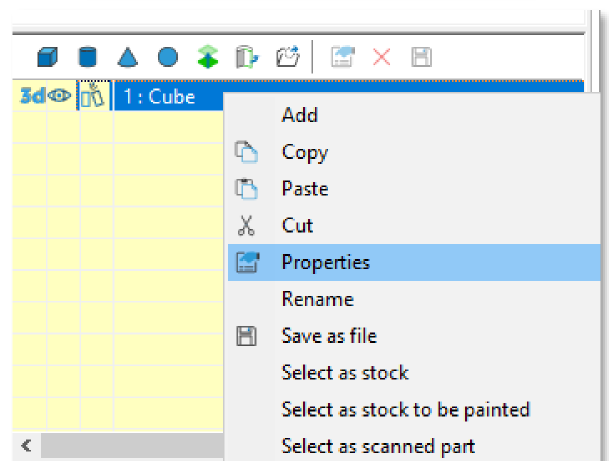
- *"Add" and select one of the available parametric shapes.*



***PROPERTIES OF THE LOADED 3D MODEL**:*

- *Right-click on the name of the new shape*
- *"Property"*

The properties window will be displayed, to change the position, scale, color and transparency of the 3D model.



4.7. 3D MODEL IMPORT OPTIONS

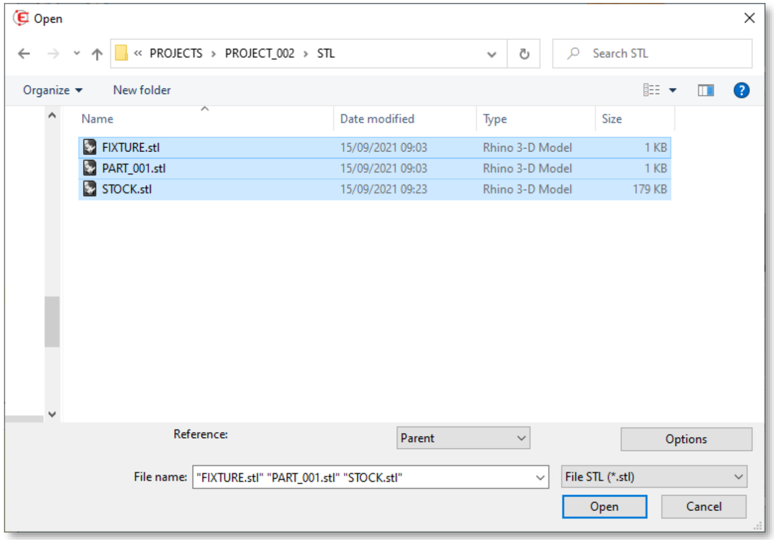
Following the commands "Add> Shape from file", Eureka will show a 3D model search window (default format: «*.stl»).

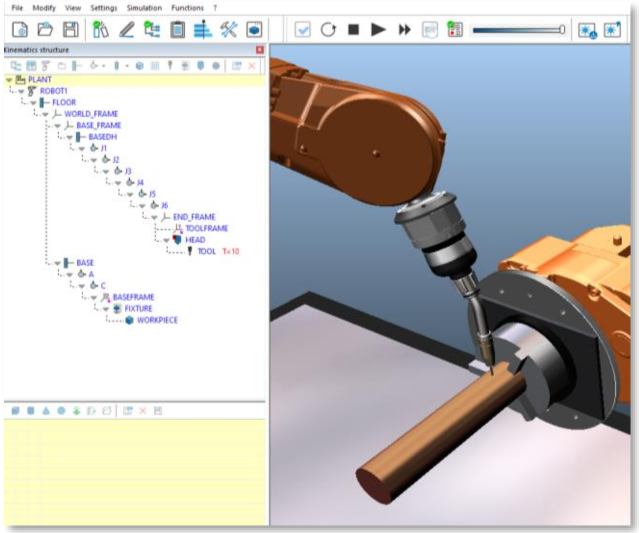
Reference: reference on which the 3D model will be placed, in Eureka

- Parent: The 3D model will be positioned with respect to the coodinate system of the "WORKPIECE" node.
- Machine / Subsystem: the 3D model will be imported with respect to the coodinate system of the "ROBOT" node (machine name).

To identify the coodinate system of the "WORKPIECE" or "ROBOT" node:

- "View > Kinematic Structure".
- Click on the node “WORKPIECE" or "ROBOT" (machine name).
- In the 3D window, locate the highlighted coordinate system.





5. MACHINING PARAMETERS

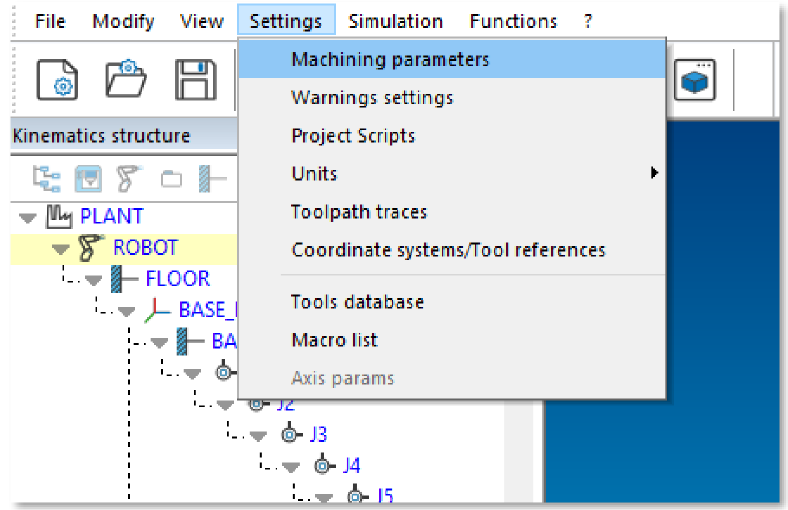
5.1. LINEAR/ANGULAR PRECISION

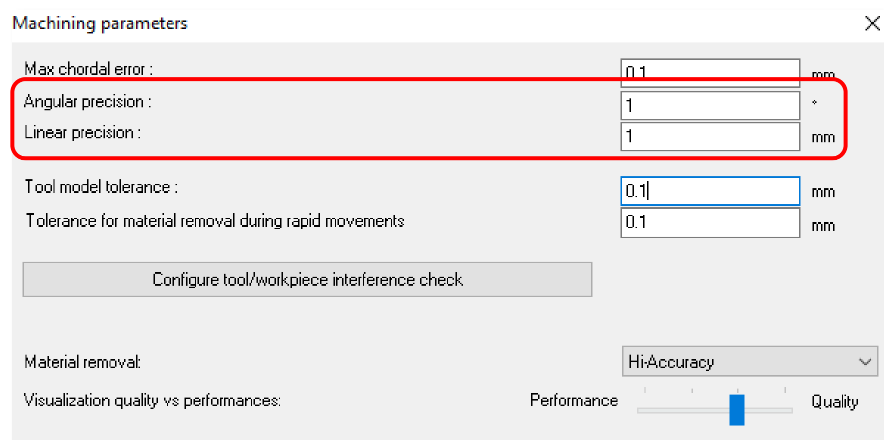
These two parameters indicate, every how many millimeters or degrees, Eureka performs a collision check, rapid removal and other possible errors.

- "Settings" menu
- “Machining parameters"

Increasing these values will greatly increase the simulation speed reducing the accuracy.

By default, these two parameters will have a value of 1 but for large workpieces is possible to use 3, 5, 7, up to a maximum of 10.

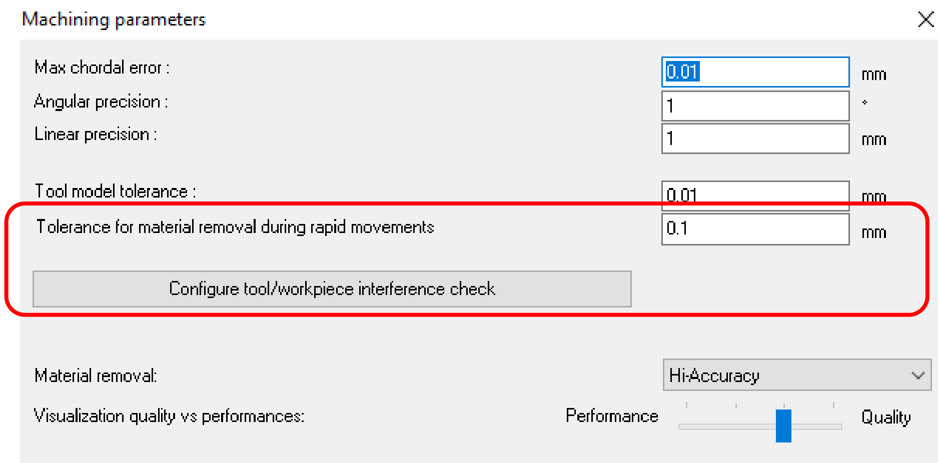


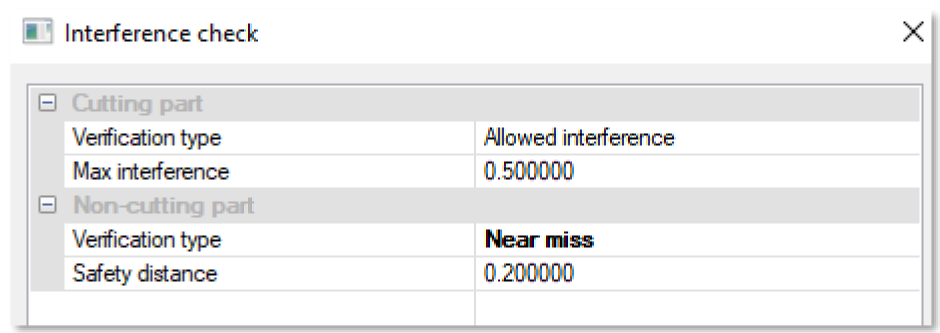


5.2. COLLISION TOLLERANCES

These parameters indicate how accurate the software will be in detecting possible material removal in rapid errors or collisions between the tool parts and the workpiece.

- "Tollerance for material removal during rapid movements": limit beyond the tool can pass through the part, moving at rapid speed, without generating the “Material removal in rapid" message.
- "Configure tool/workpiece interference check"
  - "**Allowed interference**": limit beyond the tool can cross the reference piece, before generating a "Collision" message.
  - “**Near miss**": the maximum distance the 3D model of the tool can approach the part, before generating a message of "Collision or close to collision ..."





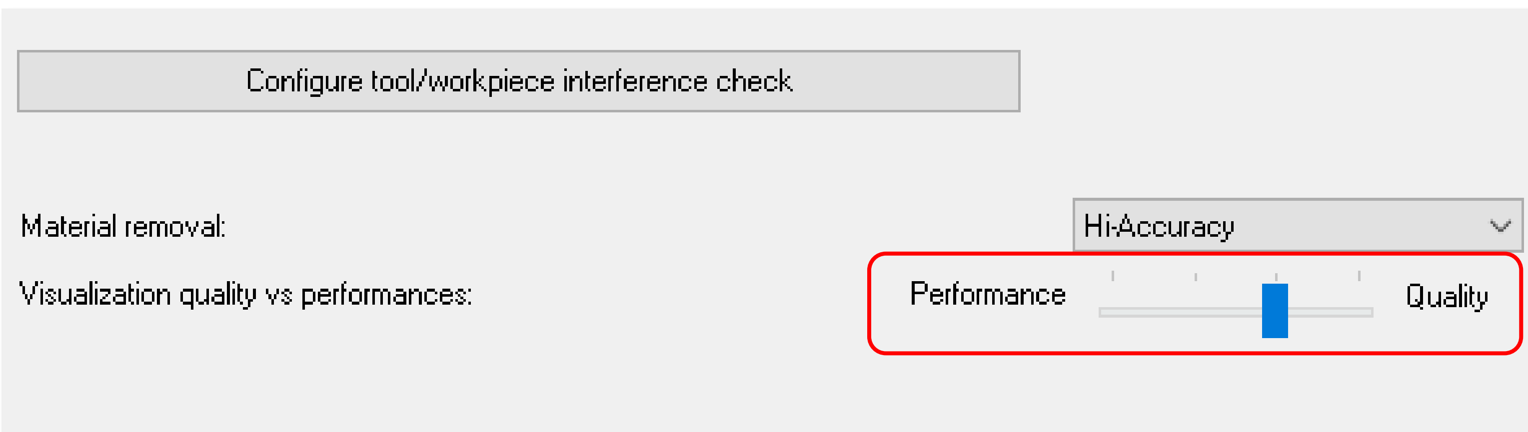
5.3. MACHINING QUALITY

Indicate the simulation mode in Material removal:

- **Hi-Accuracy**: optimized simulation for milling applications, more accurate collisions evaluation and stock calculation.
- **Hi-Speed**: standard simulation mode.
- **Hybrid**: mandatory for additive/hybrid applications.

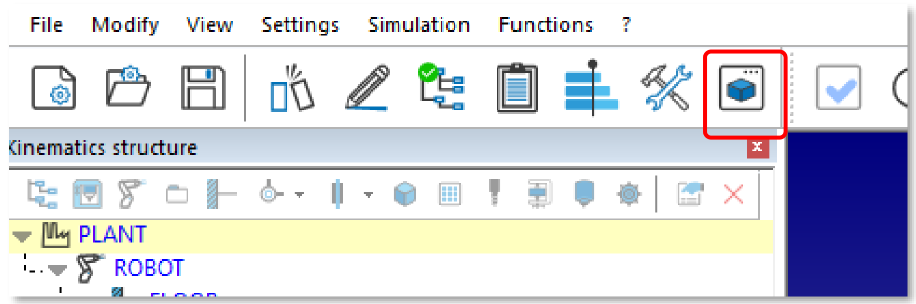
Drag the "Visualization quality vs performance" bar to increase or decrease the graphic quality of the machined piece. More quality takes slower graphic simulation.

(Be careful: in Hybrid mode it is not possible move the bar during simulation)

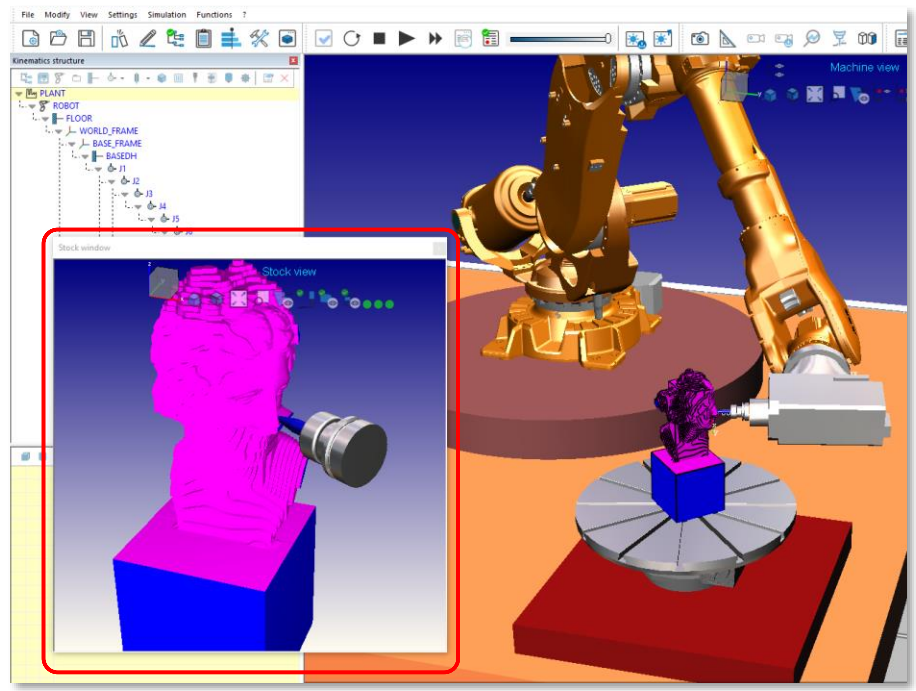


5.4. STOCK WINDOW

Click the icon to display the "Stock window".



Respect to the 3D view, stock window show only the model to be machined, the tool used and the fixture with the best graphic quality available (depending on the resolution of the window).



It will be possible to decrease the quality of the machined piece in the "Machining parameters" menu to increase the speed and keep the "Stock window" superimposed to have a high detail for material removal.

The three illuminated green circles indicate the best quality available.
Deselect one or more green circles to decrease the graphic quality.

6. SIMULATION

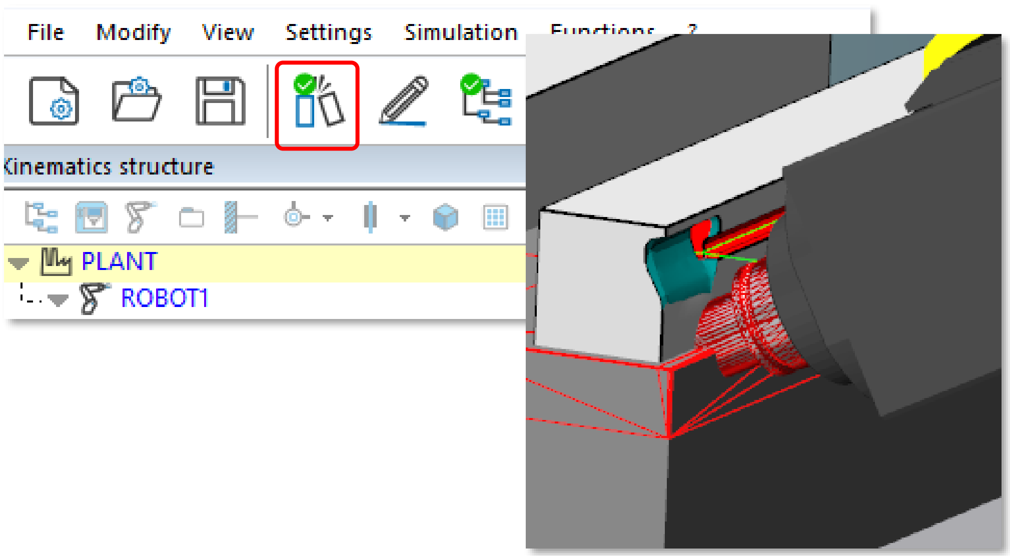
6.1. COLLISION CHECK

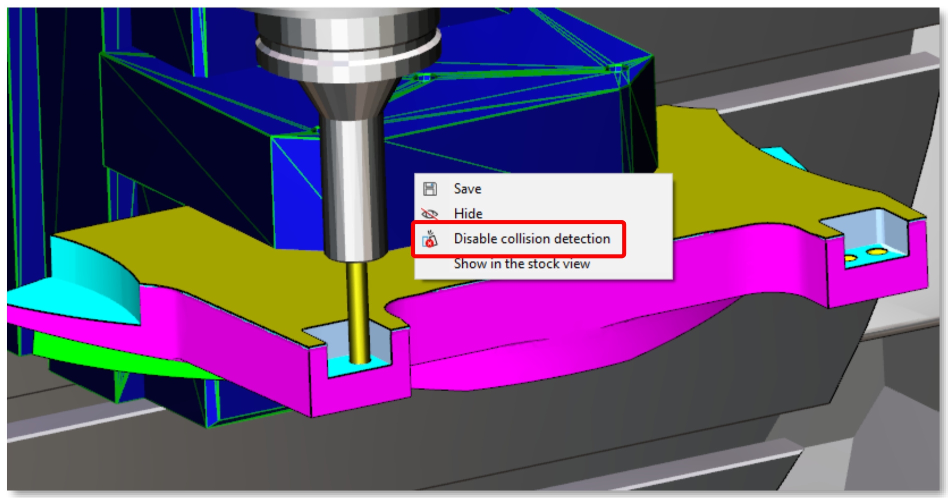
- Click on the "Enable/Disable collision detection" icon.

Eureka will check for collisions on all the parts of the machine.

To exclude a 3D model, from checking, it is necessary

- Switch to "Selection" mode and left-click on the 3D model in the 3D window.
- "Disable collision detection".



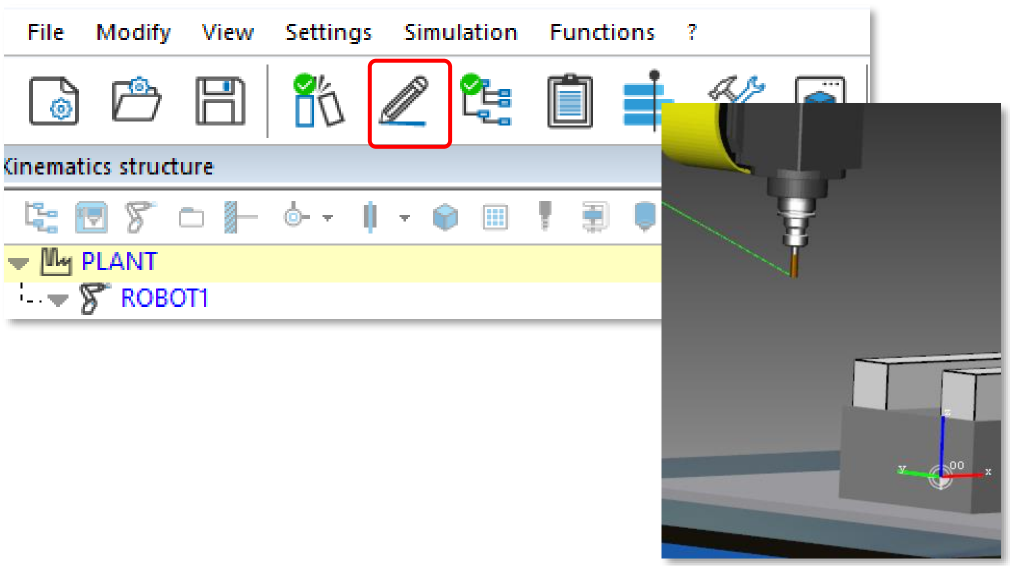


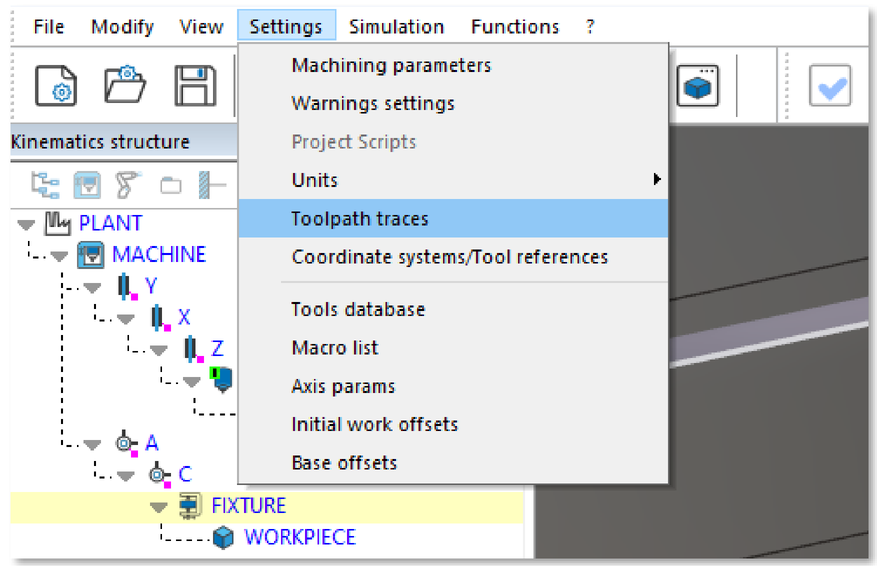
6.2. TOOLPATH TRACE

- Click the “Show/Hide toolpath trace" icon to show/hide the trajectory of the active tool.

CHANGE THE COLOR OF THE TOOL TRACE:

- "Settings" menu
- “Toolpath traces”





6.3. ERROR/WARNING MANAGEMENT

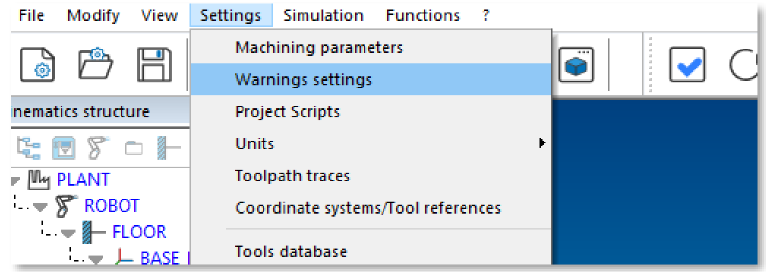
For each type of error or warning it will be possible to decide what Eureka's behavior will be.

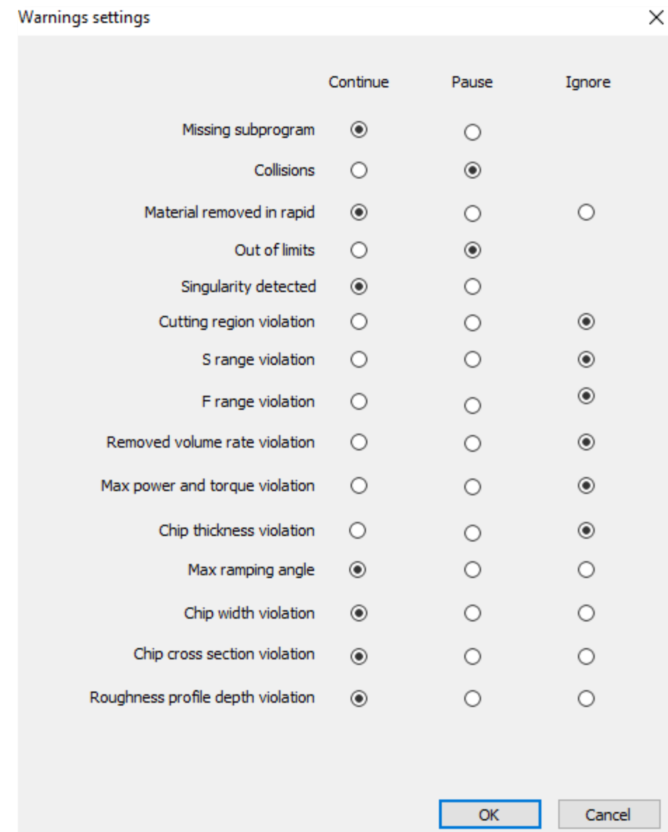
- "Settings" menu
- "Error/warning settings"

Select:

- "**Continue**": Eureka will show the message in the message bar, but the simulation will continue.
- "**Pause**": Eureka will show the message in the message bar and the simulation will be stopped, showing the line of the program where the error or warning occurred.
- "**Ignore**": Eureka will not show the error and the simulation will continue without messages.

Without some modules, other than the standard one, some of the items in the figure may not be present.



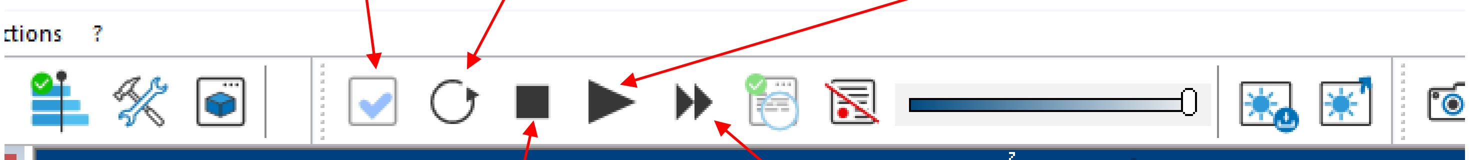


6.4. SIMULATION COMMANDS

«**Quick check**»: quickly analyzes the APT program and shows possible syntax problems or missing elements (example: missing macro or tool).

«**Restart**»: restores the stock model and restores the simulation to its initial state.

«**Simulate all**» (F5): starts the simulation of the APT program, which shows both the movements of the robot and the material updating (if there is a stock model).



«**Terminate simulation**»: stops the simulation and allow to import new 3D models, new programs or perform some operations.

«**Simulate without 3D display**»: starts the simulation of the iso program in hidden mode, without showing the movements of the robot or the material updating. The results will be displayed once the simulation is stopped.

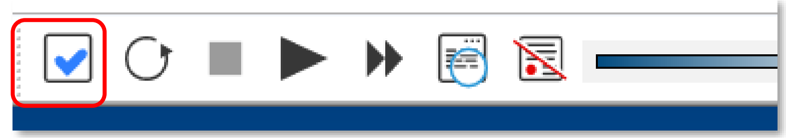
6.5. QUICK CHECK

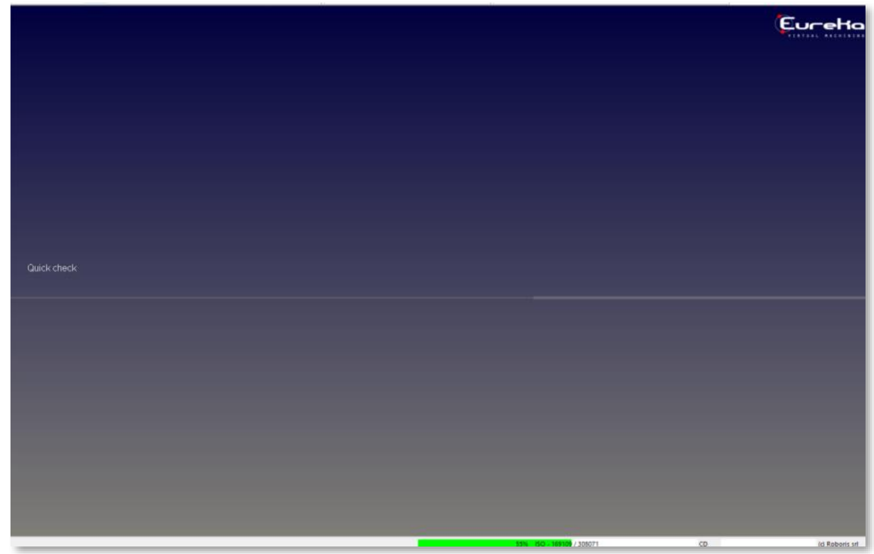
Make sure you have clicked on the "Terminate simulation" button.

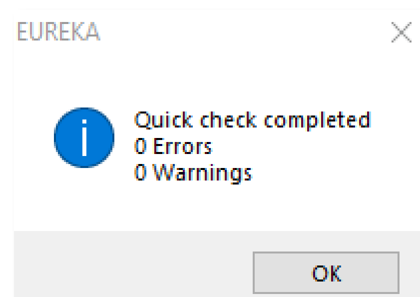
- Click on the "Quick check" button.

- Eureka will perform a quick check of the imported APT program and return a report, in the form of messages (errors / warnings).

This check does not include the detection of any collisions but aims to identify syntax errors, missing macros and errors related to programming.







6.6. PRE-ANALYSIS

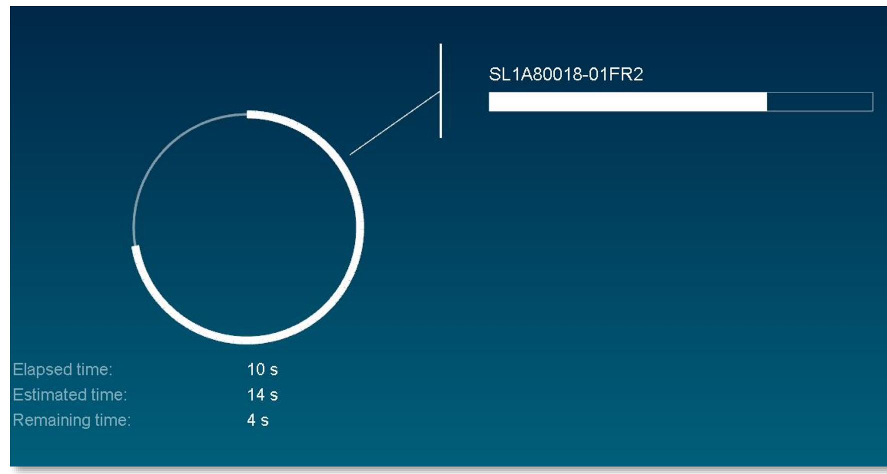
Make sure you have clicked on the "Terminate simulation" button.

- Click on the "Pre-analysis" icon.
- "Restart".

Eureka will start a thorough analysis of the imported APT program.

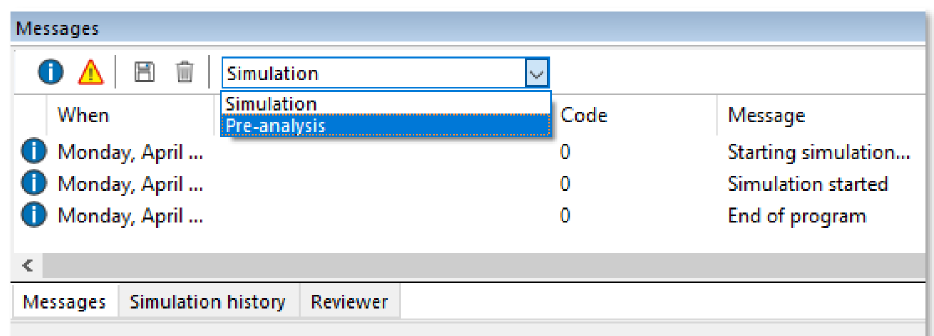
Once the pre-analysis is finished, by clicking on the "Simulate without display" icon, Eureka will show us:

- Time spent in the simulation.
- Estimated simulation time.
- Remaining time to complete the simulation.



Check the message bar to detect the “Simulation” option and switch to “Pre-analysis”.

Eureka will show the pre-analysis result.



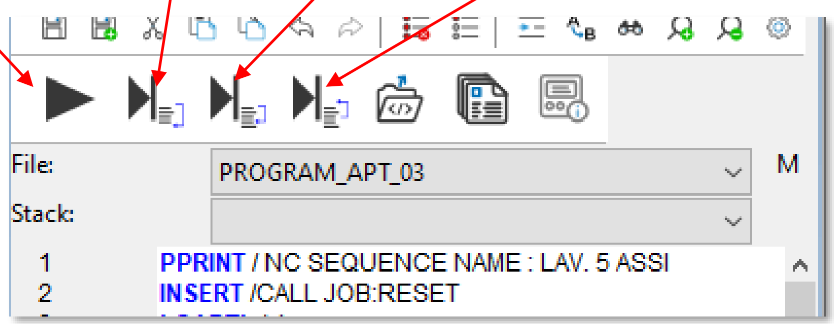
6.7. SIMULATE BY THE PROGRAM WINDOW

«**Simulate all**» (F5): starts the simulation of the APT program, which shows both the movements of the robot and the material updating (if there is a stock model).

«**Simulate line/procedure**»(F11): the simulation will stop at each new line of the program, showing the results. In the presence of macros or subroutines, Eureka will execute the entire content, without showing it.

«**Simulate line**»: line-by-line simulation, including the content of subroutines and macros.

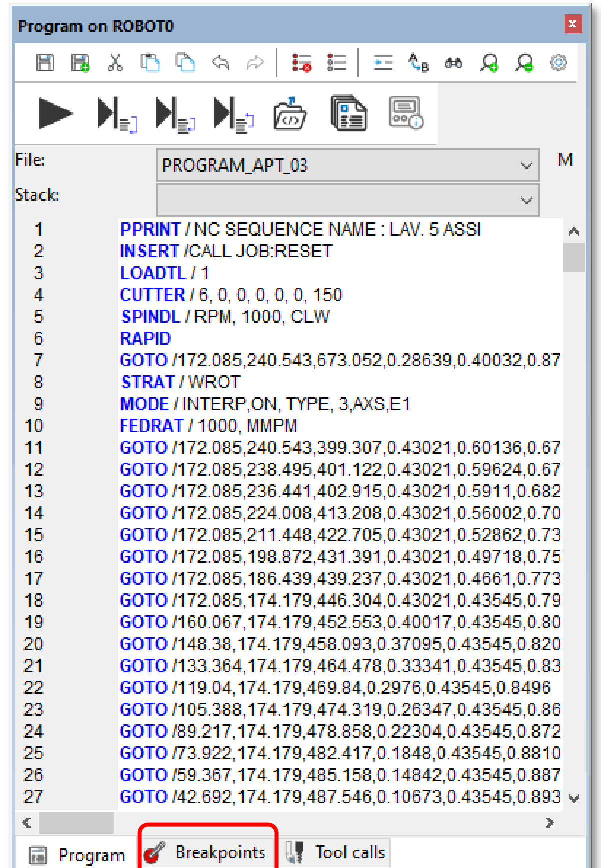
«**Simulate procedure**»: allows to execute the contents of a macro or subroutine and return to the height of the main program.



6.8. BREAKPOINTS

The "Breakpoints" allow to automatically stop the simulation when a certain line is reached or by indicating a certain condition.
(example: identification of a series of letters and numbers)

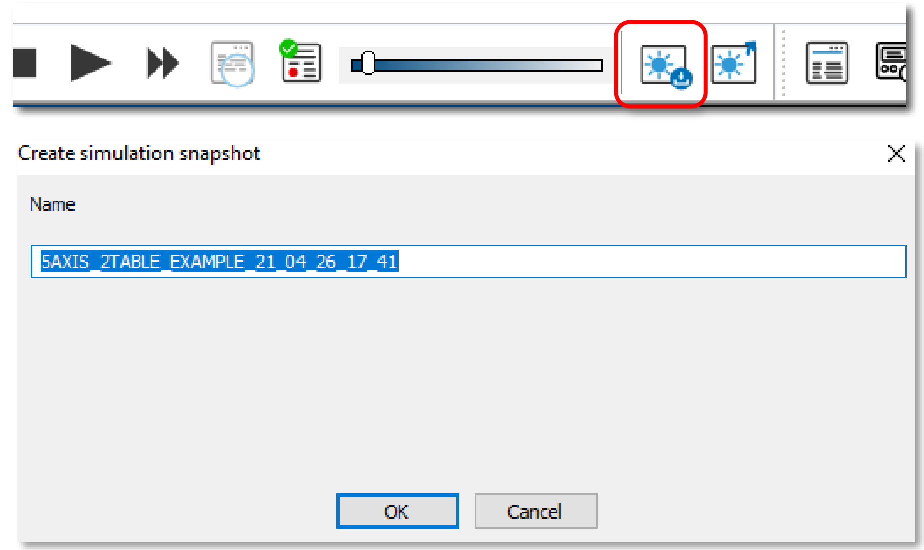
- Make sure the green check mark is present on the "Ignore Breakpoint" icon.
- Click on the side of the program to add a new breakpoint.
- Click on the "Breakpoints" menu to open the breakpoint window and define a new condition.



6.9. SNAPSHOT

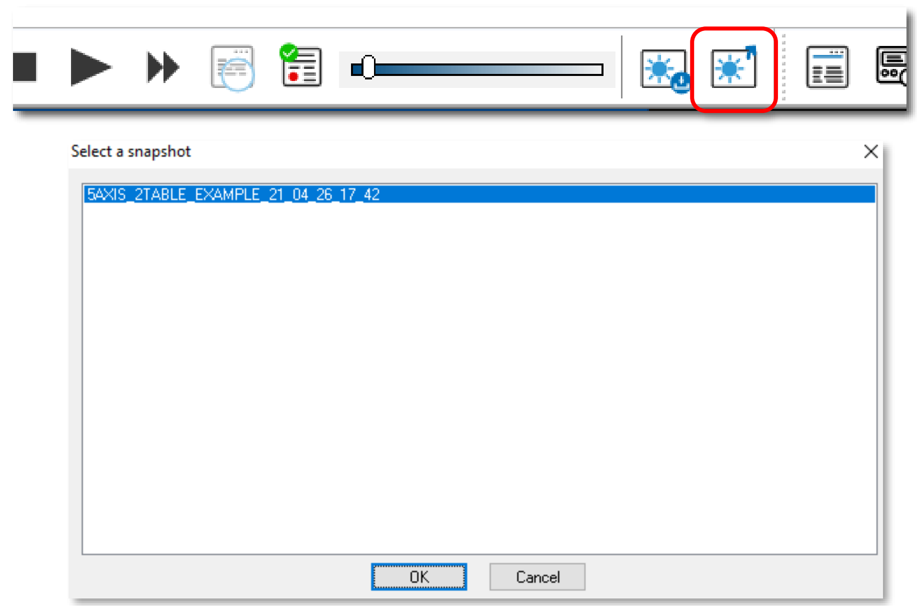
With the "Snapshot" it will be possible to save the simulation state so that it can be restored in case of Eureka closure or work interruption.

- "Restart".
- Fully or partially simulate the APT program.
- Click on the "Create simulation snapshot" icon.
- Define the name for the new snapshot and/or click «Ok» to confirm the command.



RESTORE SIMULATION SNAPSHOT:

- Click "Restore simulation snapshot".
- Choose one of the available snapshots from the list.
- Confirm with "Ok".

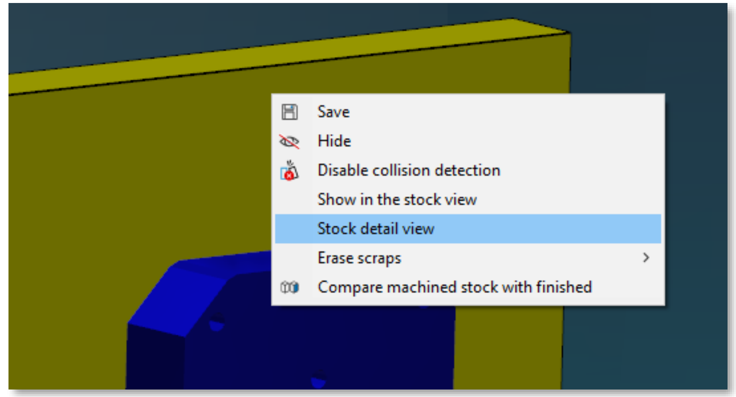


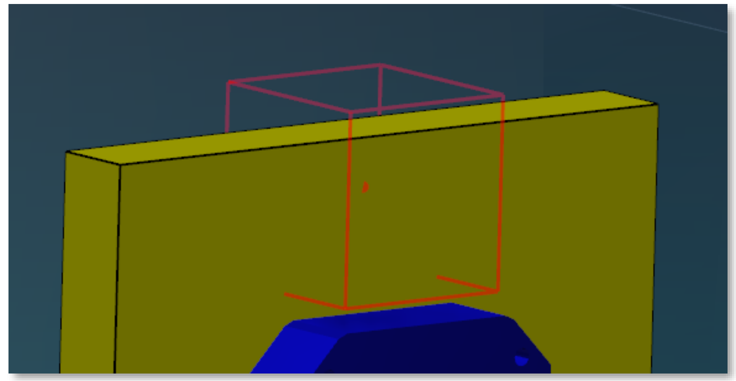
6.10. STOCK DETAIL VIEW

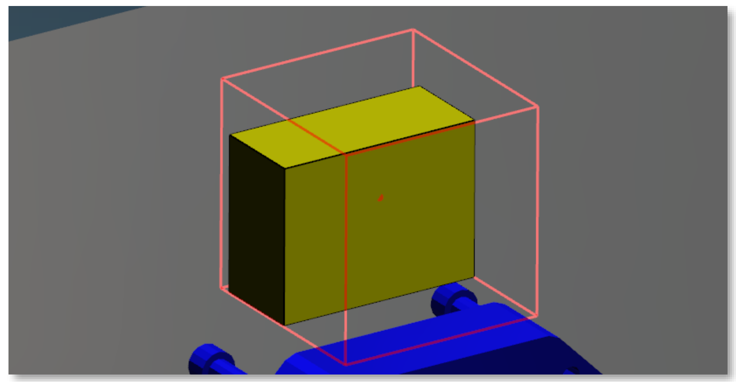
This command allows to analyze a portion of the stock model, concentrating the graphic resources in a limited area.

- Make sure you have one or more stock models.
- Switch to "Selection" mode and left-click on the 3D model of the stock.
- “Stock detail view".
- Place the cursor on the stock model and select the vertex from which to expand the detail area (cube).
- Roll the mouse wheel forward to enlarge the detail area.
- Left click on the 3D view to confirm the command.

A small selection has more details.







6.11. JOG

Make sure you have activated the simulation.

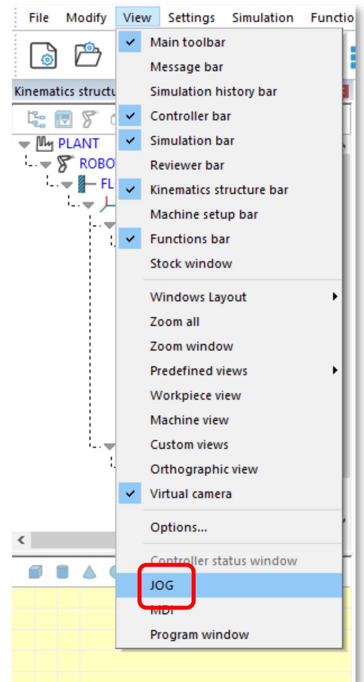
The "JOG" allows to check/move the axes positions.

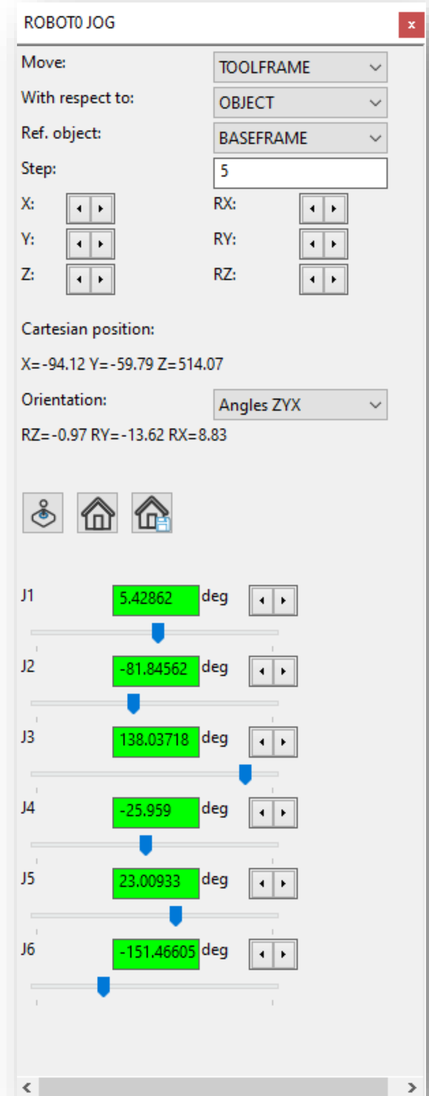
For cartesian movements:

- Indicate the toolframe that should be moved.
- Indicate the reference objectframe.
- Indicate a "Step" and click on "+/-" on "X,Y,Z" to translate and on "RX,RY,RZ" to rotate in positive and negative direction respect to the selected reference frame axes (TOOL, BASE, WORLD, OBJECT).

For axes movements:

- Indicate a "Step" and click on "+/-" to move the axes in positive and negative direction.



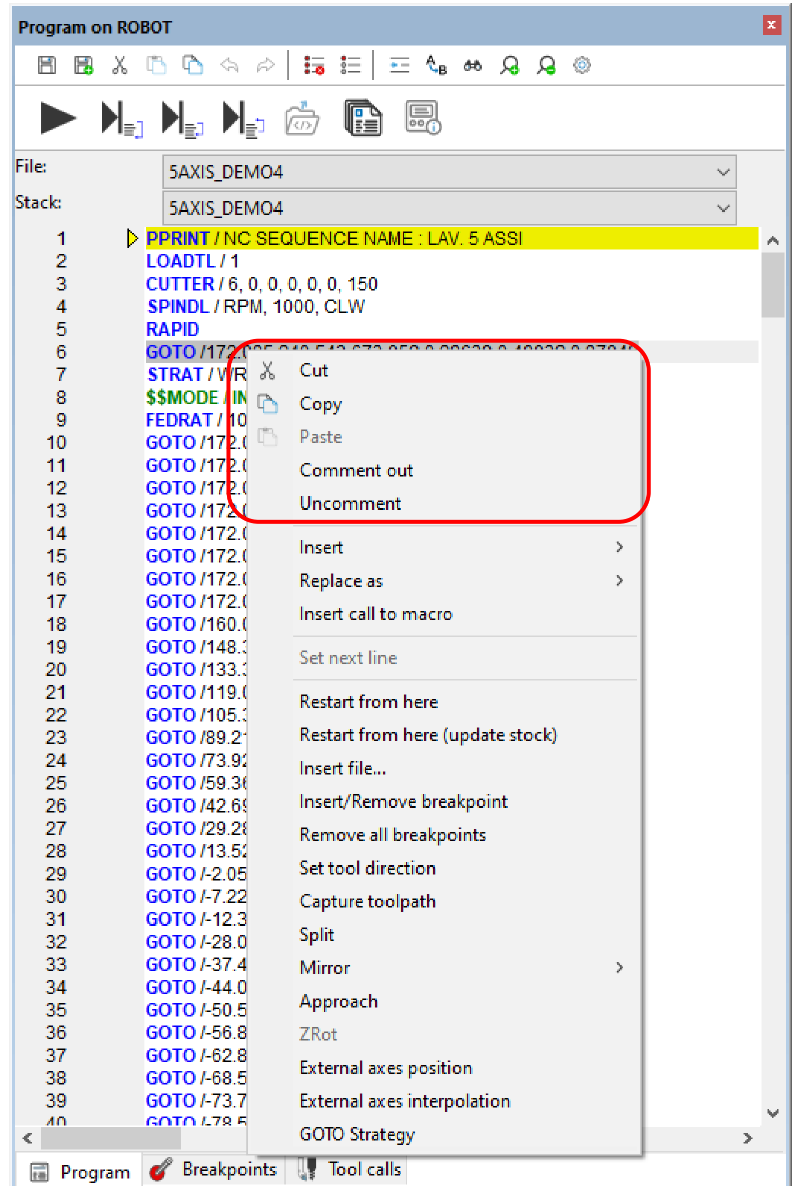


7. PROGRAM EDITOR

7.1. EDIT THE APT PROGRAM

The program window integrates a text editor, with the possibility of:

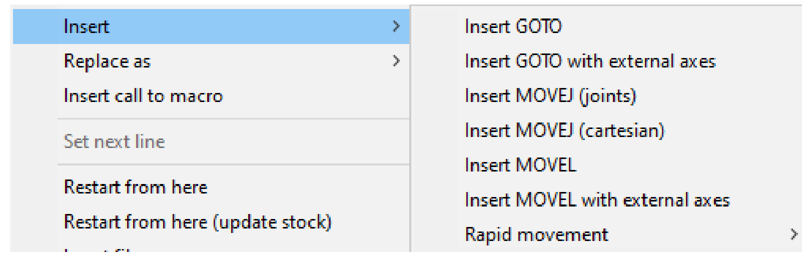
- Program manually, even starting from an empty file typing on the text.
- Cut/Copy/paste portions of the program.
- Comment out multiple lines of code at the same time.



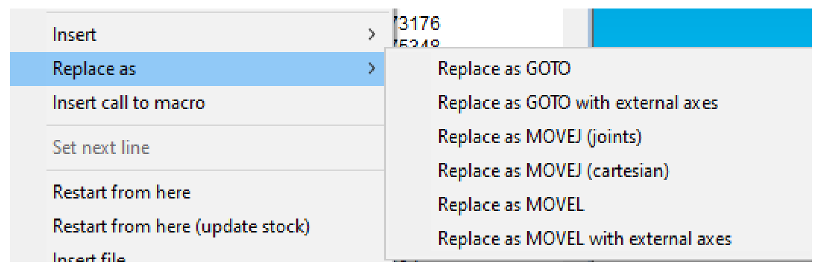
7.2. INSERT/REPLACE AS/ INSERT CALL TO MACRO

Right-click on a single line in the program

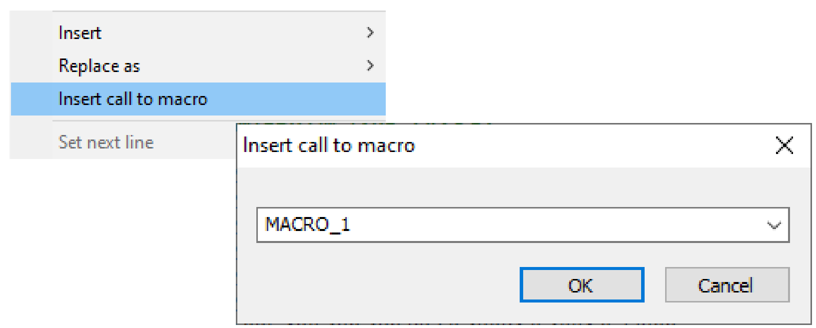
- "**Insert**": insert the current robot position in the APT program as TOOLFRAME position respect to the current work origin, or as joints position (**MOVEJ**).



- "**Replace as**": replace the selected line in the APT program with the current robot position as TOOLFRAME position respect to the current work origin, or as joints position (**MOVEJ**).



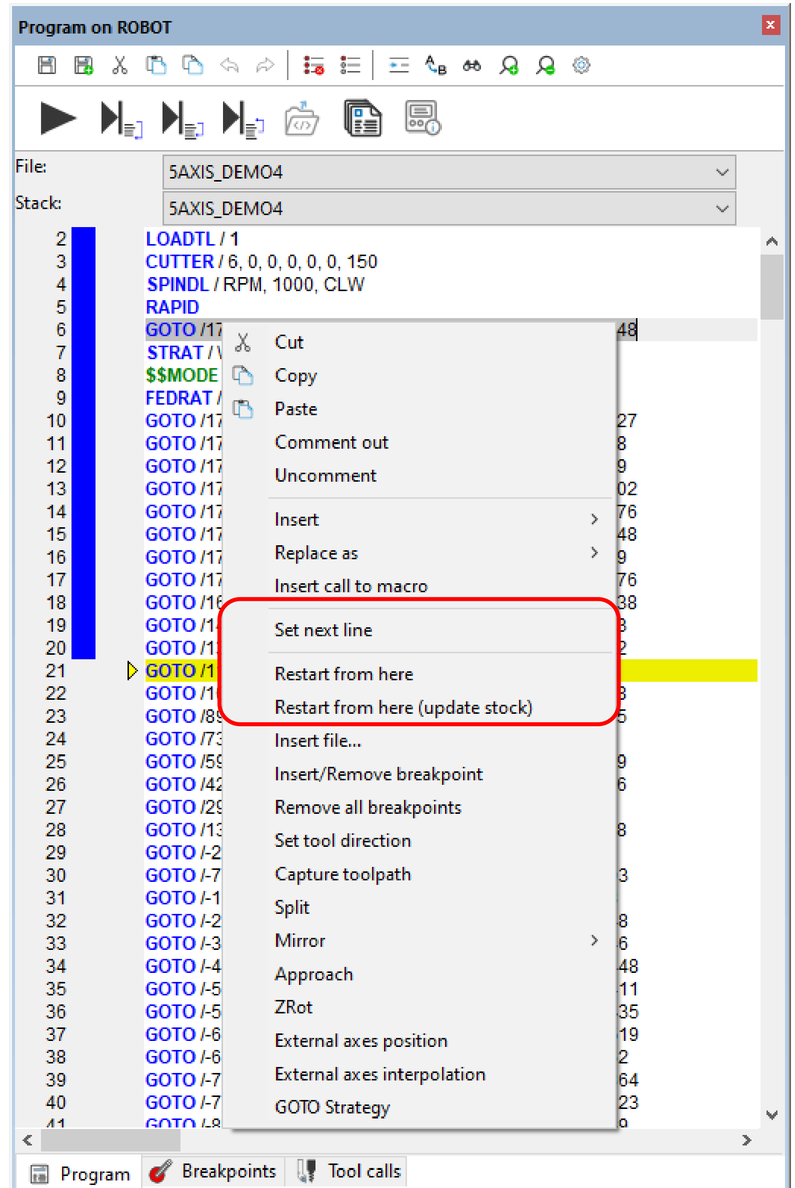
- "**Insert call to macro**": insert the call to a macro from the controller macro list before of the current selected line the current APT.



7.3. SET NEXT LINE / RESTART FROM HERE

Right-click on a single line in the program

- "**Set next line**": the simulation will come back to the selected line without re-simulating the APT program, neither checking collision or updating the raw model.
- "**Restart from here**": the APT program will be re-simulated from the beginning, without considering collision checking. The simulation will automatically stop on the selected line and the raw model will not be updated.
- "**Restart from here (update stock)**": the APT program will be re-simulated from the beginning. The simulation will automatically stop on the selected line and the raw model will be updated, considering the changes made to the program.



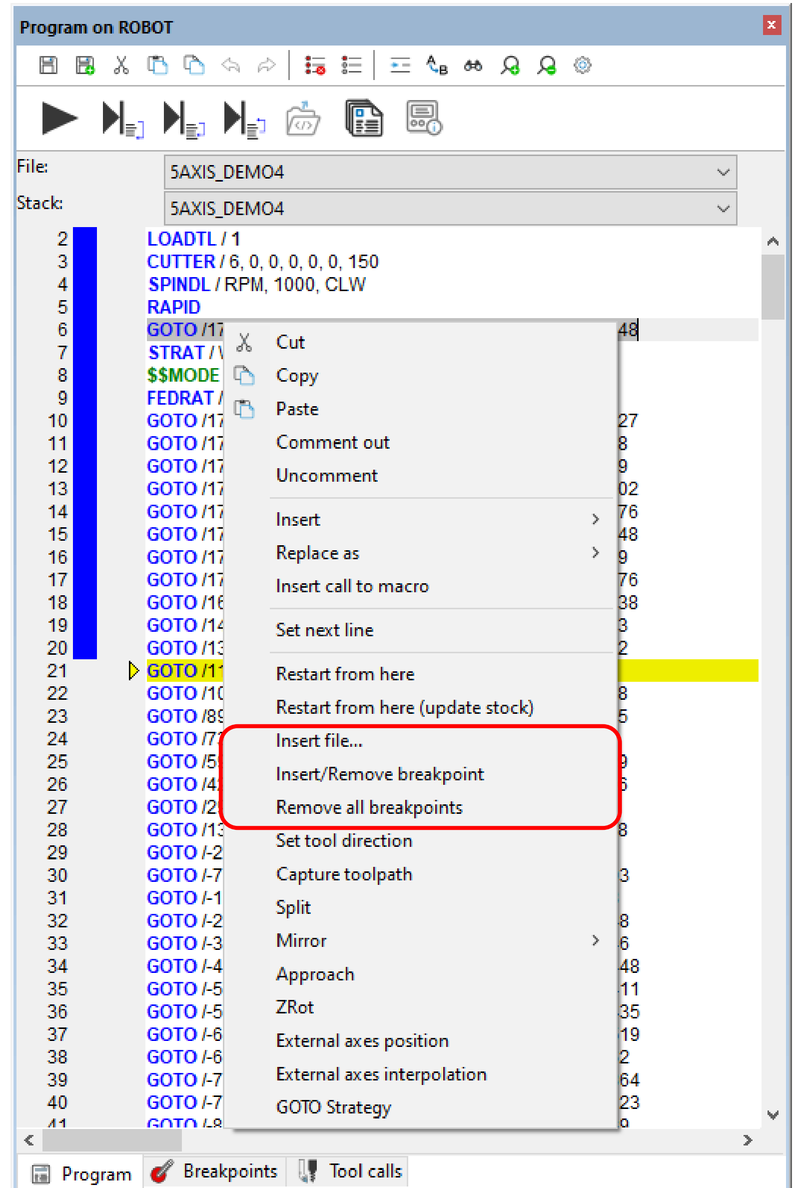
7.4. INSERT FILE / INSERT OR REMOVE BREKPOINTS

Right-click on a single line in the program

- "**Insert file...**": insert text lines from an external file before the selected line in the APT program.

- "**Insert/Remove breakpoint**": insert or remove a breakpoint in the selected line of the APT program.

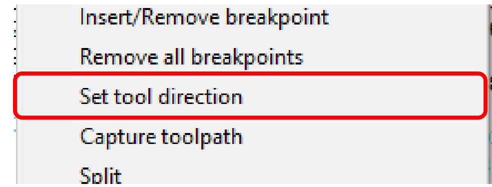
- "**Remove all breakpoints**": remove all breakpoints in the program editor.

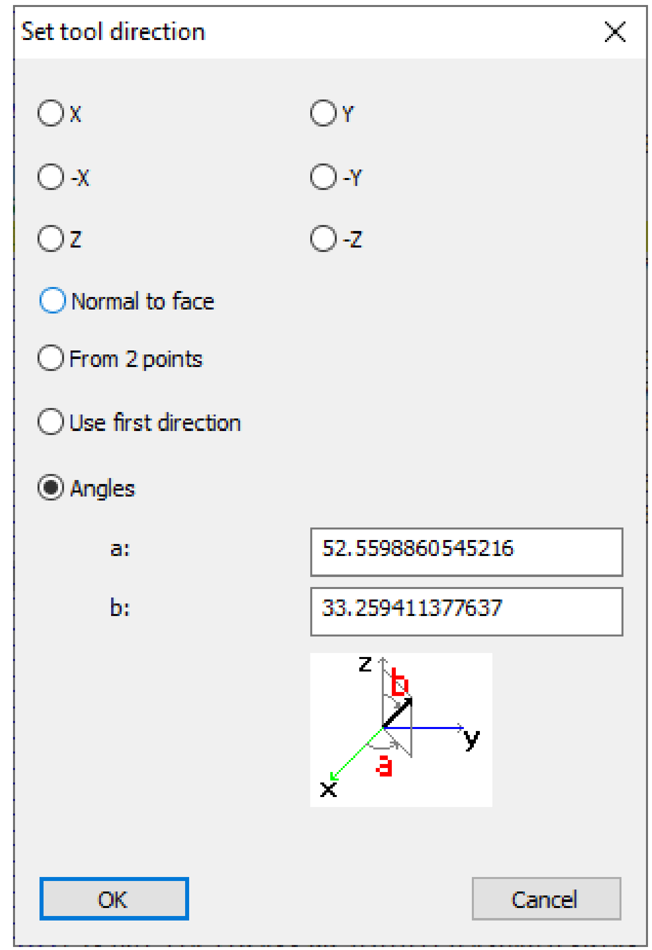


7.5. SET TOOL DIRECTION

Modify the tool direction of the selected line(s) using one of the following option.

- Set the tool direction along an axis of the current work OBJECTFRAME (X, Y, Z, -X, -Y, -Z).
- Set the tool direction normal to a face.
- Set the tool direction selecting two points of a segment.
- If more lines are selected, set the tool direction of the first selected line in all the following selected lines.
- Set the tool direction using two angles referred to the current work OBJECT FRAME.





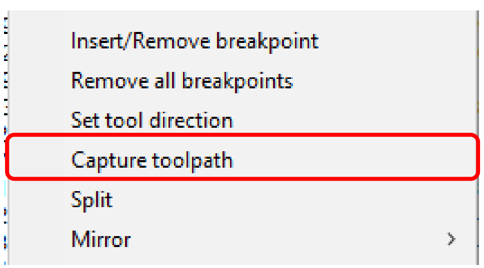
7.6. CAPTURE TOOLPATH

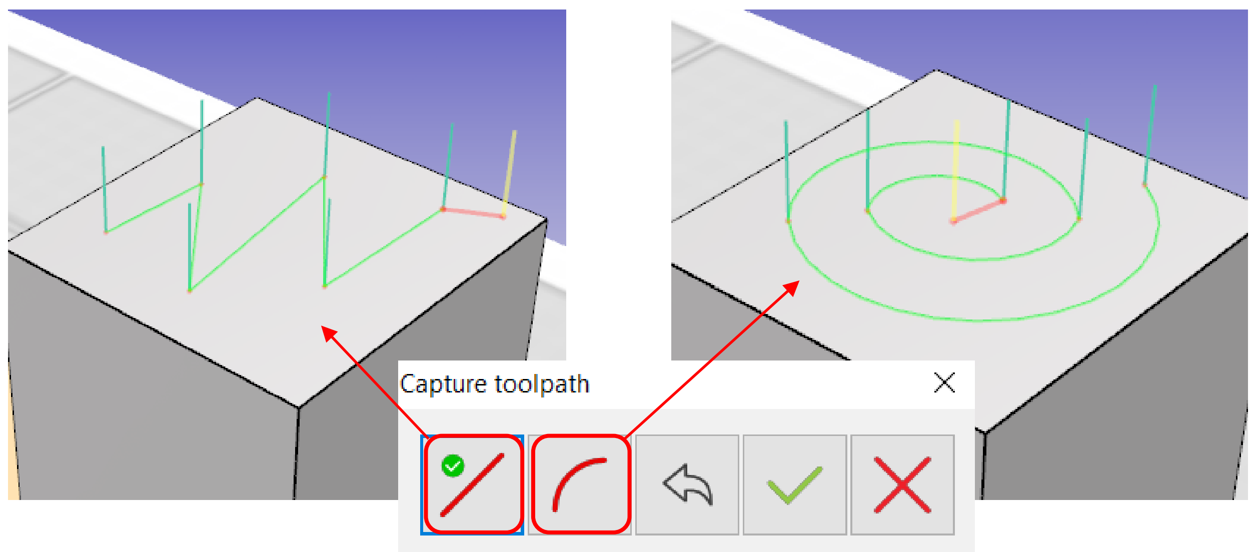
Right-click on a single line in the program

Insert movements lines before the selected line capturing the toolpath as polyline, arcs or a combination of both.

- Linear movements will be converted in GOTO commands.
- Arc movements will be converted in CIRCLE commands.

The tool direction is automatically set normal to the captured point plane.





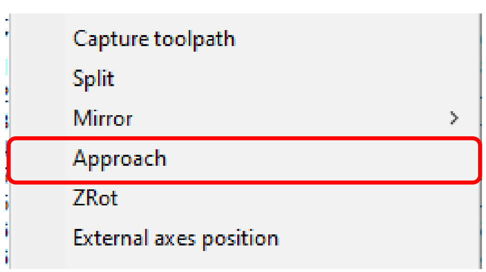
7.7. APPROACH

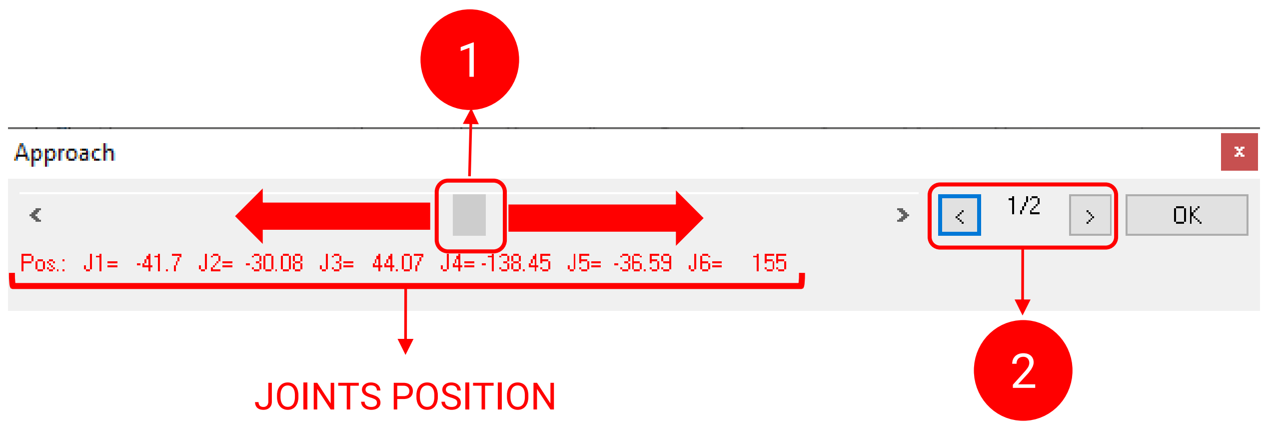
Right-click on a single line in the program

Choose the robot joints configuration and position to reach the selected point. Red value represents axis value.

1. Slide the bar to change the joints position in the current configuration.
2. «i/n» values represent the current i configuration on n configurations available for the selected point.

After this command, use "Insert/ Replace as" MOVEJ command to save the choosen approach in the APT program.
Changing the axis configuration is possible to solve some problems (mainly in on approach moves) as singularity, collision and others.





7.8. ZROT

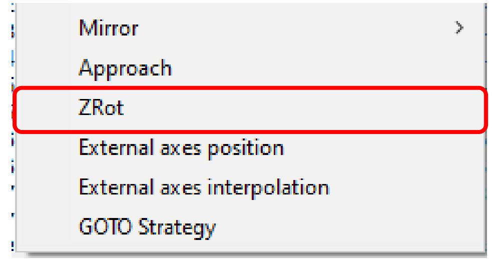
Right-click on a single line in the program

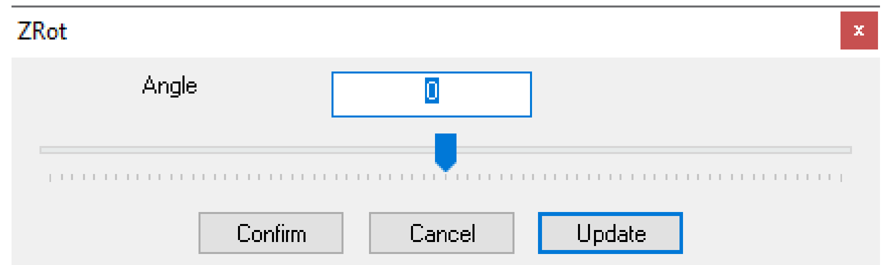
Rotate the robot wrist around TOOLFRAME Z axis.

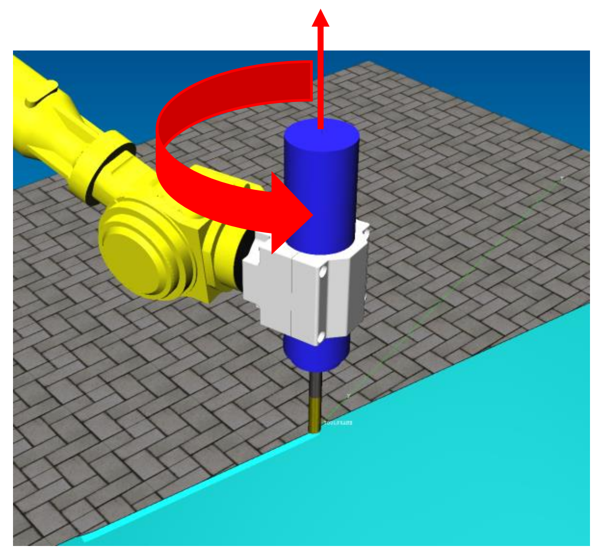
- Type the value in degrees or slide the bar to select rotation angle.

- Click confirm to update automatically the current selected line and save the change in the APT program.

Rotating the robot writst around TOOLFRAME Z axis is useful to solve singularity or collision issues.







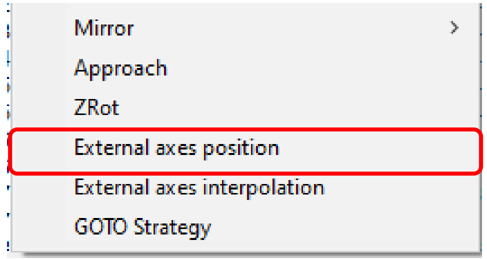
7.9. EXTERNAL AXIS POSITION

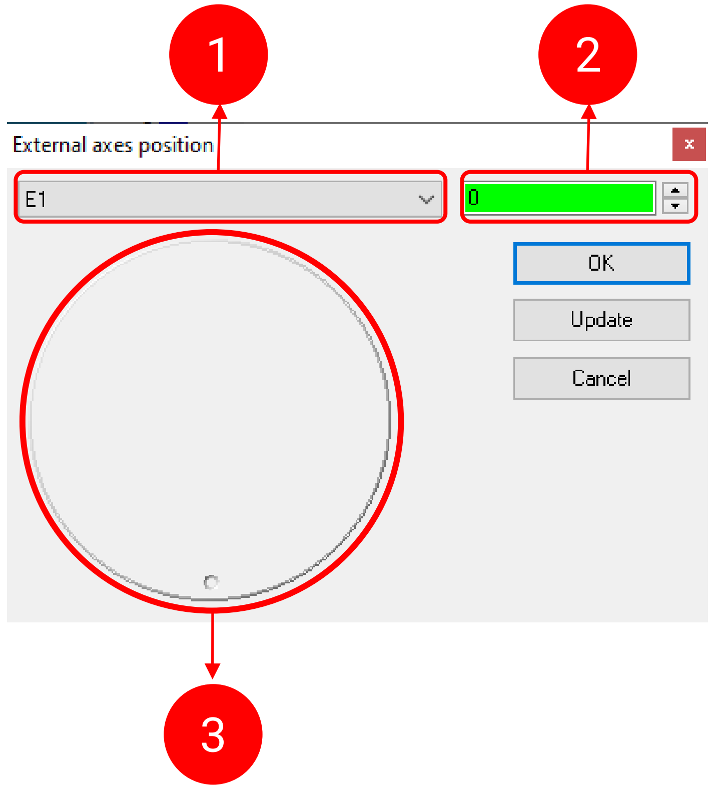
Right-click on a single line in the program

Choose the external axis position to reach the current selected point

- Set the axis that need to be changed on combo list 1.
- Set the axis position value on text box 2 or slide the controller 3.

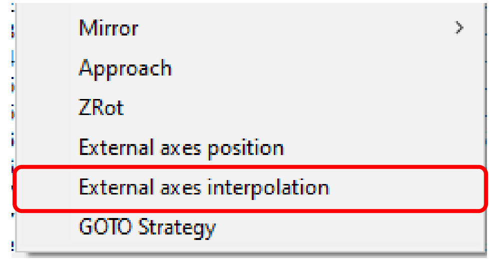
After this command, use "Insert/ Replace as" command (with external axis declared) to save the choosen position in the APT program.





7.10. EXTERNAL AXIS INTERPOLATION

Right-click on a single line in the program



Set the external axis interpolation strategy.

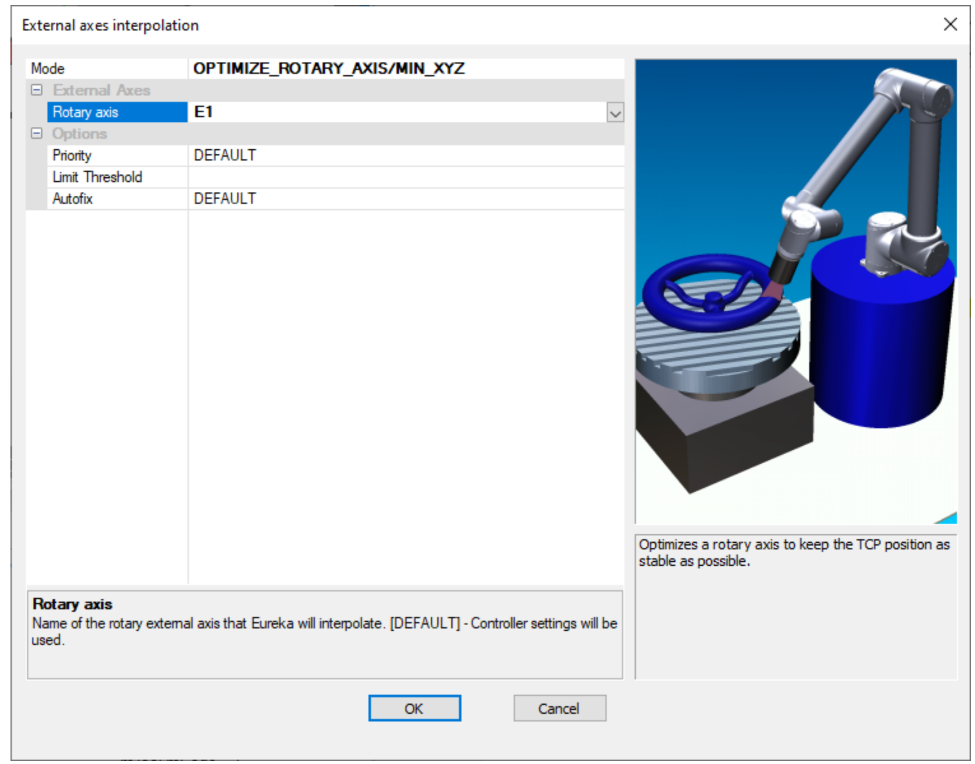
- Select the intepolation strategy from the combo list.

- Select the external axis that should be interpolated.

- Set the strategy parameters.

- Press OK to confirm an insert the MODE/INTERP command in the selected line.

If no interpolation strategy is choosen, the external axis will remain constant at their initial position.



7.10. EXTERNAL AXIS INTERPOLATION

1. OPTIMIZE_ROTARY_AXIS/MIN_XYZ
2. OPTIMIZE_TRACK/MIN_ROBOT_CHANGES
3. OPTIMIZE_ROTARY_AXIS/MIN_ORI
4. OPTIMIZE_TRACK/ALIGN_ROBOT_BASE
5. OPTIMIZE_TRACK/ALIGN_ROBOT_WRIST
6. OPTIMIZE_GANTRY
7. SPINNING_AXIS
8. OPTIMIZE_ROTARY_AXIS/ECCENTRIC_TURNING
9. OPTIMIZE_2-AXES_POSITIONER/UPDIR
10. OPTIMIZE_PART_SLIDER
11. OPTIMIZE_TRACK_ROTARY_AXIS/MIN_XYZ
12. OPTIMIZE_TRACK/ALIGN_ROBOT_BASE _ROTARY_AXIS/MIN_ORI
13. OPTIMIZE_TRACK_ROTARY_AXIS/MIN_ORI

7.11. GOTO STRATEGY

Right-click on a single line in the program

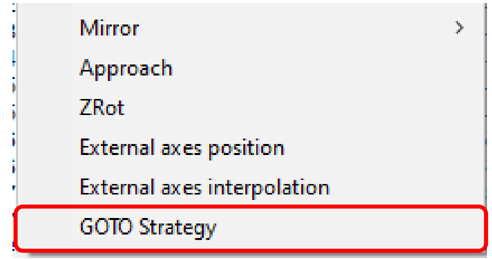
Set a strategy to orient the TOOLFRAME axis direction for GOTO moves.

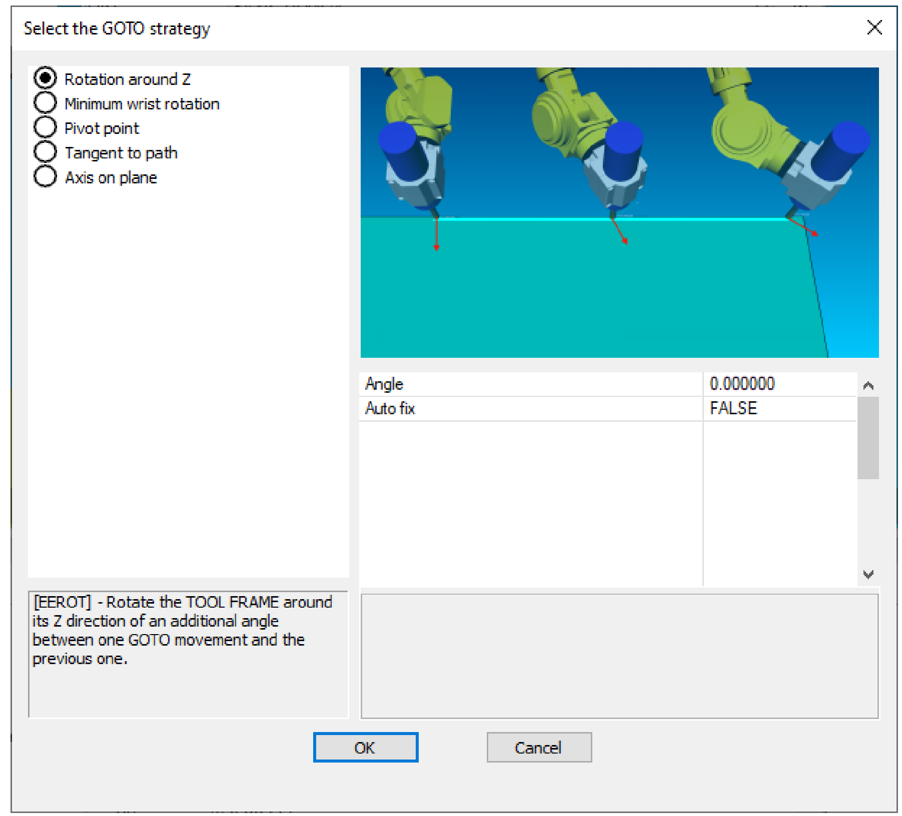
- Select the intepolation strategy from the list on the left.

- Set the strategy parameters.

- Press OK to confirm an insert the STRAT command in the selected line.

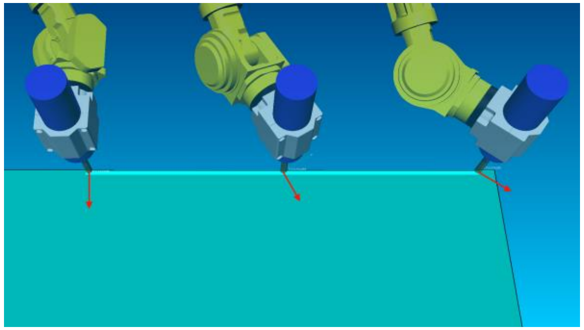
The default strategy is minimum rotation around the TOOLFRAME Z axis (EEROT strategy with 0 angle).



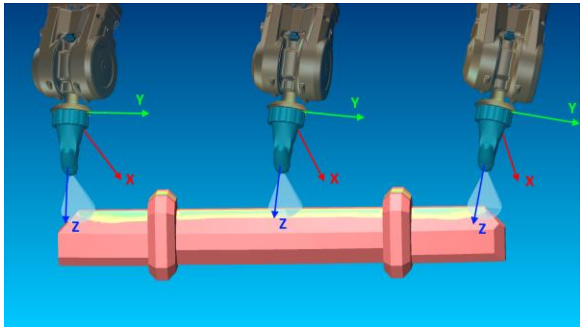


7.11. GOTO STRATEGY

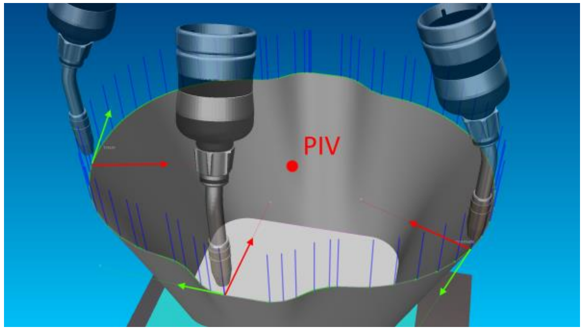
Rotation around Z



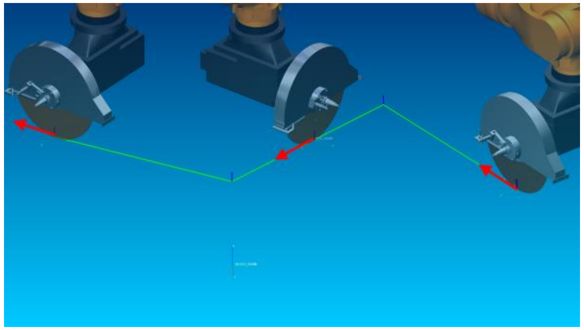
Minimum wrist rotation



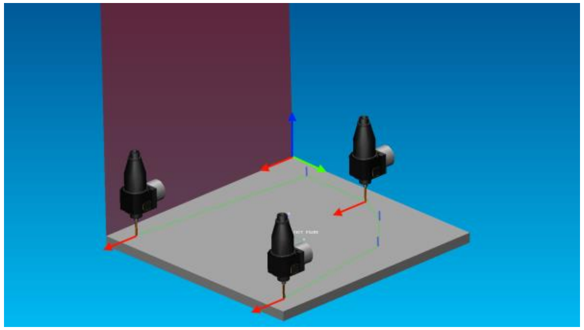
Pivot point



Tangent to the path



Axis on plane



7.12.ROTATE/TRANSLATE

Right-click on multiple lines in the program

Apply to them one or more of the following transformations.

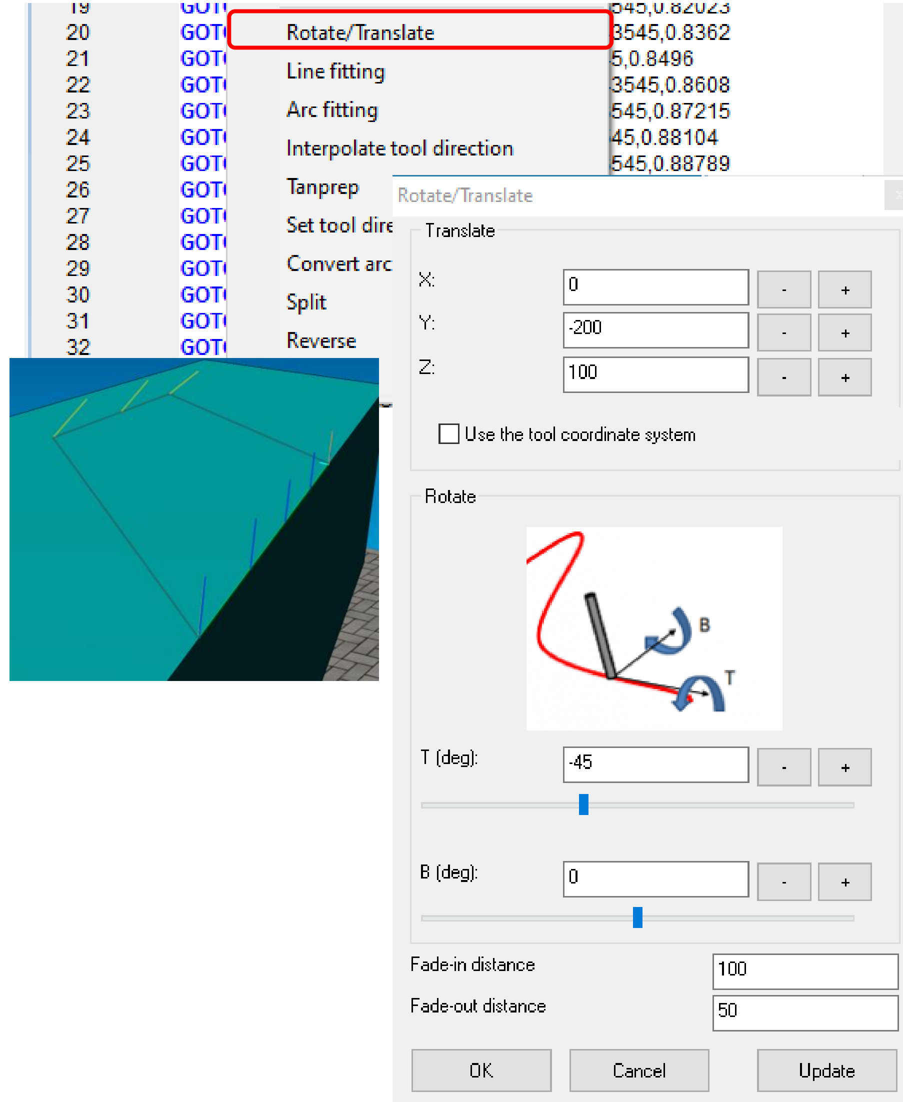
- Translate:
  Translate the selected lines along X, Y and Z axis of the current work OBJECT FRAME or the current TOOL FRAME is the flag is enabled.

- Rotate:
  Rotate the selected lines around their tangent (T-value) and normal (B-value) versors.

- Fade-in/Fade-out:
  Set the distance from the begininng/the end of the selected toolpath lines to define the range where applies the previous trasformations.

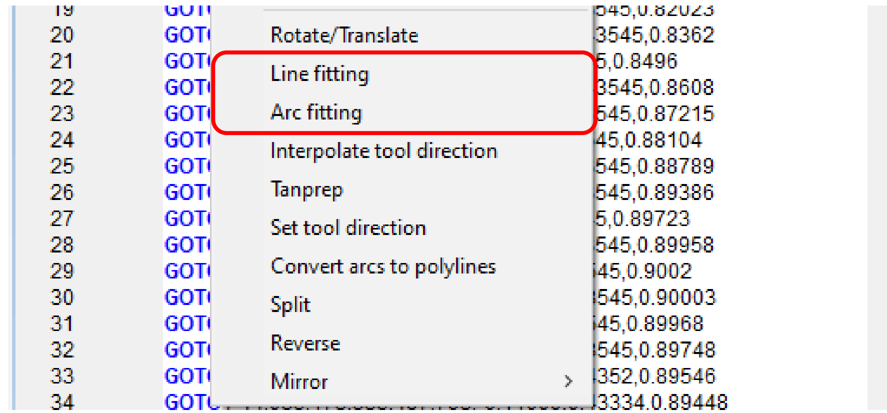
Press Update to see the trasformations preview.

Press Ok to confirm the trasformations.



7.13. LINE / ARC FITTING

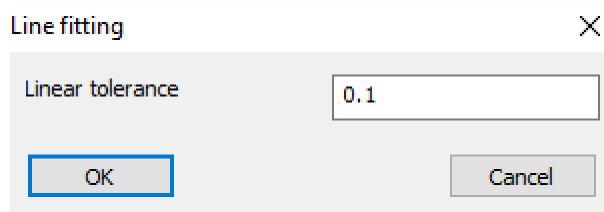
Right-click on multiple lines in the program



Line fitting:

Simplify the selected lines on a new linear tollerence.

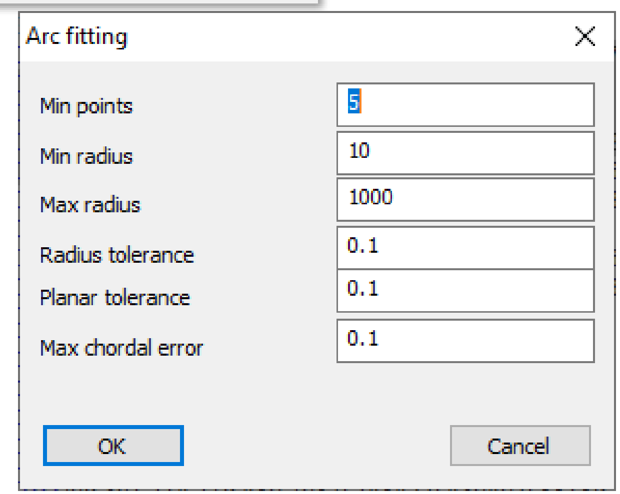
- Enter the linear tolerance in millimeters.
- Click on «Ok» to perform the calculation.



Arc fitting:

Simplify the selected lines on new arc tollerence.

- Enter the arc fitting parameters.
- Click on «Ok» to perform the calculation.



7.14. INTERPOLATE TOOL DIRECTION/ TANPREP/ CONVERT ARCS

Right-click on multiple lines in the program

Interpolate tool direction:

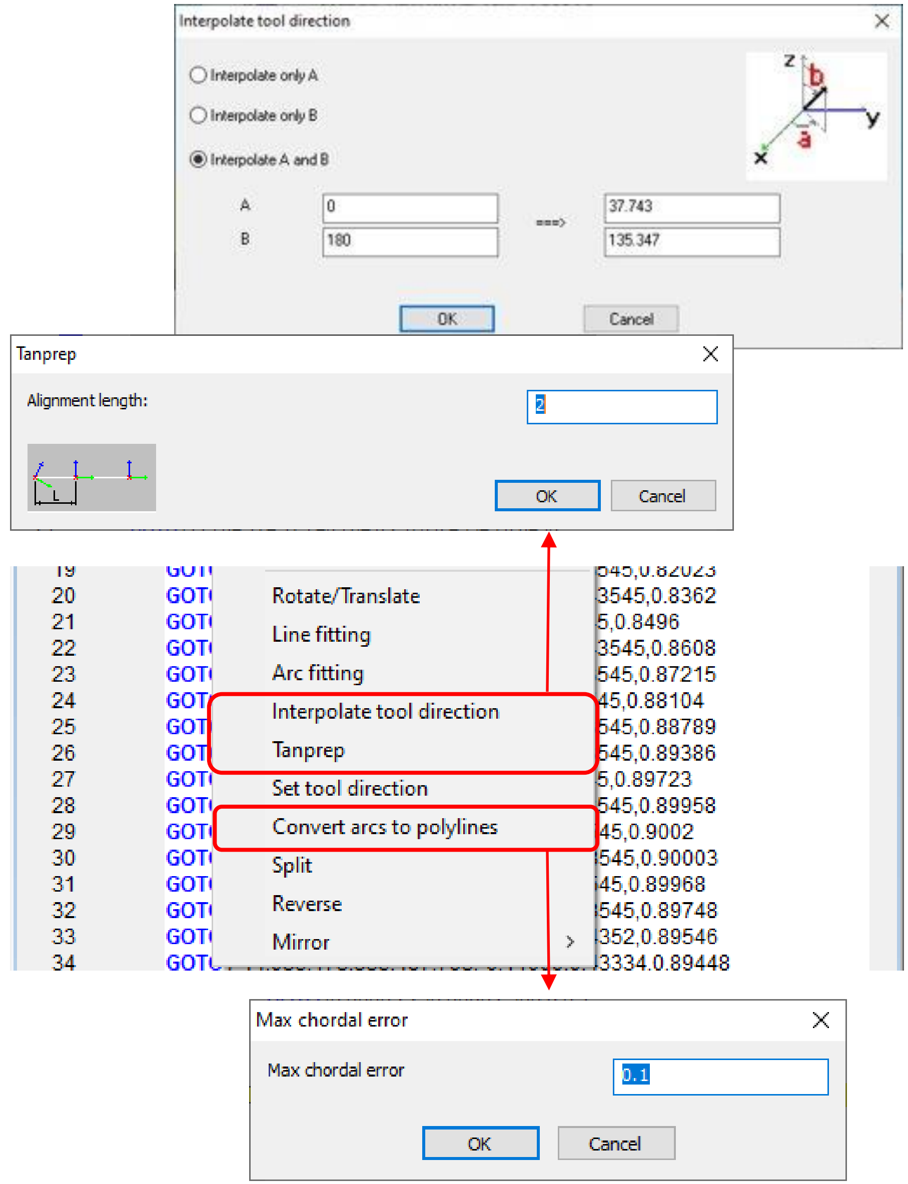
Interpolate the tool direction of the selected line(s) between the initial and the final tool direction. Both tool directions angles can be modified.

Tanprep:

Split the movements in 2 parts to create an initial short segment where the tangent GOTO strategy can align correctly the TOOLFRAME orientation.

Convert arcs to polylines:

Converts arcs to polylines after the max chordal error is set for the conversion.



7.15. SPLIT/ REVERSE / MIRROR

Right-click on multiple lines in the program

Split:

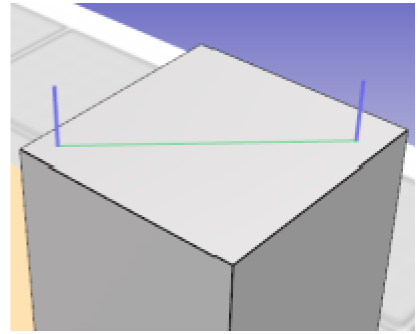
Split the selected toolpath lines of a splitting step.

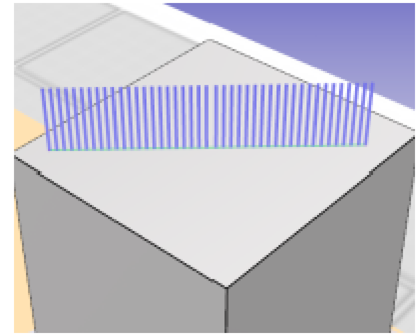
Reverse:

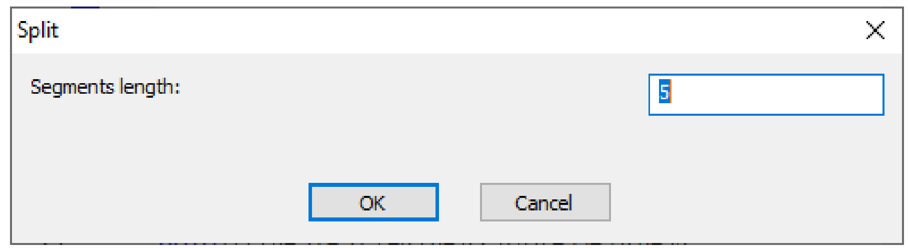
Revert in the toolpath the selected lines from the last to the first one.

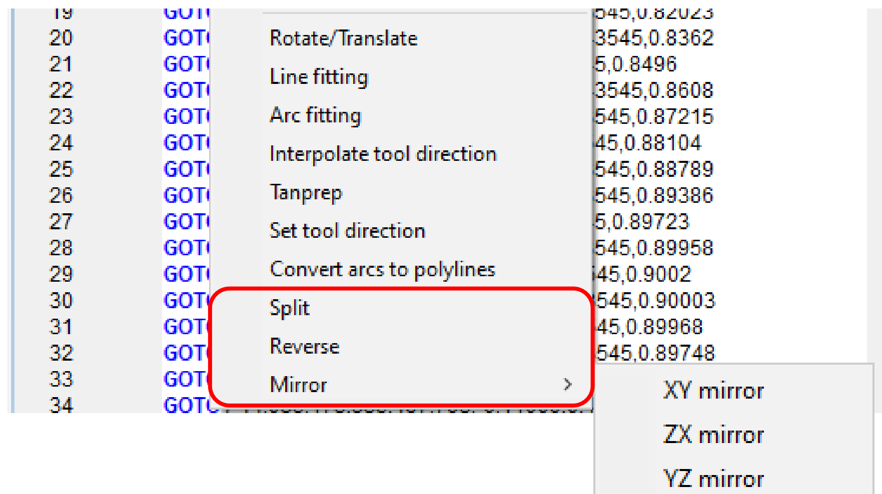
Mirror:

Mirror the selected lines respect a reference plane of the work OBJECT FRAME.







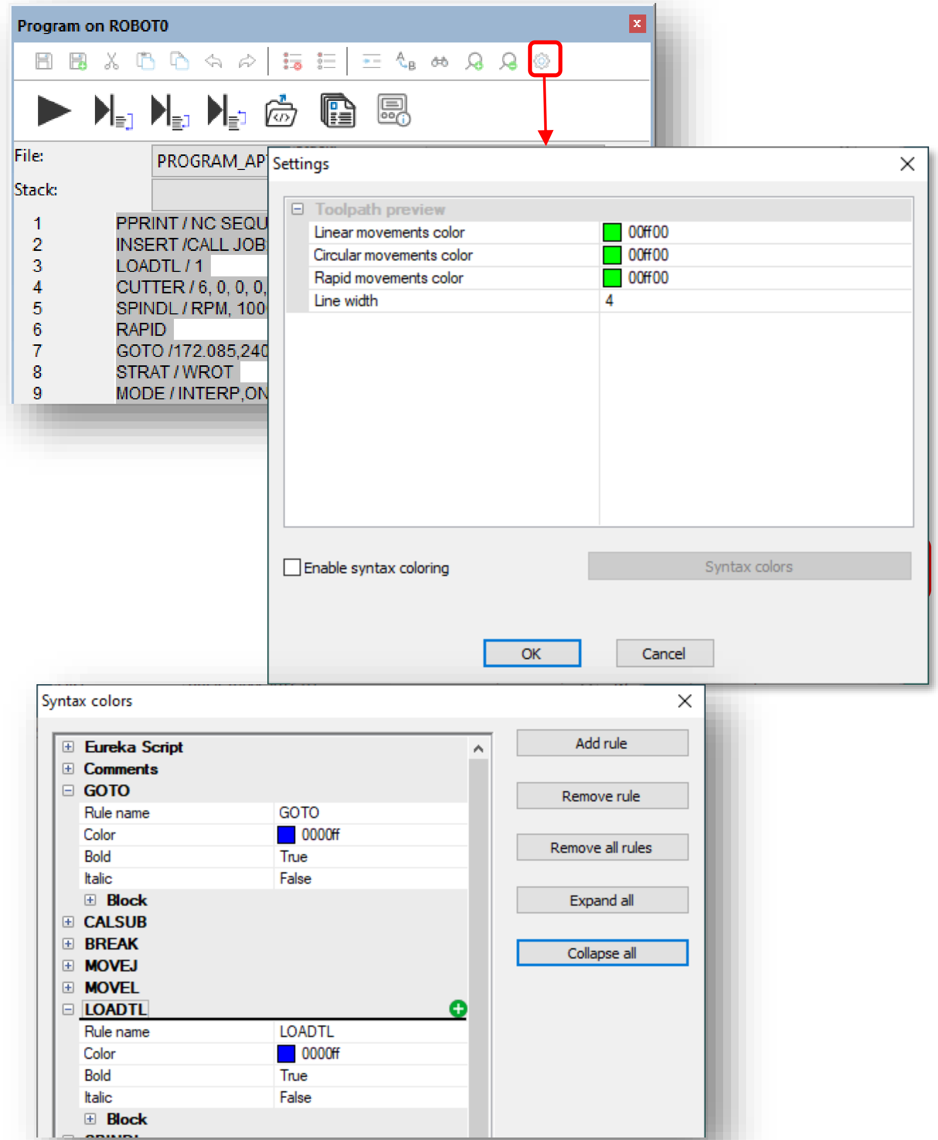


7.16. SYNTAX COLORING

- Click the "Settings" icon in the program window.
- "Enable syntax coloring".
- "Ok".

CHANGE THE COLOR OF THE SYNTAX:

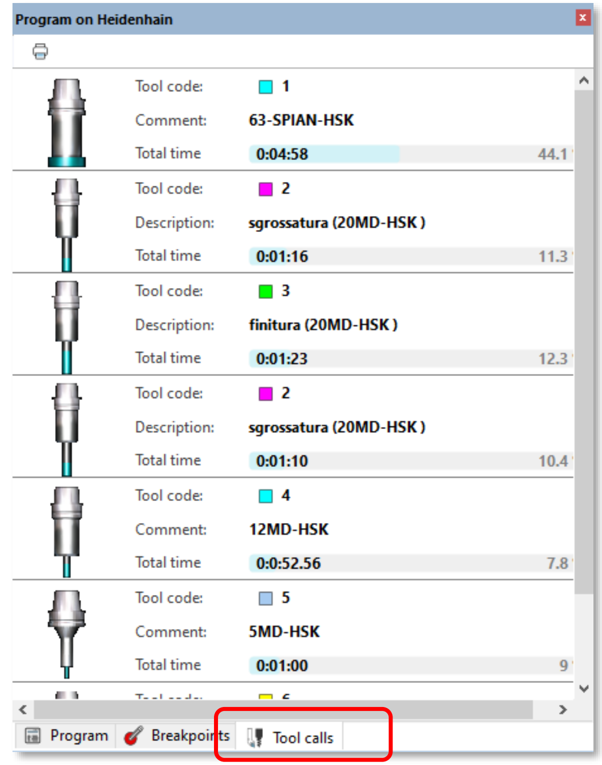
- Click the "Settings" icon in the program window.
- "Syntax Colors".
- Click on «Syntax Colors» to modify the single rules associated with groups of numbers and/or letters.

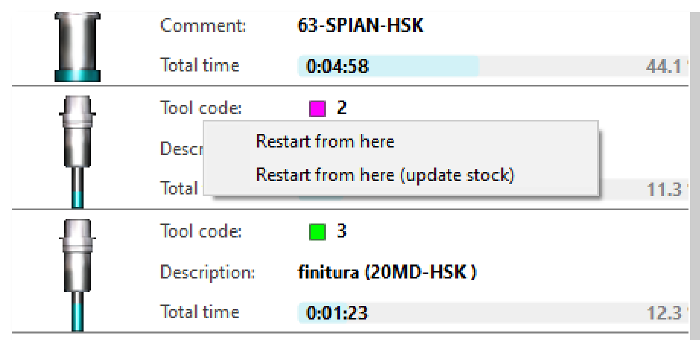


7.17. TOOL CALLS

- Click on the "Tool Calls" menu to view the list of all tools used up to that point by the simulated program.
- Right-click on one of the listed tools and select "Restart from here" or "Restart from here (update stock)“.

Then, the list can be printed by clicking on the relative icon.





8. FUNCTIONS

8.1.Measures

8.2. Compare machined stock with finished

8.1. MEASURES

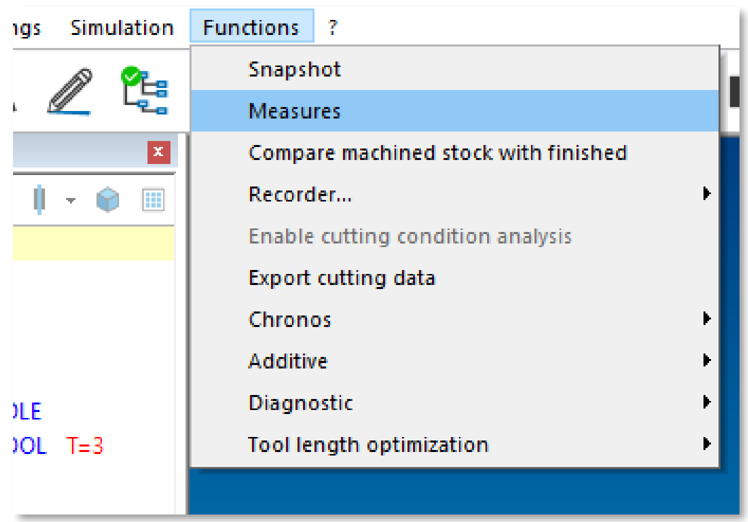
- "Functions" menu
- "Measures"

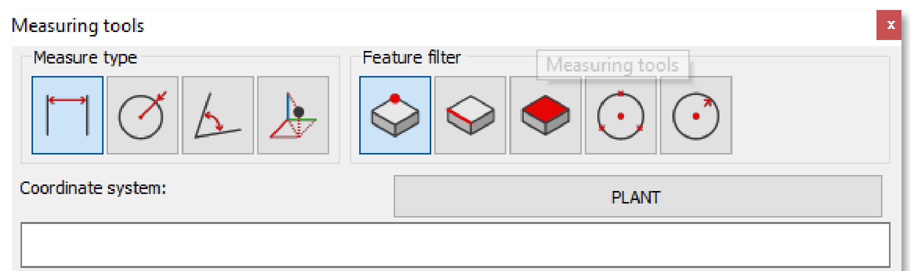
In the section on the left you can select the type of measurement:

- Distance
- Diameter
- Angle
- Position of a point with respect to an element of the kinematics.

In the right section you can select the filter for the selection:

- Summit
- Edge
- Face
- Center for three points



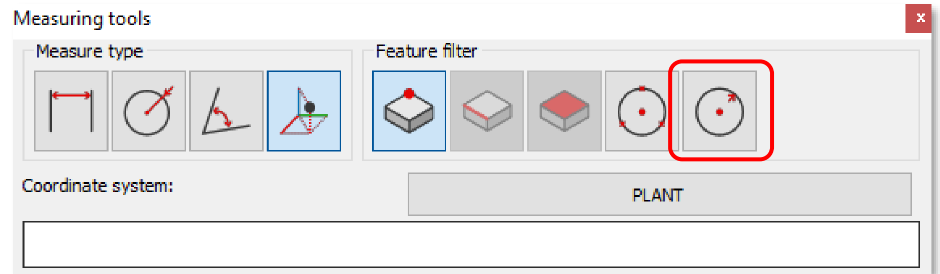


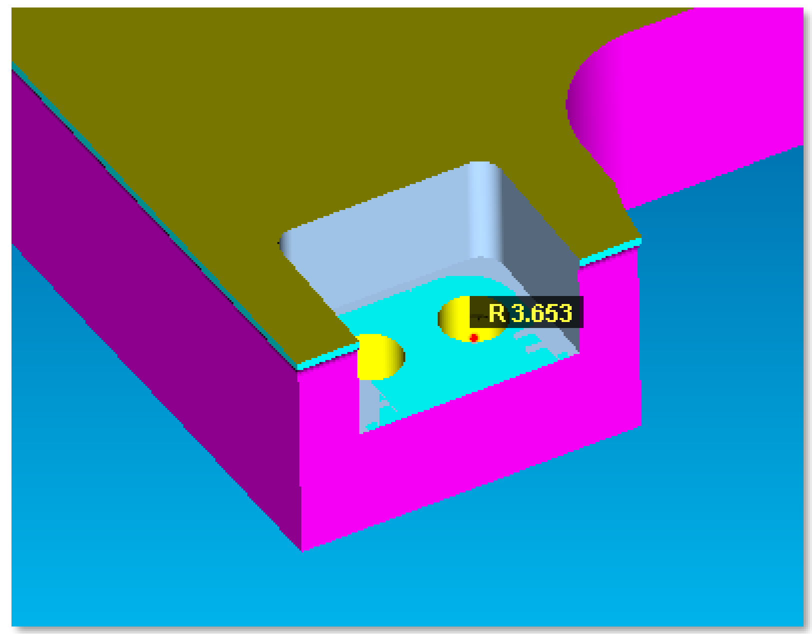
8.1. MEASURES

MEASUREMENTS IN THE STOCK WINDOW:

- Click the “Stock Window" icon.
- "Functions > Measures"
- Choose the "Center of a circle" selection filter
- Place the cursor on the circumference of a circle or on the side of a cylinder.

Eureka will show the radius of the detected circle.

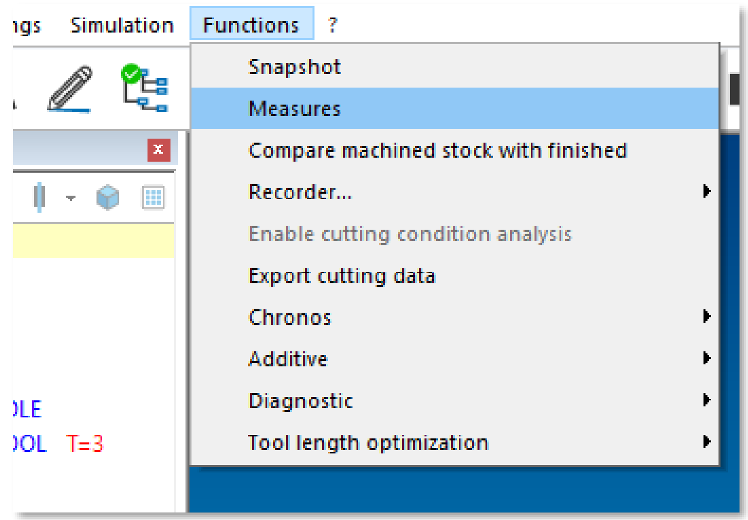


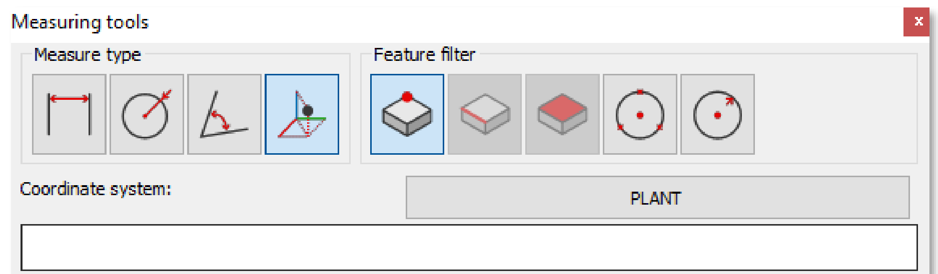


8.1. MEASURES

The "Coordinate system" option is used to determine the position of a point.

- Select the type of measurement "Position of a point"
- Click the button to the right of "Coordinate system" to select a different reference system from which to take the distance.
- Click on the point you are interested to analyze.
- In the part below "Coordinate system" the obtained values will be shown.





8.2. COMPARE MACHINED STOCK WITH FINISHED

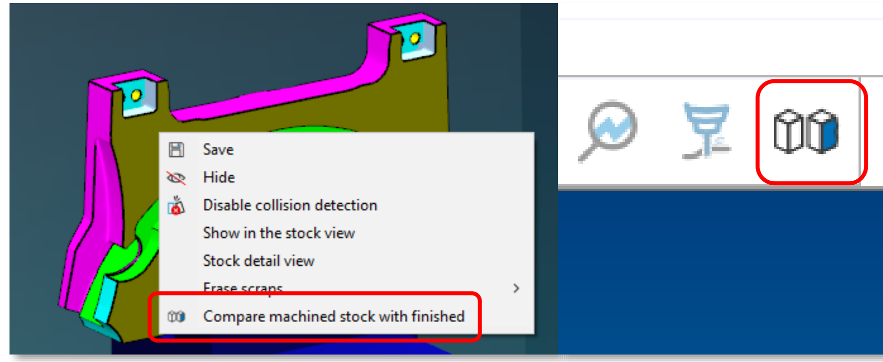
At any time during the simulation, without interrupting it, it will be possible to make a quick comparison between the machined stock and the finished part.

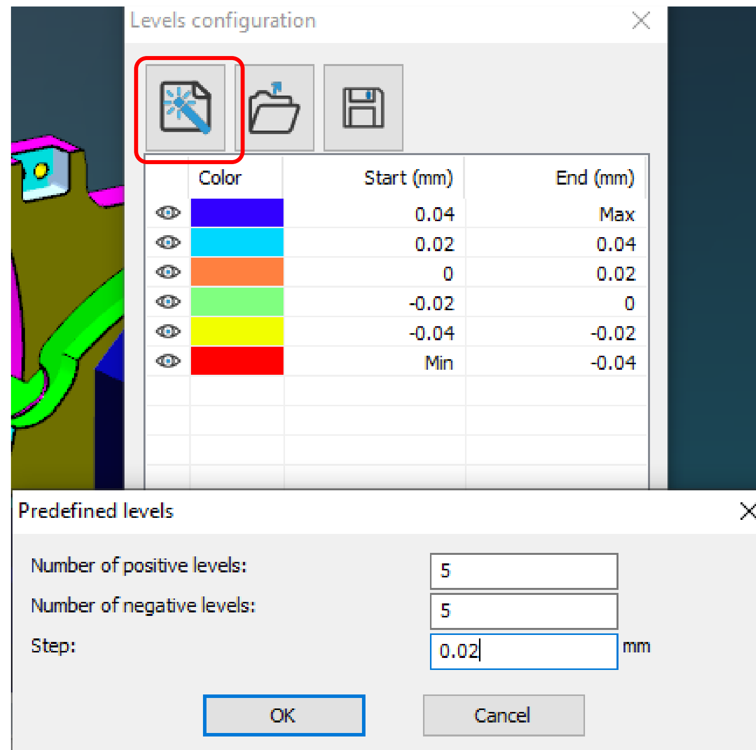
A color scale will help the user to identify areas where more material needs to be removed to achieve the desired result or areas where more material than necessary has been removed.

- Left click on the stock model.

or

- Click the "Compare machined blank to finished" icon.
- "Compare machined blank with finished".
- Click on the magic wand icon to specify how many layers the color scale will consist of and what the transition between them will be.
- Confirm to view the result.





8.2. COMPARE MACHINED STOCK WITH FINISHED

Once the color scale and the step between one level and another have been configured, it will be possible to choose whether:

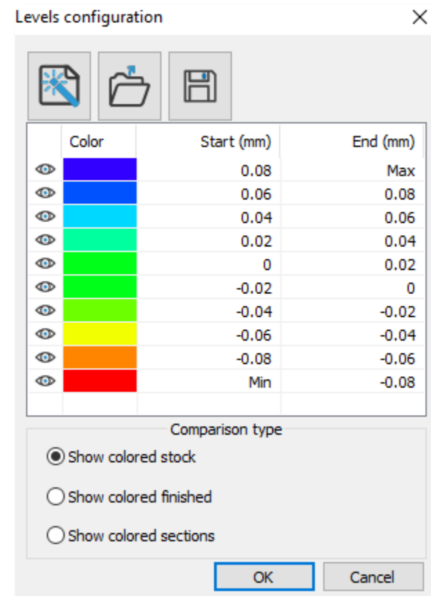
- Color the machined stock.
- Color the finished part.

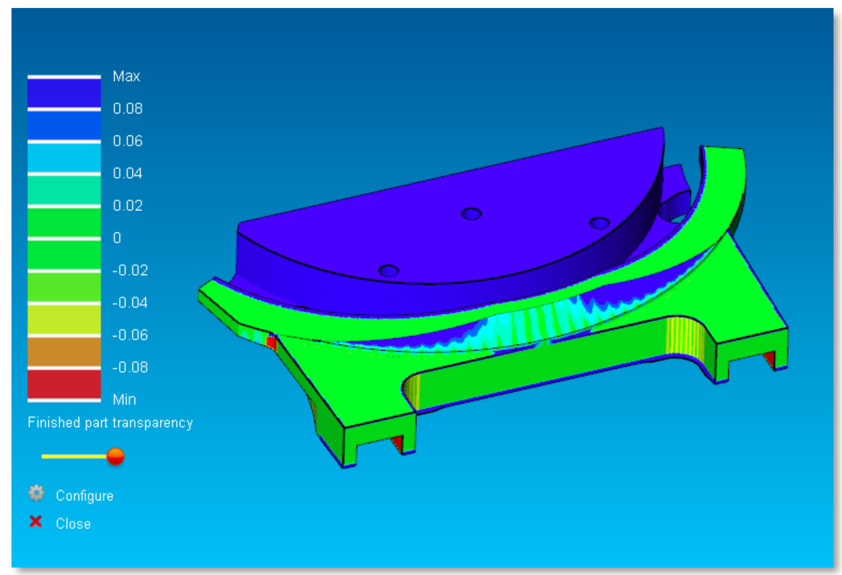
or

- Create sections.

- Click «Ok» to view the result.
- Click on the 3D model to get the distance to the reference part.

Click on «Configure» to return to the configuration window and change the parameters of the comparison or to choose a different staining method.





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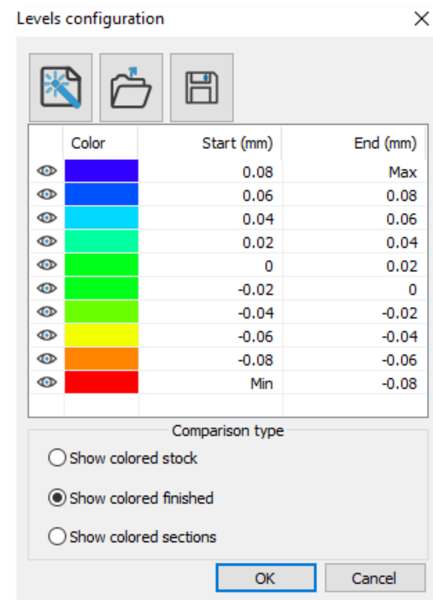
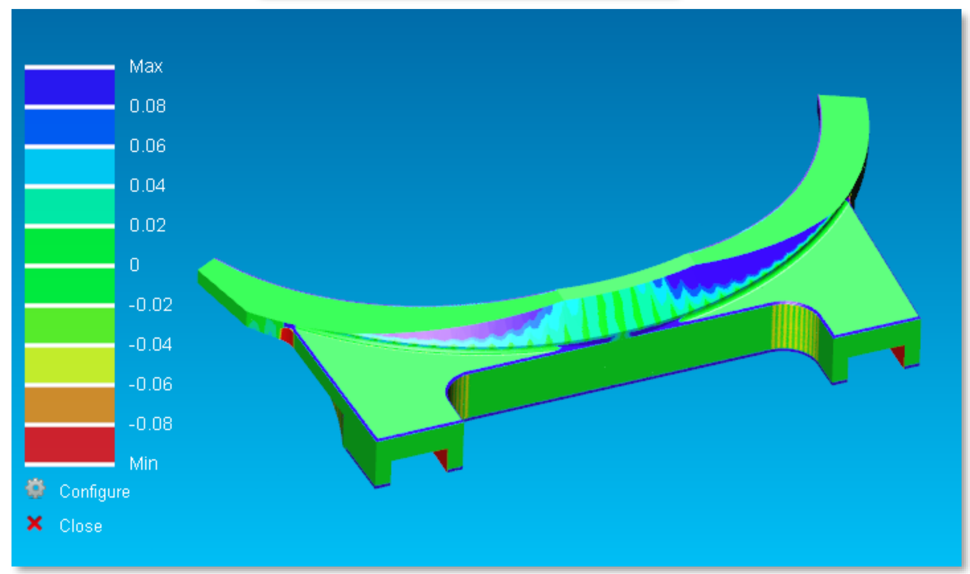


- Click "Ok" to view the result.
- Click on the 3D model to get the distance to the reference part.



Click on «Configure» to return to the configuration window and change the parameters of the comparison or to choose a different staining method.

8.2. COMPARE MACHINED STOCK WITH FINISHED

COLOR SECTIONS:

- Choose "Color Sections".
- "Ok".
- In the "Section Settings" window you can specify the plane on which to make the section.
- Drag the blue bar, under «Distance (mm)», to position the plane used to generate the section.
- "Ok" to view the results.

Enter a number other than 1 in the "Number of sections" field and specify a step to generate multiple sections at the same time.