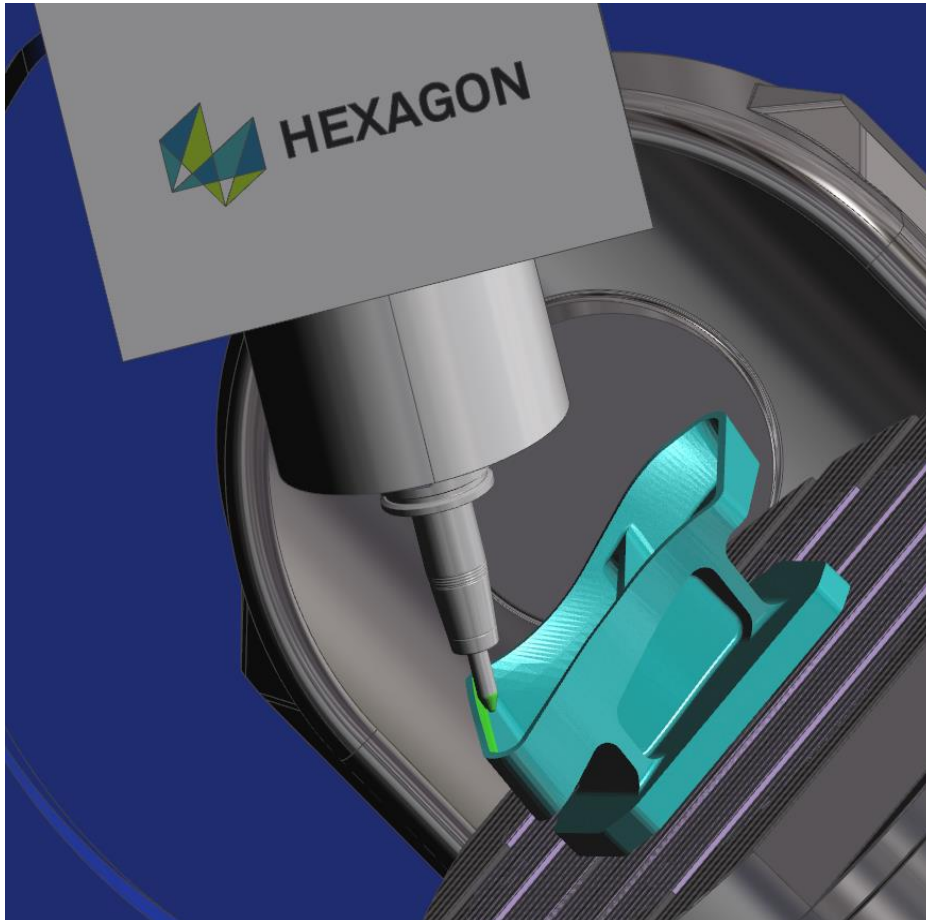




HEXAGON

WHAT'S NEW IN EDGECAM 2024.1



This document highlights new product features and enhancements in EDGECAM 2024.1.

To run EDGECAM 2024.1, the maintenance expiry date in the license must be March 2024 or later.

9 April 2024

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'What's New' Document Overview

Purpose of this Document and Other Sources of Information

The purpose of the document is to highlight new and changed items in the current release. Non-release specific information such as installation and licensing information, system requirements and CAD Links information can be found in the relevant document.

For help with your installation, please refer to the Installation Guide. This is available from the DVD or the Help sub-menu in the EDGECAM program group.

For help with licensing your standalone or network license, please refer to the Licensing Guide. This is available from the Help sub-menu in the EDGECAM program group, the CLS menu and the License Manager dialog.

For information on system requirements and supported CAD systems, please refer to the Installation Guide.

Targeted Information inside EDGECAM and Other Programs

In addition to this document, 'targeted' information on new items is available in the dialog help and user guides for other applications. This allows you to focus on new features/enhancements for a specific program or the cycle you are currently working on, for example.

Dialogs that have new functionality or where the cycle behaviour has changed have an additional 'What's New' tab in the help. This explains what has been added to the dialog or changed in this release.

What's new topic(s) have been added to help files for other programs, such as Code Wizard, Code Generator, and ToolStore etc. This only lists new functionality for that program, allowing you to focus on those items.

The Development History of EDGECAM

Additional functionality and enhancements are developed with each release of EDGECAM software. For an overview of new features and enhancements in the last release, please refer to [New Features in Version 2023.1](#).

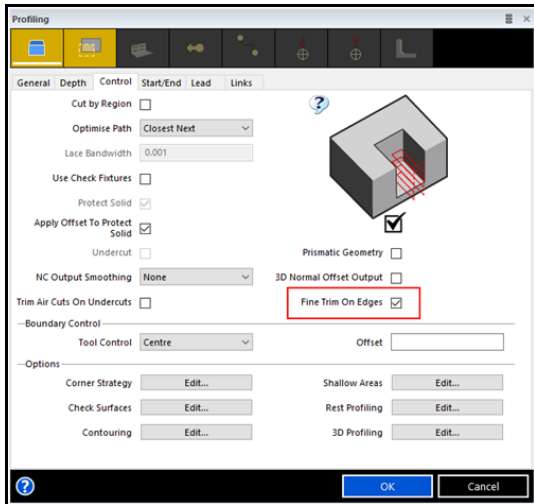
For a summary of new features in previous releases, please visit the [History section of the EDGECAM website](#).



Important Information

Manufacture Enhancements

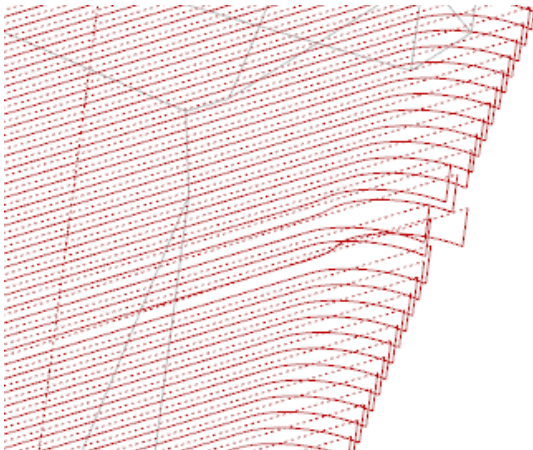
Profiling - Improve toolpath trimming on picked faces



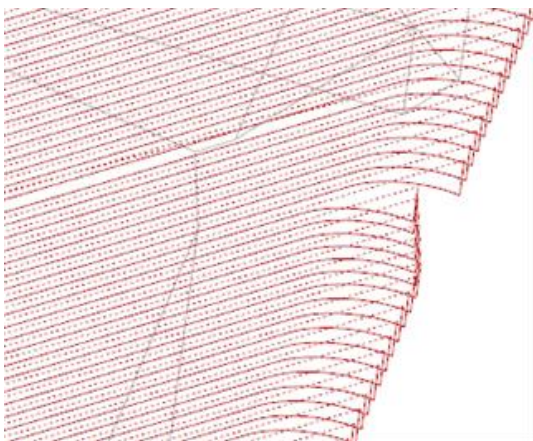
For this release, a new **Fine Trim On Edges** option has been added to the Control tab.

When profiling with **Pick Solid Faces** selected, the trimming against the solid can be improved by selecting the **Fine Trim On Edges** option. This can even out the lead on/off moves.

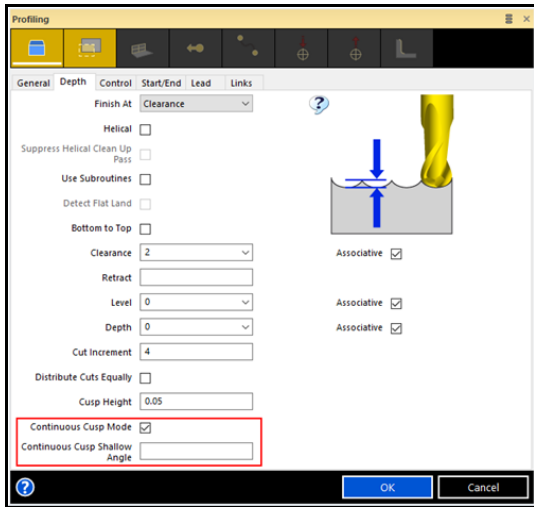
Disabled



Enabled



Profiling - Continuous Cusp Mode



For this release, a new **Continuous Cusp Mode** option and associated **Continuous Cusp Shallow Angle** modifier have been added to the Depth tab.

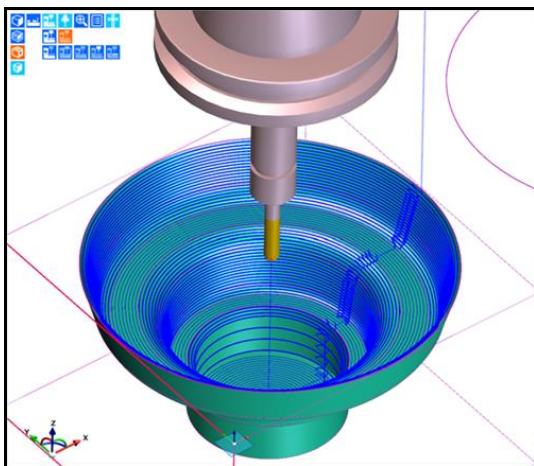
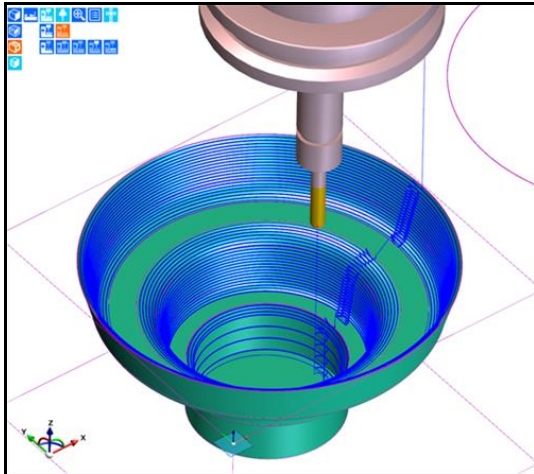
The **Continuous Cusp Mode** option maintains a Cusp Height everywhere on the feature which:

- Is beneficial for a wall with a shallow.
- Works only with a single wall feature.

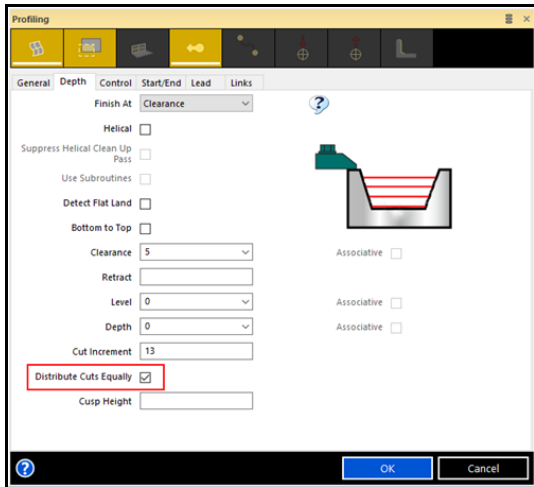
The associated **Continuous Cusp Shallow Angle** modifier:

- Defines the angle to horizontal defined by 2 adjacent passes.
- Reorders shallow passes to approach the upper steep region from outside.
- No reordering, by default.

The cycle can be applied to Wireframe contour walls or Nested Pocket or Boss Features.

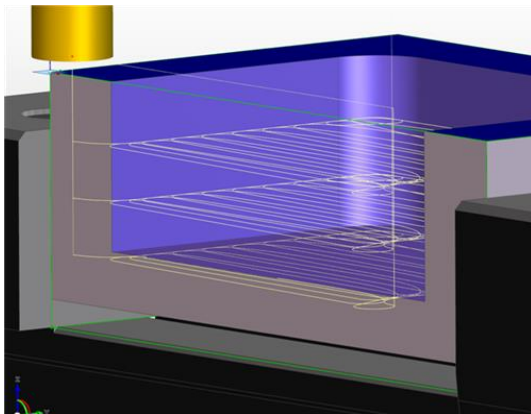
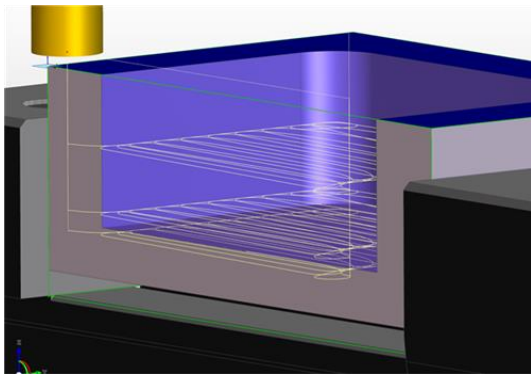


Profiling - Distribute Cuts Equally

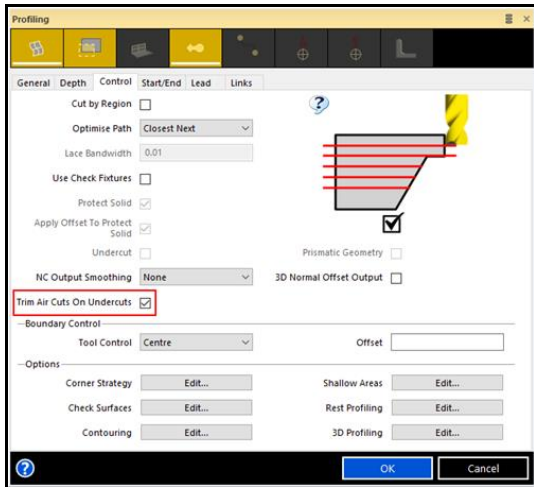


For this release, a new **Distribute Cuts Equally** modifier has been added to the Depth tab.

Often, the **Cut Increment** does not divide evenly across the depth of the part, leaving a thin last cut. When **Distribute Cuts Equally** is enabled, the **Cut Increment** is reduced ensuring that the last cut is equal to the previous cuts. The cycle will still contain the same number of levels and the cycle time will be approximately the same.



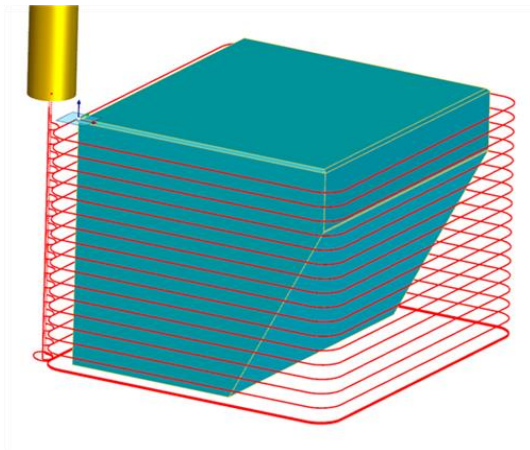
Profiling - Trim Air Cuts On Undercuts



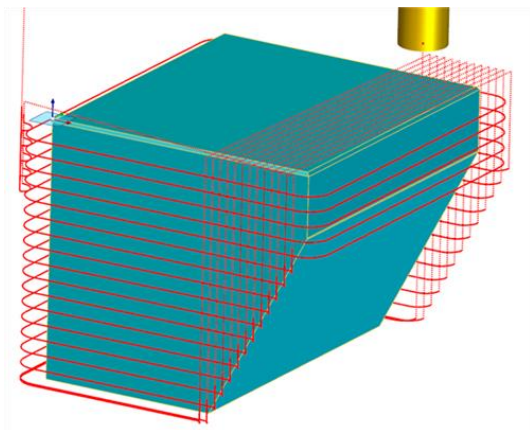
For this release, a new **Trim Air Cuts On Undercuts** modifier has been added to the Control tab.

This option will remove parts of machining segments corresponding to overhanging surfaces and, therefore, prevent air machining.

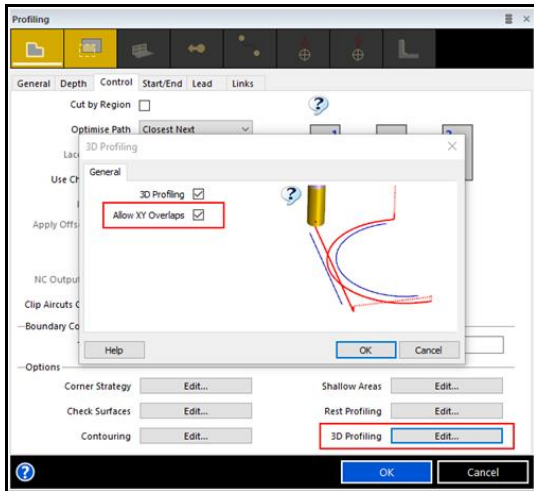
Disabled



Enabled



Profiling - Allow XY Overlap

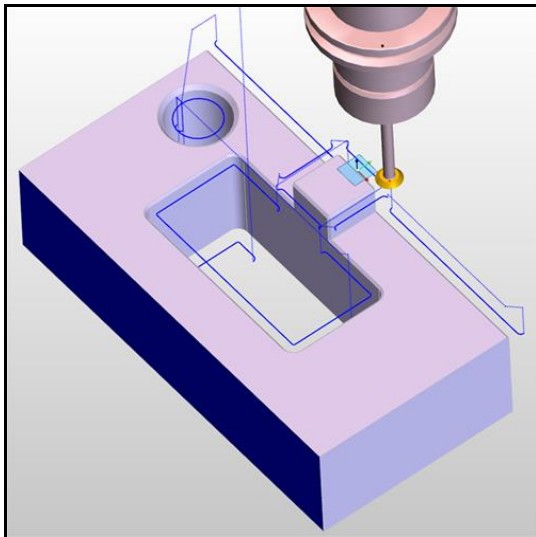


For this release, a new **Allow XY Overlap** modifier has been added to the Control tab which can be used when **3D Profiling** for wireframe is enabled:

- When selected, all edges are machined. This is potentially unsafe unless check surfaces are also selected.
- Deselect to remove overlaps in the XY projection, which is the normal behaviour, but may leave some edges under machined.

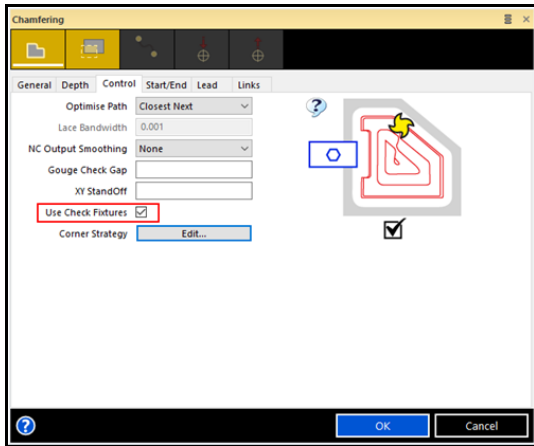
To simplify the dialog, the **Allow XY Overlap** and **3D Profiling** options have been placed in a **3D Profiling** dialog button to highlight their dependency.

Chamfering - Double Angled cutter applied to top and bottom edges

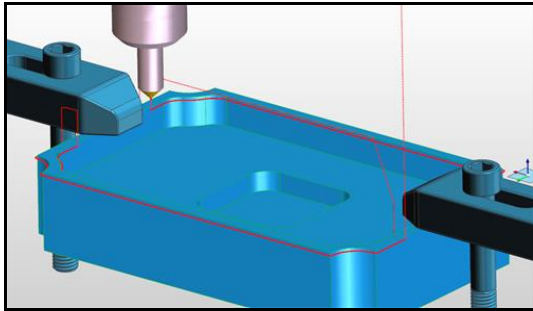


For this release, the Chamfering cycle has been improved. Chamfers on both the top and bottom of through pockets can now be machined in one cycle with a Double Angled cutter.

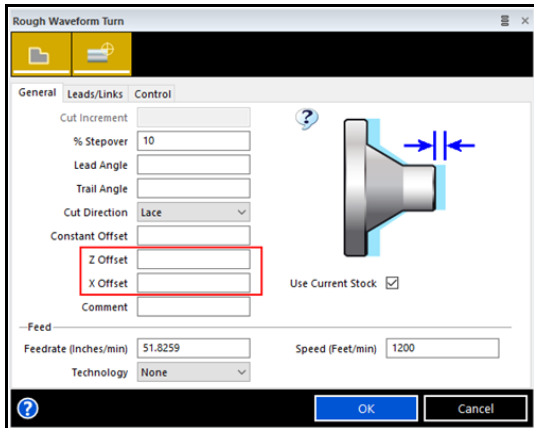
Chamfering - Implement Check Fixture support



For this release, a new **Use Check Fixtures** modifier has been added to the Control tab which, when selected, will avoid any defined fixtures.

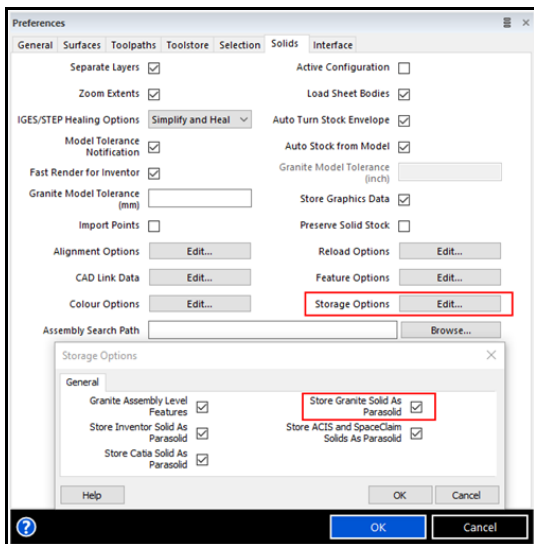


Rough Waveform Turn - X and Z Offsets



For this release, new **Z Offset** and **X Offset** modifiers have been added to the General tab of the Rough Waveform Turn cycle to support separate X and Z Offsets.

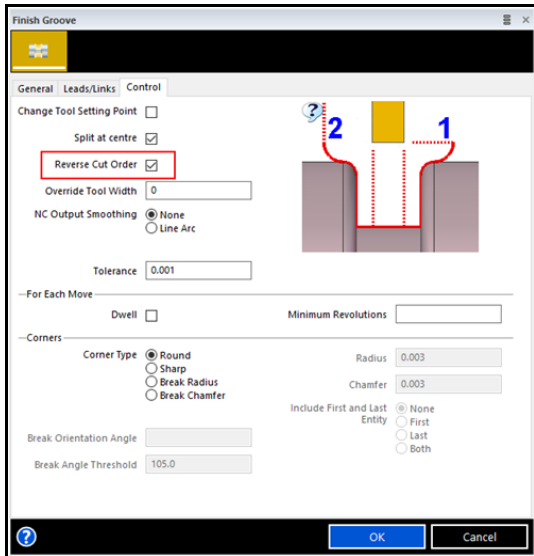
Preferences - Solid Machinist for Granite now defaults to load model as Parasolid



The **Store Granite Solid as Parasolid** option in the **Storage Options** section of the **Solids** tab in the Preferences dialog has been changed to default to enabled when first installed. This is the preferred solution.

The user can disable the option, if necessary, and continue storing the model as Granite.

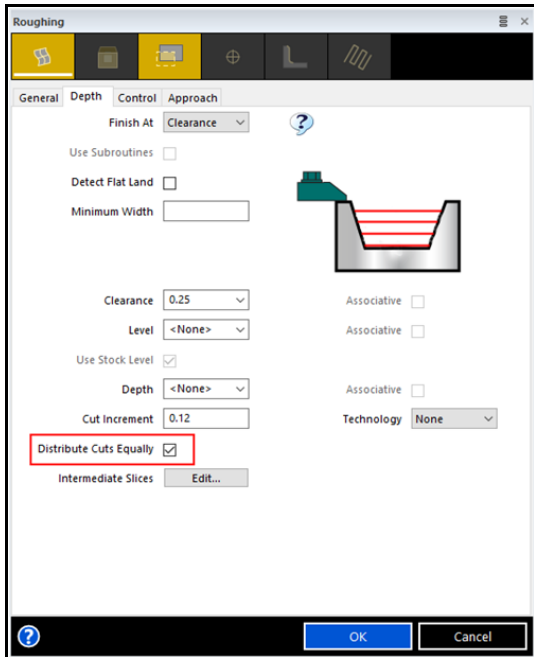
Finish Groove - Reverse Cut Order



We have added a **Reverse Cut Order** option to the Control tab of the Finish Groove cycle.

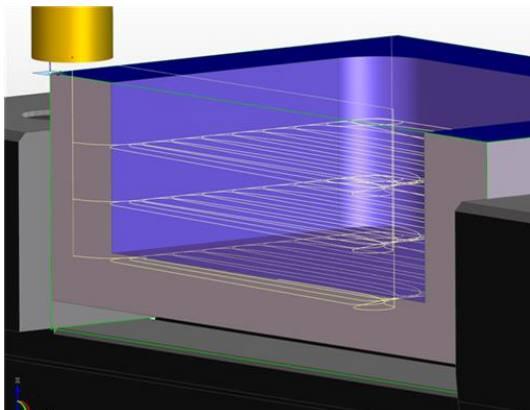
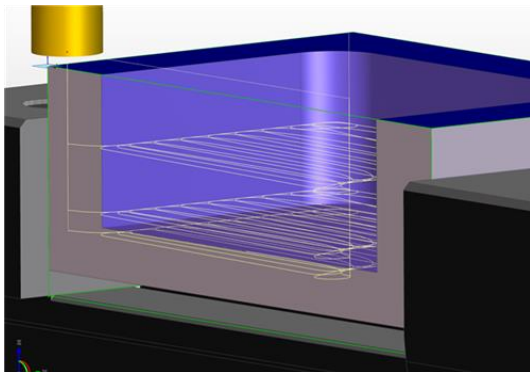
When checked, the order in which the sides of the groove are cut is reversed. This is especially useful when working with Strategy Manager strategies where a manual reversal of cut direction is not possible.

Roughing Cycle - Distribute Cuts Equally

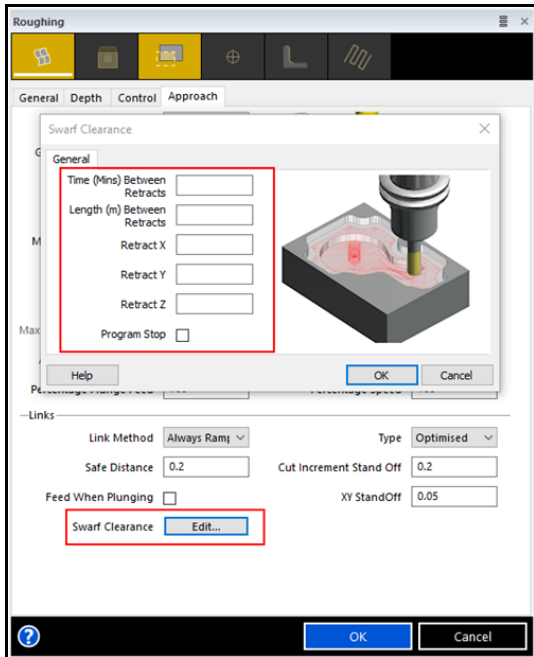


For this release, a new **Distribute Cuts Equally** modifier has been added to the Depth tab.

Often, the **Cut Increment** does not divide evenly across the depth of the part, leaving a thin last cut. When **Distribute Cuts Equally** is enabled, the **Cut Increment** is reduced ensuring that the last cut is equal to the previous cuts. The cycle will still contain the same number of levels and the cycle time will be approximately the same.



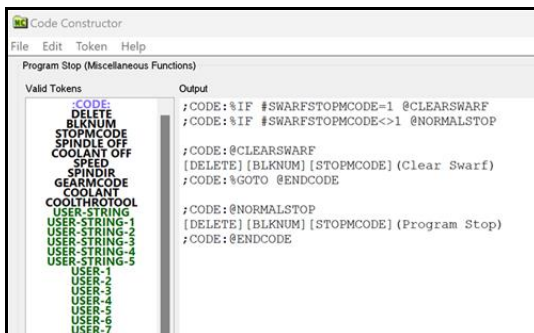
Roughing Cycle - Swarf Clearance

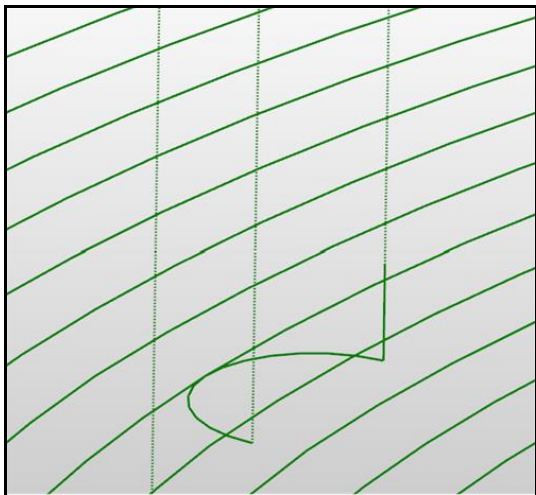
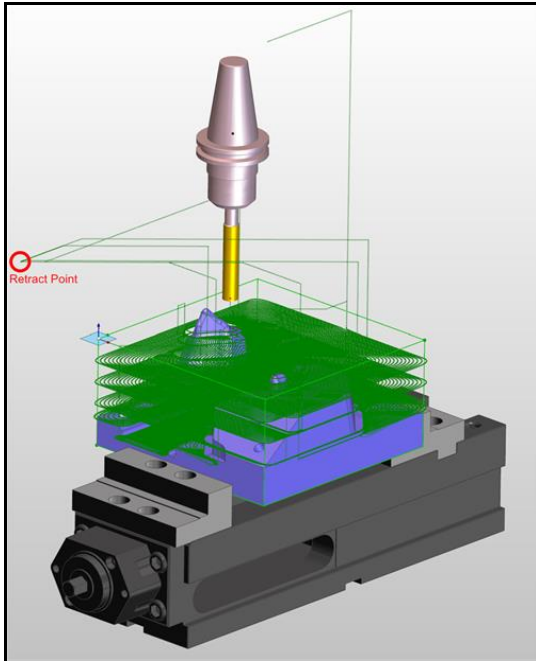


The Roughing cycle now has **Swarf Clearance** available. This will force the cycle to retract to a X, Y or Z position and, optionally, add a **Program Stop**. This is controlled by entering either the Time that the tool can cut or the Length of the cuts.

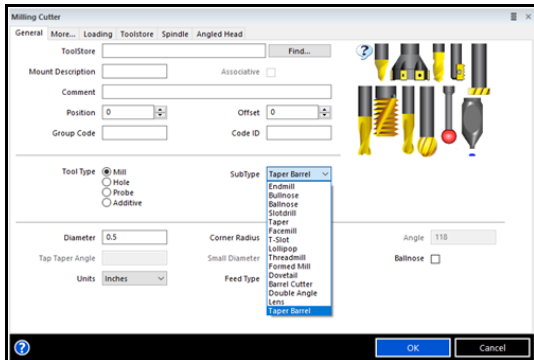
When the tool reaches the Time or Length limit, the tool will lead off the material, retract to the XYZ position and stop, if requested. The tool will then return to the material, lead back in and continue machining.

If the **Program Stop** option is checked, the Code Generator will visit the Program Stop Code Constructor. To identify a Stop code generated by the Roughing cycle, you can test the #SWARFSTOPMCODE variable which is set to 1 if created by the Roughing cycle.





Tooling - Support For New Taper Barrel Tool Type

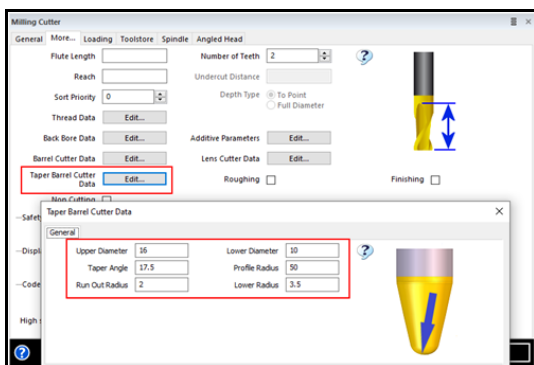


For this release, we have added support for the Taper Barrel tool type.

These are becoming a popular tool choice for 5 axis applications.

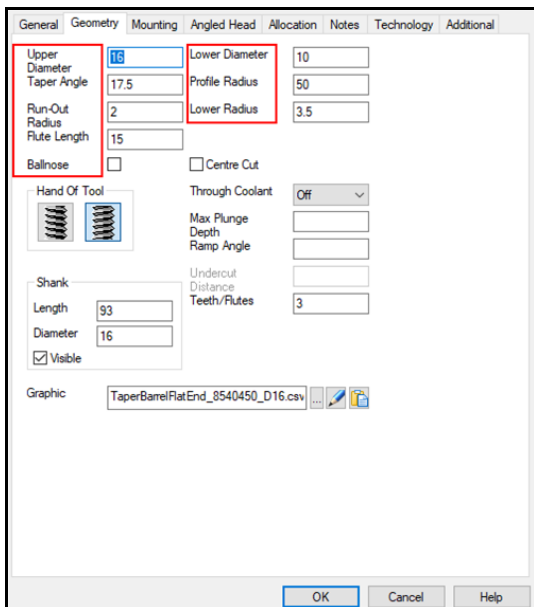
The **Milling Cutter** dialog has been modified to include:

- A **Taper Barrel** Sub Type has been added for the **Mill** Tool Type on the **General** tab.
- A **Taper Barrel Cutter Data** parameters button has been added to the More tab.



The ToolsStore now includes a dedicated Taper Barrel tool type for which the following parameters define the tool:

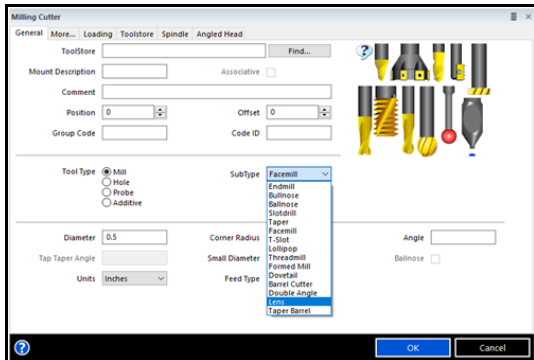
- **Upper Diameter.**
- **Lower Diameter.**
- **Taper Angle.**
- **Profile Radius.**
- **Run Out Radius.**
- **Lower Radius.**
- **Flute Length.**
- **Ballnose.**



Notes:

- Five Axis, Advanced Five Axis and Flow Surface cycles are available for Lens and Taper Barrel cutters.
- Flow surface cycle is greyed out when the Taper Barrel cutter does not have a ball end..

Tooling - Support For New Lens Tool Type



For this release, we have added support for the Lens tool type.

These are becoming a popular tool choice for 5 axis applications.

The shape of the Lens allows for increased stepover, shorter cycle times and improved surface finish.

The **Milling Cutter** dialog has been modified to include:

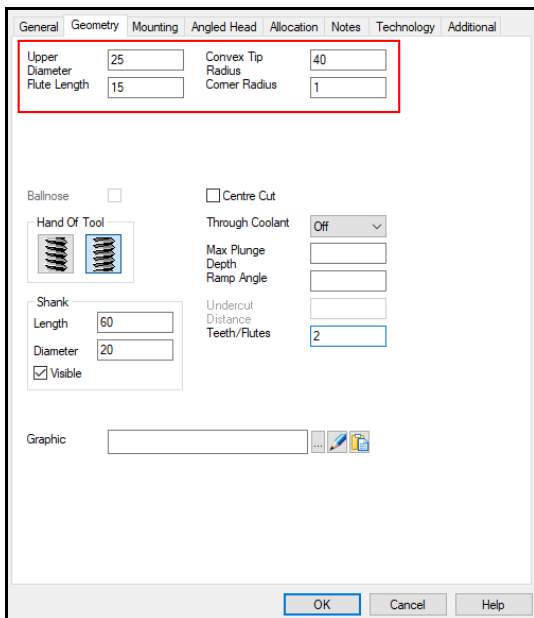
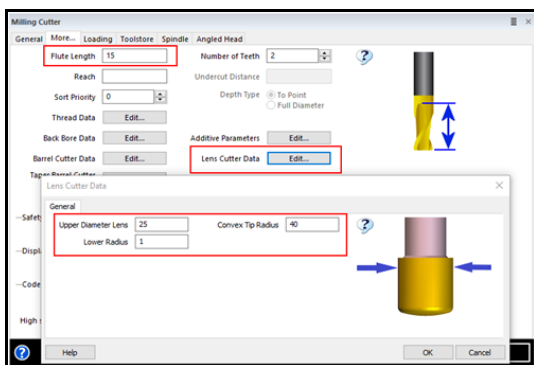
- A **Lens** Sub Type has been added for the **Mill** Tool Type on the **General** tab.
- A **Lens Cutter Data** parameters button has been added to the More tab.

The ToolsStore now includes a dedicated Lens tool type for which the following parameters define the tool:

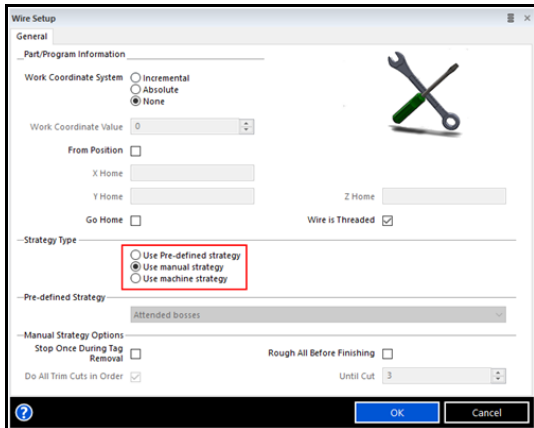
- **Upper Diameter.**
- **Convex Tip Radius.**
- **Corner Radius.**
- **Flute Length.**

Note:

- Five Axis, Advanced Five Axis and Flow Surface cycles are available for Lens and Taper Barrel cutters.



Wire Smart Cycle - Triangular Attachments



For this release, we have added the ability to define a triangular attachment in the Wire **Smart Cycle**.

Attachments / tags are slivers of uncut material which stop the cut pieces from becoming detached from the main body and falling into the machine.

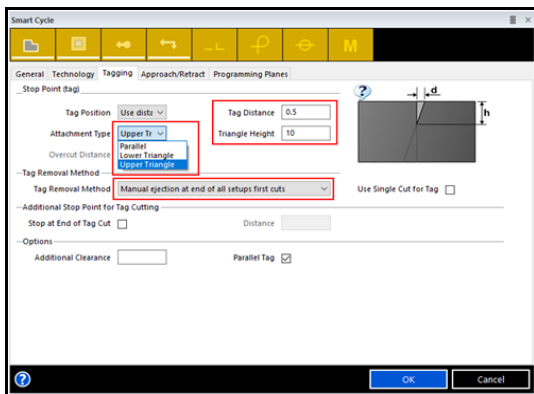
The detachment process usually requires the machine operator to manually separate these pieces with a hammer in order to remove them safely.

Typically, after roughing passes, the tags remain uncut, the machine is stopped and the operator removes the cut pieces before proceeding with the finishing cuts.

Previously, it was only possible to define parallel tags and, occasionally, these could be difficult to break, especially on thicker parts. However, triangular tags are easier to break.

Triangular attachments are available for Manual strategies when the **Strategy Type** is set to **Use manual strategy** in the **Wire Setup** command.

In the **Tagging** tab of the **Smart Cycle** dialog:

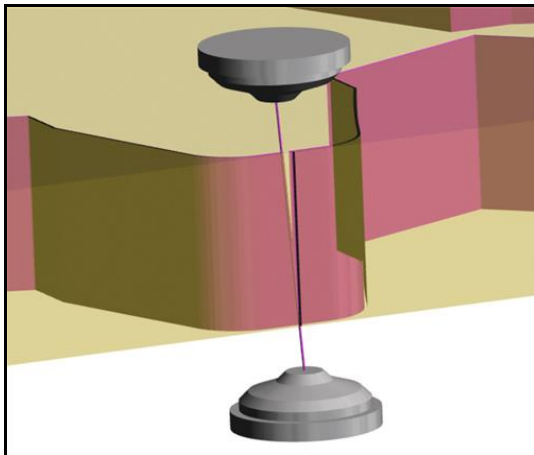


- Select either a **Lower Triangle** or **Upper Triangle** attachment from the **Attachment Type** drop-down list.
- Enter the **Tag Distance** and **Triangle Height**.

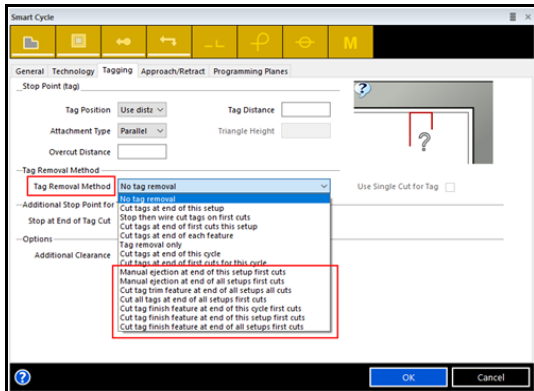
For example, a typical height would be 0.5 x the workpiece height with a tag distance of 0.5mm.

- Select the **Manual ejection at end of all setups first cuts** option from the **Tag Removal Method** drop-down list.

This performs first cuts across all setups and stops the machine allowing the operator to manually eject the slugs with a hammer before restarting the machine and proceeding with the finishing cuts.



Wire Smart Cycle - Additional Tag Removal Methods



Additional Tag Removal Methods have been added to the **Smart Cycle**, predominantly to control the tag removal process across single or multiple wire setups.

The **Tag Removal Method** drop-down list is available when the **Strategy Type** is set to **Use manual strategy** in the **Wire Setup** command.

The additional options are:

- **Manual ejection at end of this setup first cuts**

This performs first cuts for the active setup and stops the machine allowing the operator to manually eject the slugs with a hammer before restarting the machine and proceeding with the finishing cuts.

- **Manual ejection at end of all setups first cuts**

This performs first cuts across all setups and stops the machine allowing the operator to manually eject the slugs with a hammer before restarting the machine and proceeding with the finishing cuts.

- **Cut tag and trim each feature at end of all setups after all cuts**

This performs all cuts across all setups. The feature tag is then cut and trimmed before repeating tag cut and trim for each remaining feature.

- **Cut tag finish feature at end of this cycle first cuts**

This performs tag removal and finish feature at the end of each Smart cycle after first cuts.

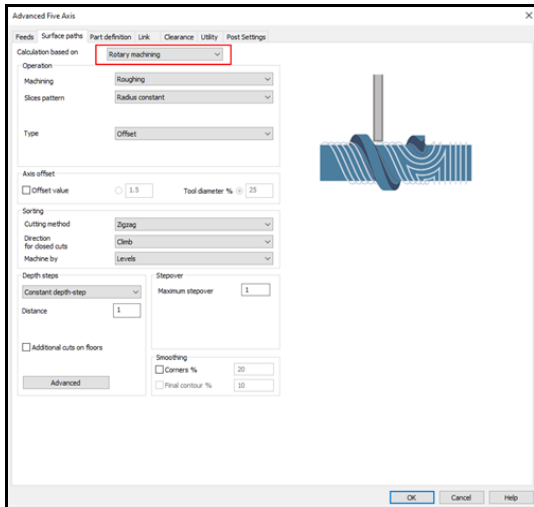
- **Cut tag finish feature at end of this setup first cuts**

This performs tag removal and finish feature at the end of each Wire Setup after first cuts.

- **Cut tag finish feature at end of all setups first cuts**

This performs tag removal and finish feature at the end of all Wire Setups after first cuts.

Advanced Five Axis - Rotary Machining



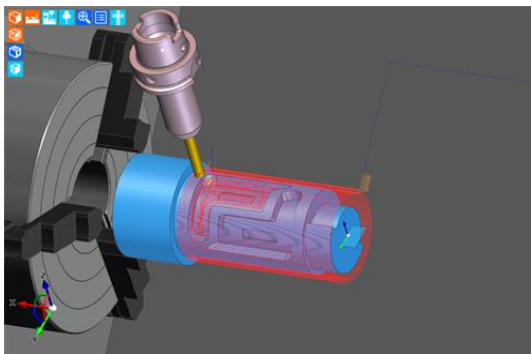
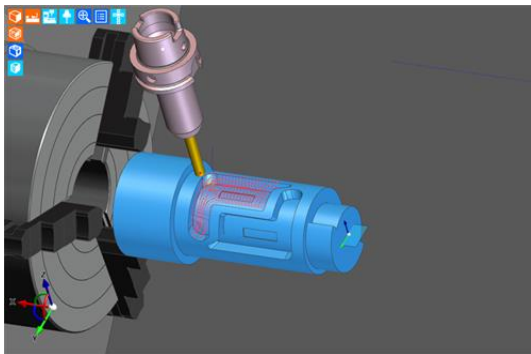
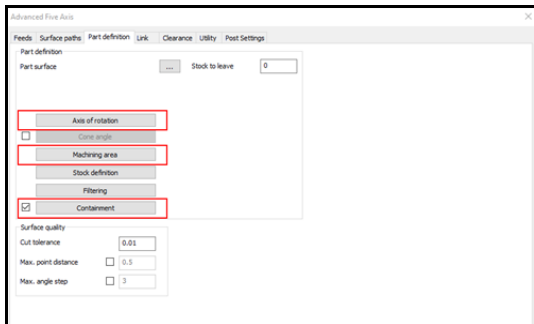
The **Advanced Five Axis** cycle has been expanded to include Rotary Machining. The option is available from the **Calculation based on** drop-down list on the **Surface paths** tab,

Rotary Machining is a 4th Axis cycle that can be used for machining around the Rotary Axis.

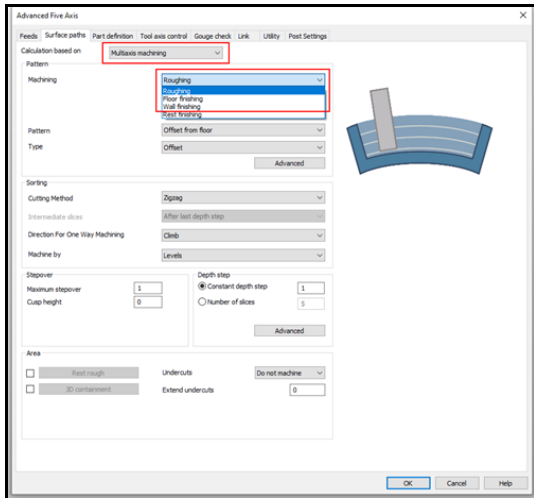
Note: Rotary Machining is available on the Advanced 5-Axis Simultaneous Milling license.

The behaviour of the cycle can be controlled using the following options available on the **Part definition** tab:

- **Machining Area** - This can be Axial or Radial Driven.
- **Axis of Rotation** - This can be controlled either Point to Point through the Centreline or based on a point and direction.
- **Containment** - This is when the cycle can be controlled with a 2D or 3D boundary.



Advanced Five Axis - MultiAxis Machining

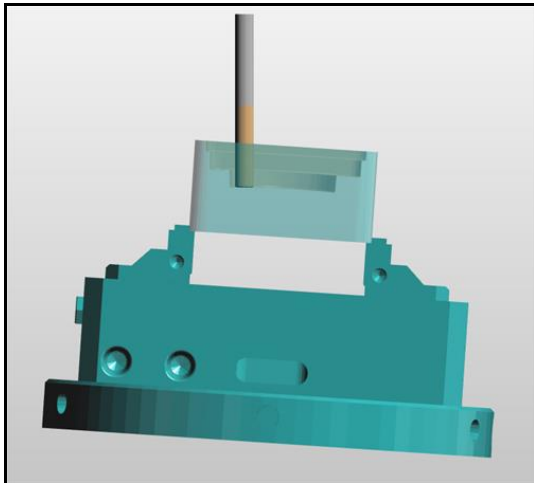


The **Advanced Five Axis** cycle has been expanded to include MultiAxis Machining. The option is available from the **Calculation based on** drop-down list on the **Surface paths** tab,

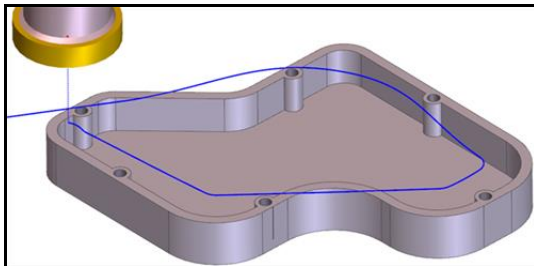
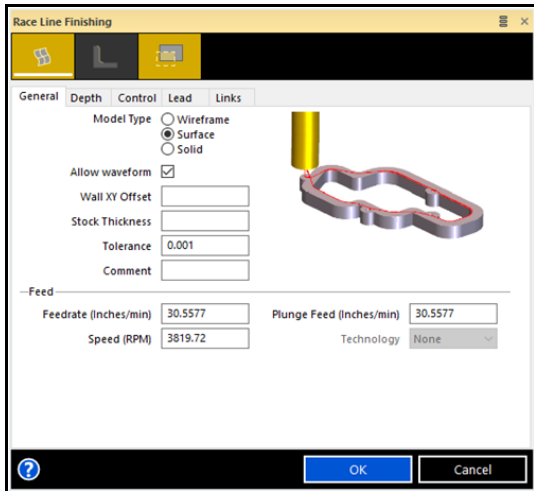
The following **Machining** types are available:

- **Roughing** - This can be done using the **Offset** or **Adaptive** Type. **Adaptive** is a 5x Trochoidal method which is similar to Waveform.
- **Floor finishing** - An advanced method which is fast and effective for machining the floor surfaces.
- **Wall finishing** - An advanced method used to machine side walls which are steep.

Note: MultiAxis Machining is available on the Ultimate 5-Axis Simultaneous Milling license.



PREVIEW - Race Line Finishing cycle



A new **Race Line Finishing** cycle has been developed. This is designed to machine the top of open or closed walls in an optimal path. Typical applications would be sealing faces between components such as engines and gearboxes.

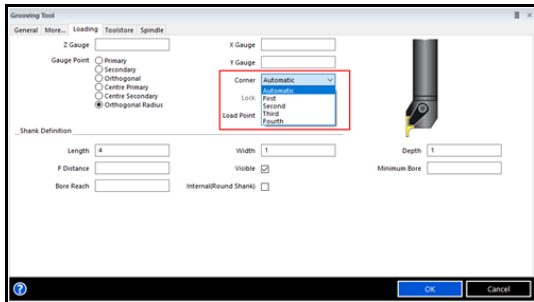
Currently, you can select the solid and use level and depth to control the range or create geometry from edges or loops and machine in Wireframe.

Most of the modifiers will be familiar and are already used in the **Flat Land Finishing** or **Rough Waveform** cycles. The following new modifiers have been added:

- **Allow Waveform** - When checked, the regions wider than the tool stepover will be machined with a Waveform pattern.
- **Wall XY Offset** - Add a XY offset to widen the selected wall.
- **Stock Thickness** - Add a 3D offset to widen the selected wall.
- **Smoothing Factor** - A smoothing factor between 0 and 3 can be applied to the toolpath. The higher the value, the smoother the toolpath.
- **Full Finish Pass** - When checked, any upstands within the Race Line toolpath will have a finish pass applied.

Note: This cycle is only available when **Preview** is enabled. Some features require further development and testing. **Preview** can be enabled in the License Manager.

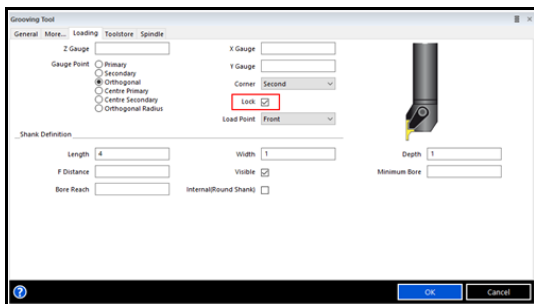
EDGECAM Grooving Tools - Gauge Point Corner and Lock Controls



Gauge point **Corner** and **Lock** controls, previously only available for Turn and Bore tools, have been added to the EDGECAM Toolchange for Groove tools. These controls are used to manage the groove tool gauge point positions.

For **Orthogonal Radius**, select the corner of the insert where you want to position the gauge point:

- The gauge point position is maintained with respect to the insert geometry irrespective of side angle / load angle settings.
- As you change the orientation of the tool, the gauge point rotates with it, maintaining the same relative position.
- Orthogonal Radius is typically used on b-axis turrets.



For **Orthogonal**, the **Corner** options provide a gauge point in the four corners of a bounding box drawn from the insert at its horizontal load angle. You also have the option to **Lock** the gauge point position:

- When checked, as you change the load orientation, the gauge point rotates with it, maintaining the same relative position with respect to the insert.
- When unchecked, the Orthogonal gauge point is positioned with respect to the specified corner of the bounding box at the load orientation.

Maintenance Database Report

For a full list of maintenance items resolved in EDGECAM 2024.1, please refer to the [Maintenance Database Report](#).

New Features in Version 2023.1

Below is an overview of new features and enhancements in the last release.

For a summary of new features in previous releases, please visit the [History section of the EDGECAM website](#).