



# What's New in RhinoCAM 2012

January 9, 2012

---

This document describes new features and enhancements introduced in RhinoCAM 2012, the CAM system for Rhinoceros 4.0 and Rhinoceros 5.0 from MecSoft Corporation.

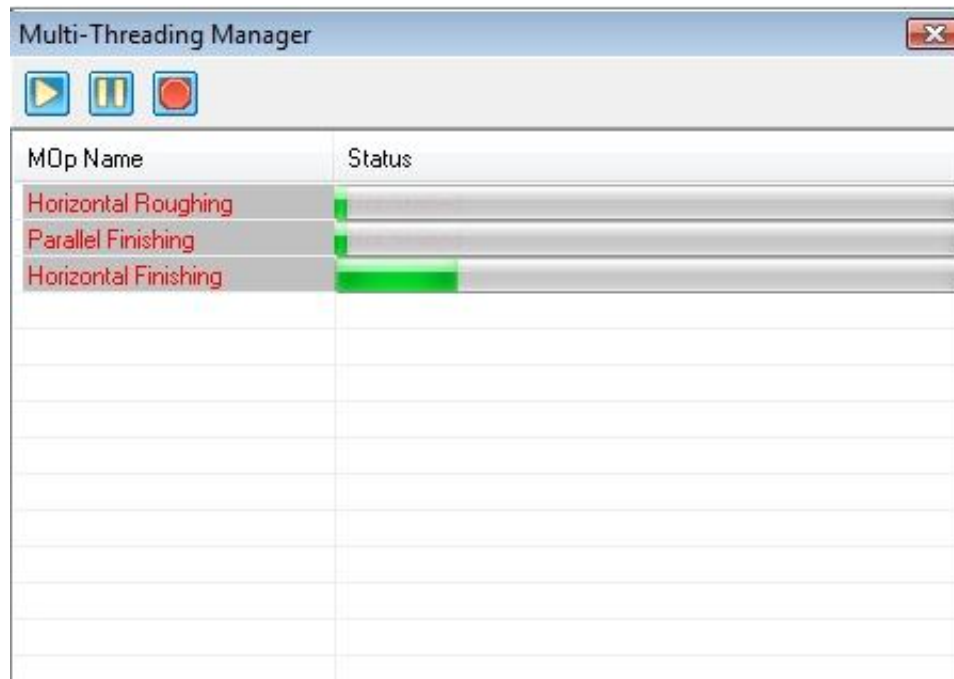
## Contents

What's new in RhinoCAM 2012 .....	3
Product Architecture.....	3
User Interface Enhancements.....	3
Productivity Enhancements .....	5
Tooling Enhancements.....	10
Materials/Feeds/Speeds .....	11
Setup .....	12
2 ½ Axis Machining Methods .....	13
3 Axis Machining Methods.....	14
4 Axis Machining Methods.....	15
5 Axis Machining Methods.....	16
Additional Machining Methods .....	19
Toolpath Simulation.....	20
Machine Tool Simulation .....	21
Post Processor Enhancements.....	22
Other .....	23
Add on Modules.....	23

## What's new in RhinoCAM 2012

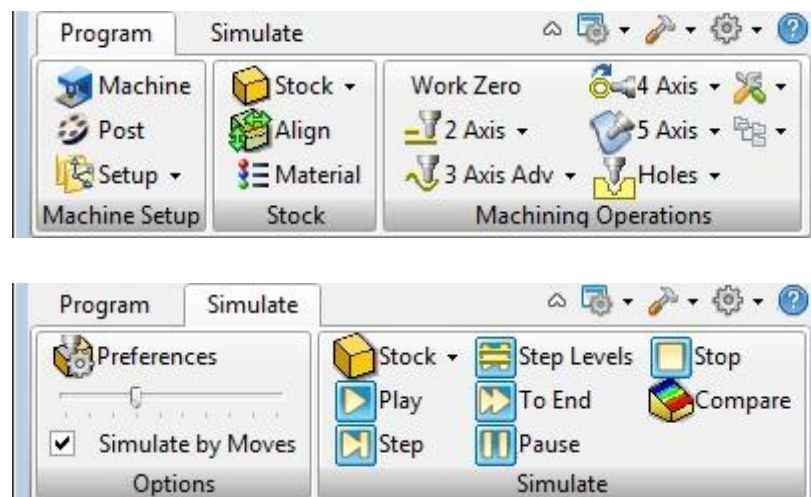
### Product Architecture

1. **64 Bit Version** – Takes advantage of 64 bit architecture. This provides ability to handle large models.
2. **Multi-thread Machining** – Uses Multi-cores to process toolpaths.

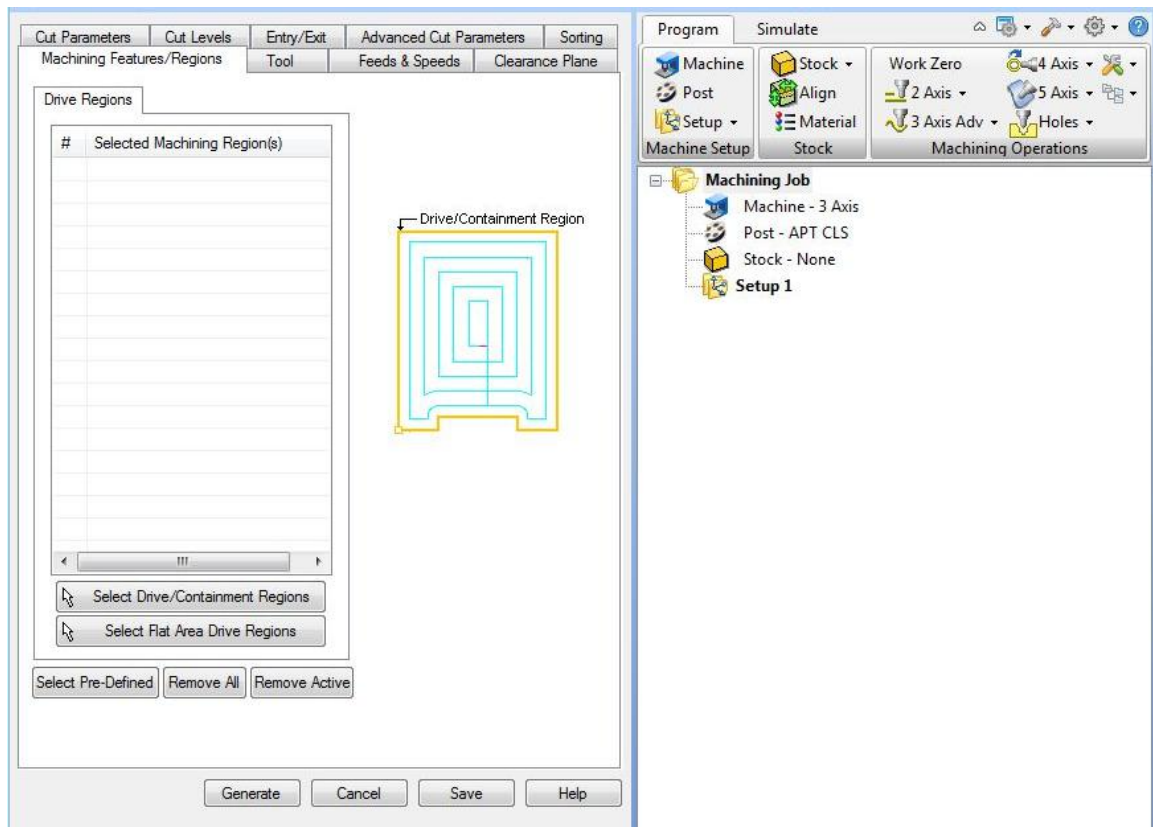


### User Interface Enhancements

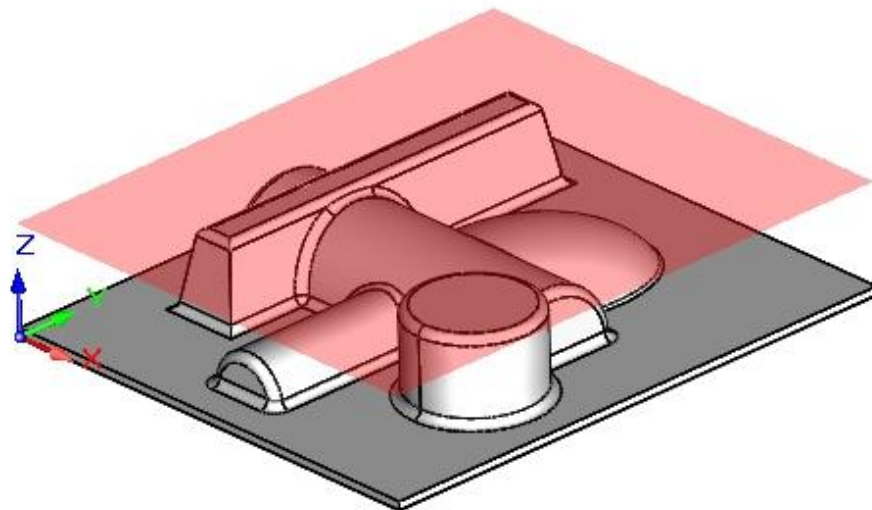
3. **Ribbon Interface for MOps browser** – Consolidates Setup & Programming functions, reduces button pokes.



4. **Dock Mop Dialogs** – Allows users to switch between floating windows and dock Mop dialogs.



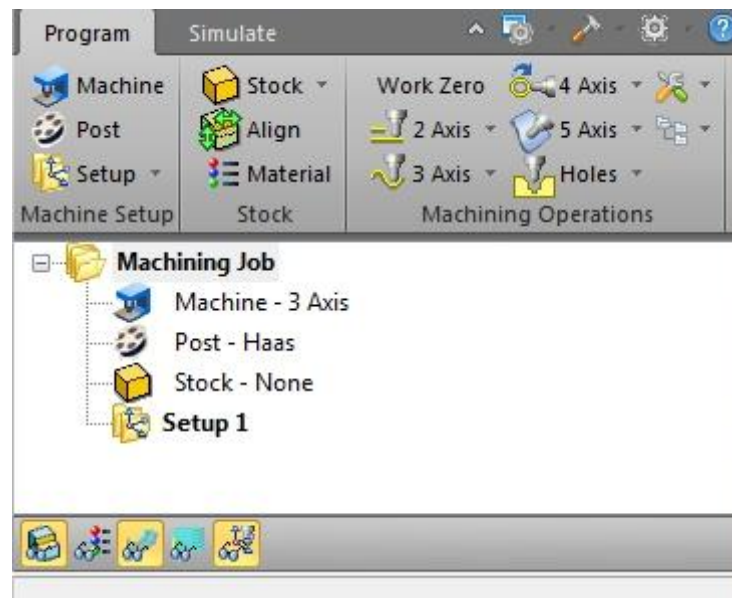
5. **Clearance Plane Visualization during setting** – Displays the clearance plane on the part geometry when specifying clearance plane parameters.



6. **Z level Picking for Horizontal machining methods** – Allows you to pick Z level containment by snapping to a point on the model.



1. **New Themes for Appearance** – Select a theme to change appearance of toolbars.



## Productivity Enhancements

7. **Machining Regions** – Reuse of machining regions by creating predefined machining regions. This can be found under Machining Objects browser (MObs)

The Regions tab allows you to

- Create pre defined machining regions from curves and flat areas
- Specify Start Point for closed curves

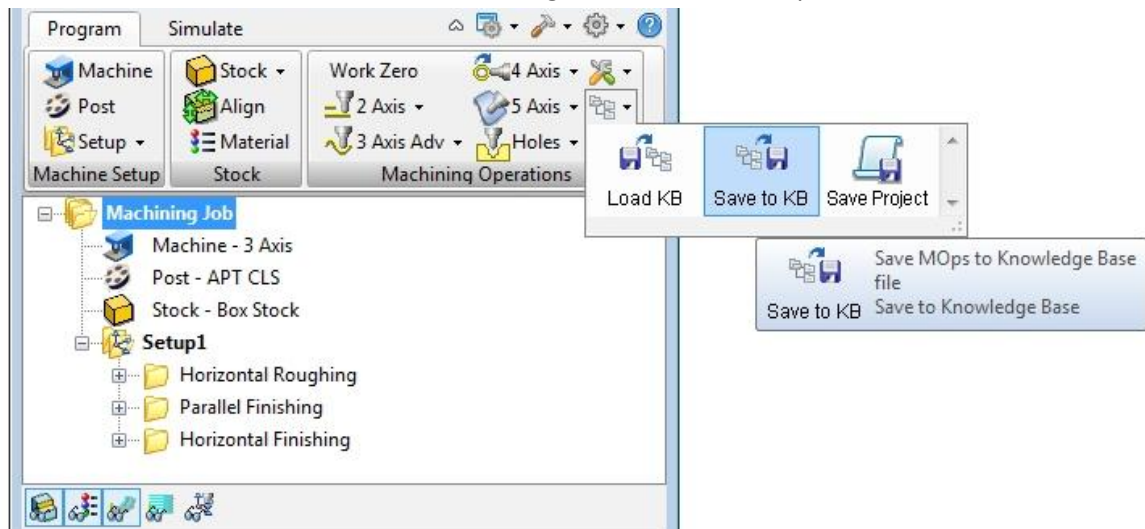
- Reverse Curve Direction
- Create Automatic Bridge points
- Manually Define Bridge Points
- Edit Bridge points
- Delete Bridge Points

This can then be selected as machining features for generating machining operations.

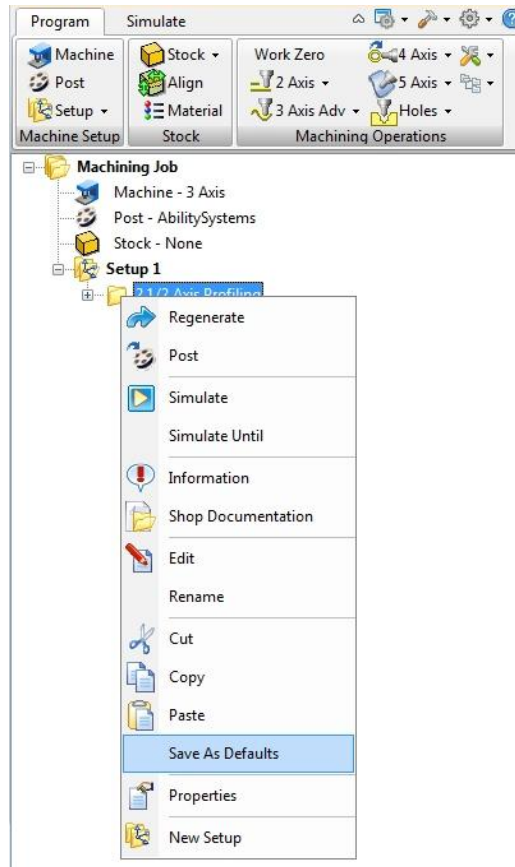


8. **Knowledge Bases** – Save and Load Knowledge bases

- Archive an entire sequence of operations and all associated parameters to a Knowledge database or K-Base. Load the knowledge base across other part files.

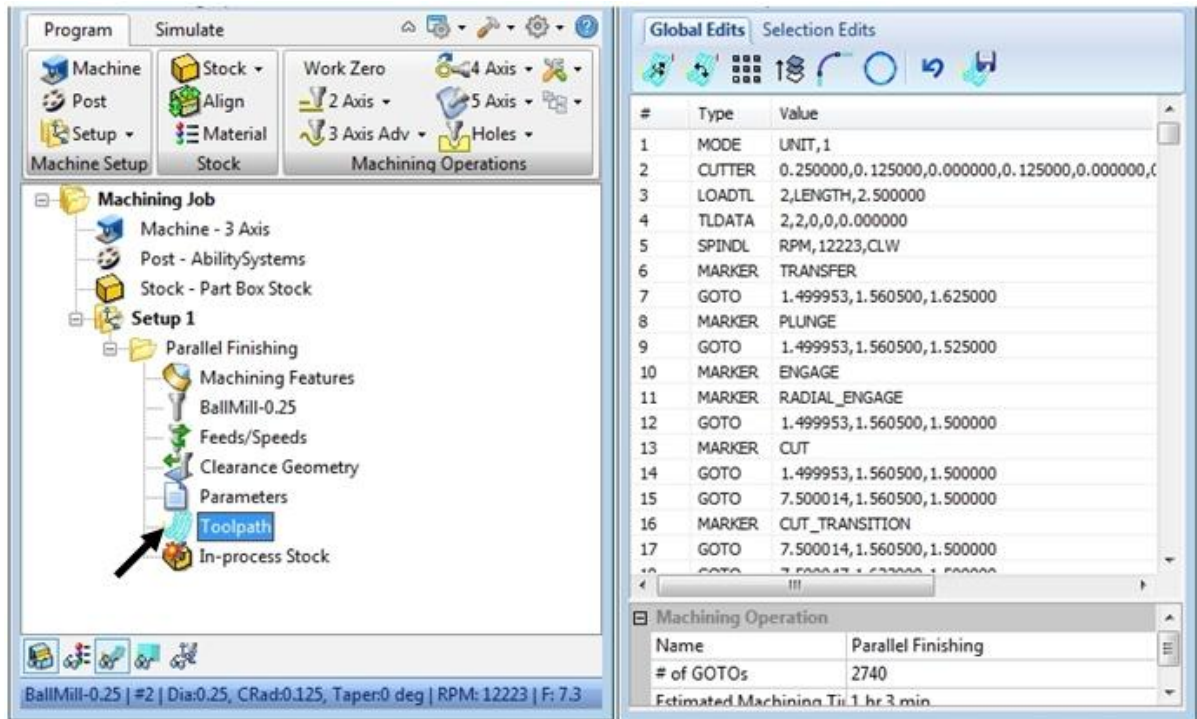


9. **Default Parameter Saving** - Default Knowledge Base allows user to set default parameters for machining operations. This allows the reuse of the machining parameters without having to enter the same parameters when creating new machining operations on same part or new part files.

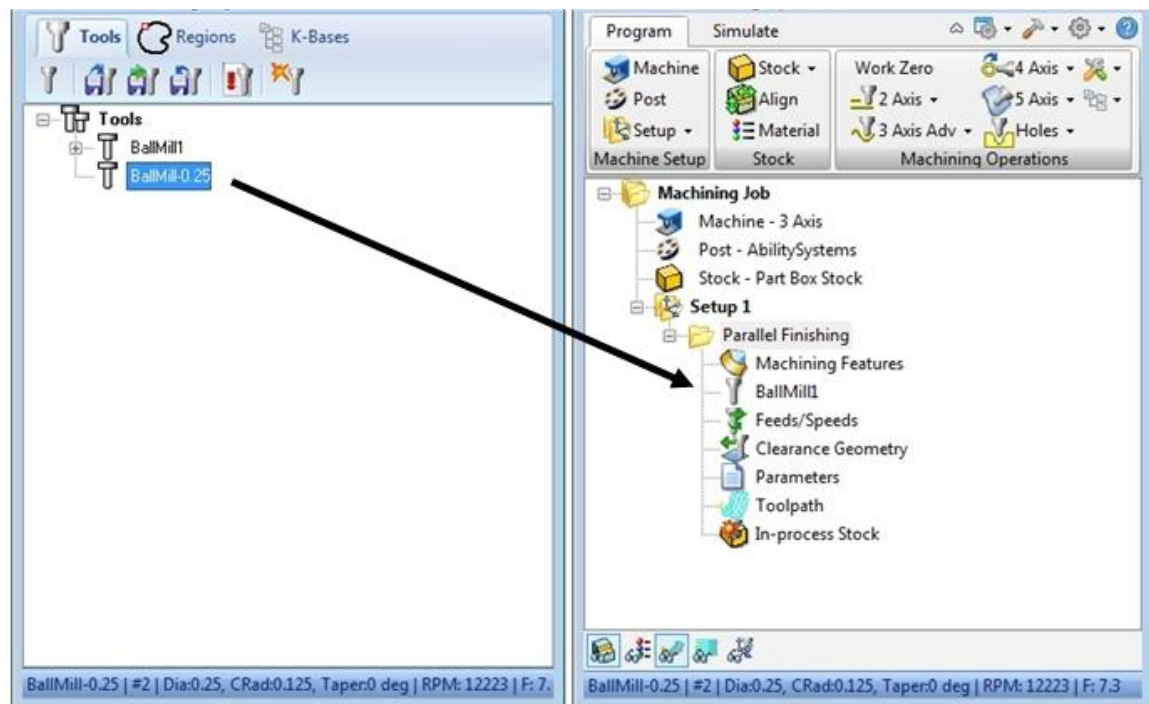


10. **Graphical Toolpath Editor** \* – Perform non associate toolpath edit. Once a machining operation is created, the toolpath can be edited to add post-processor commands.



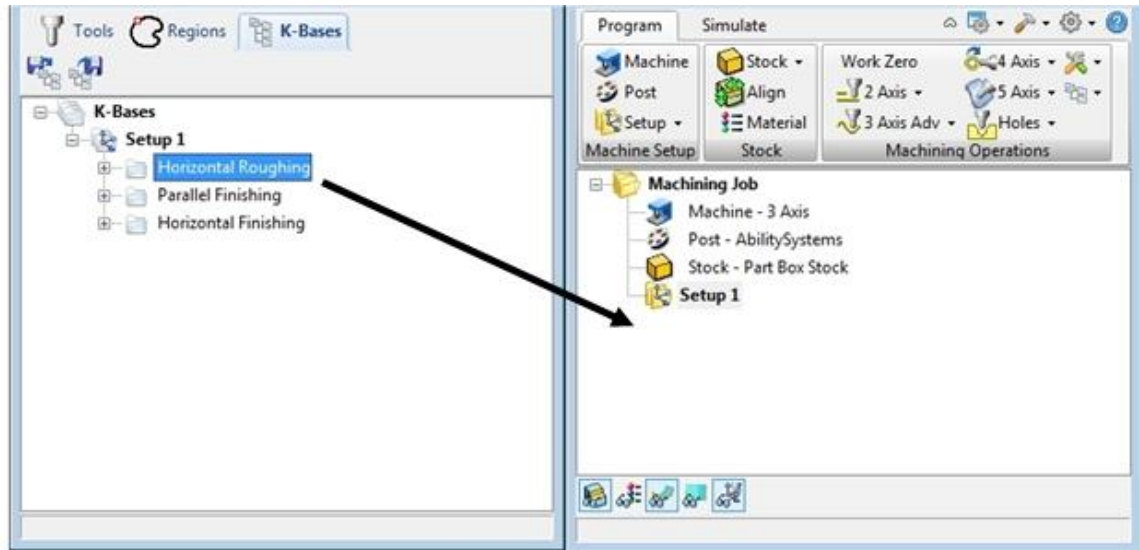


11. **Drag & Drop Tools to MOps browser** – Allows you to select a different tool for an existing operation by dragging and dropping tools from Tools tab to MOps browser.





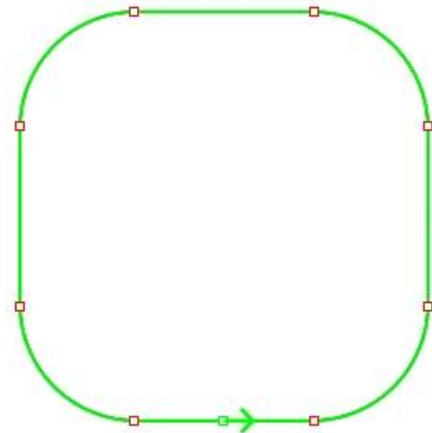
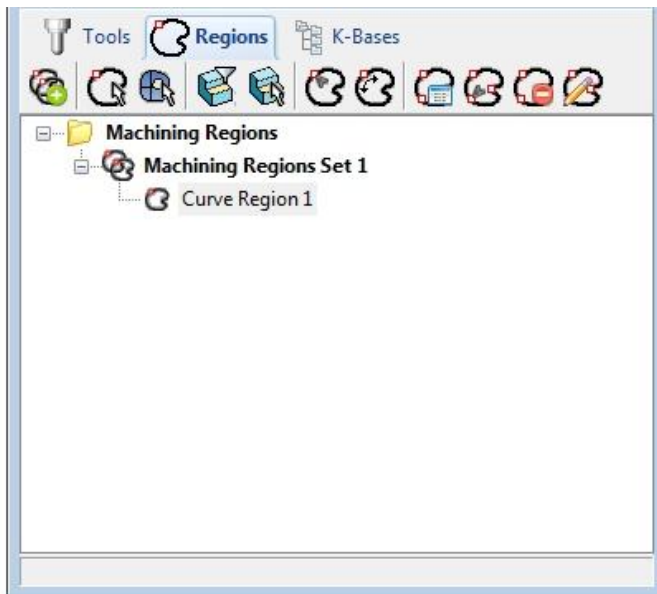
12. **Drag & Drop knowledge base operations to MOps browser** - This provides the flexibility for the user to select a Setup or an operation under the K-Bases tab and drag it to the Machining Operations browser for programming.



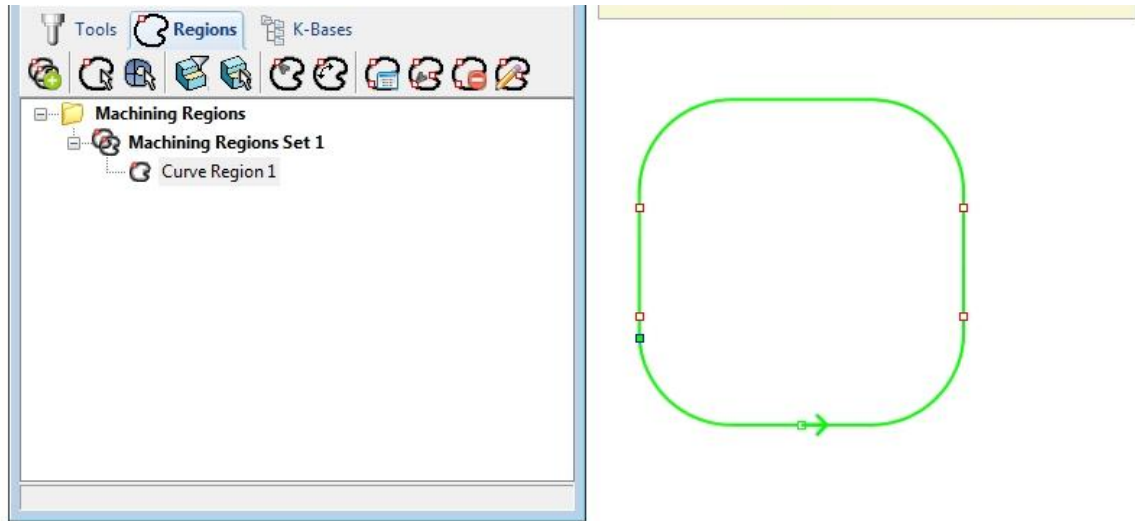
**Select operation, drag and drop to MOps browser**

13. **Graphical Bridge Points Definition/Editing –**

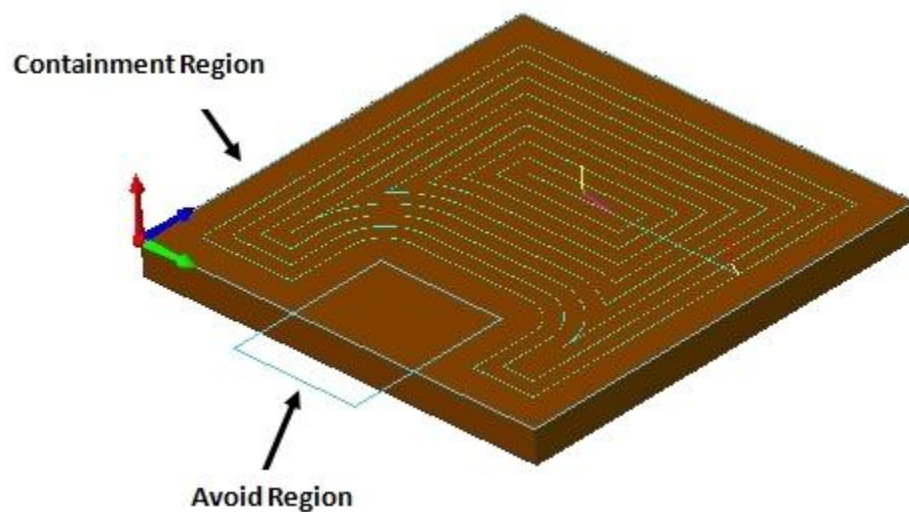
a) Bridge points can be manually selected bridge on curve region.



b) Edit bridge points - relocate the bridge point by moving the point on the curve by dragging the mouse along the curve

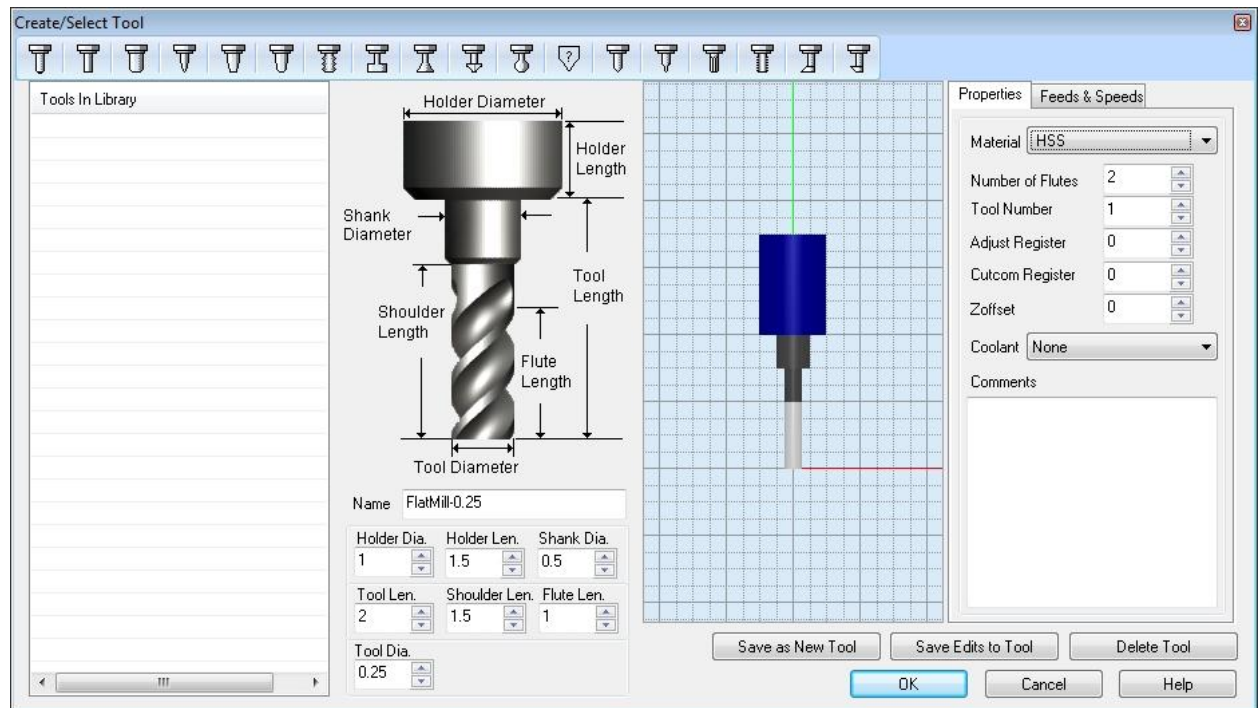


14. **Avoid Regions in Pocketing and Facing for clamps** – define regions to be avoided by the cutter during machining.

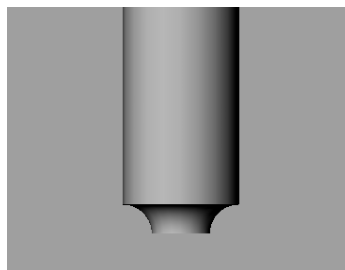


## Tooling Enhancements

15. **Stepped Tooling** – Provides ability to handle long tools  
16. **New UI for tool definition** & preview tool as you specify parameters.



17. **Radius mill definition \*\*** – Allows you to define Fillet Mills / Round over tools. These are used to machine fillets around the edge of a part.

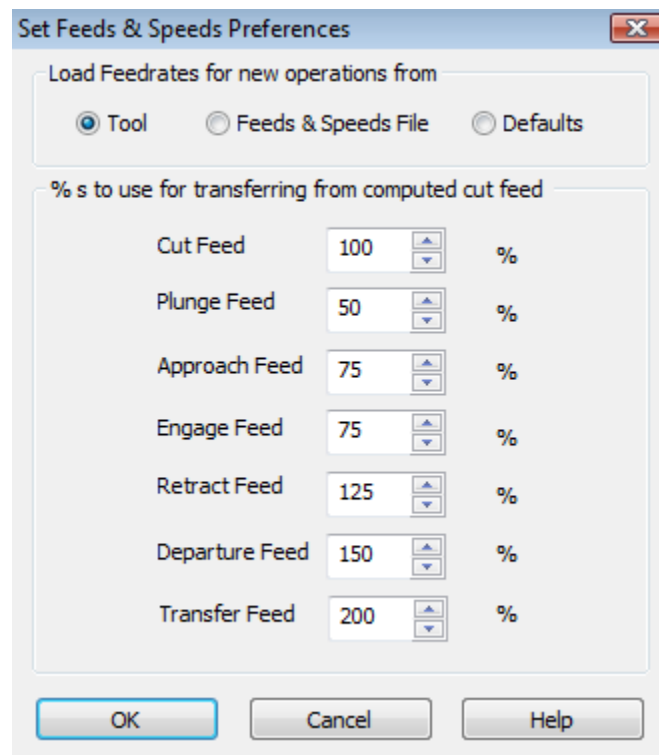


## Materials/Feeds/Speeds

18. **Material database completely revamped** – Feeds and speeds table now has an extensive list of stock materials to choose from.
19. **Associate textures for stock material** - Apply material texture to stock.

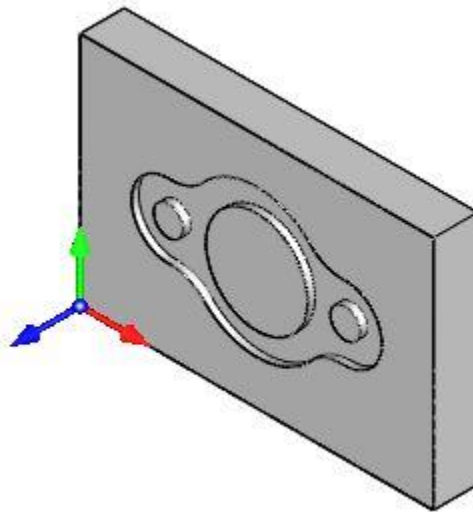


20. **Feeds Speeds Preferences** – Load feeds and speeds for new operations using Tool / Feeds & Speeds File / Defaults. Also Set defaults for % to use for transferring from computer cut feed.

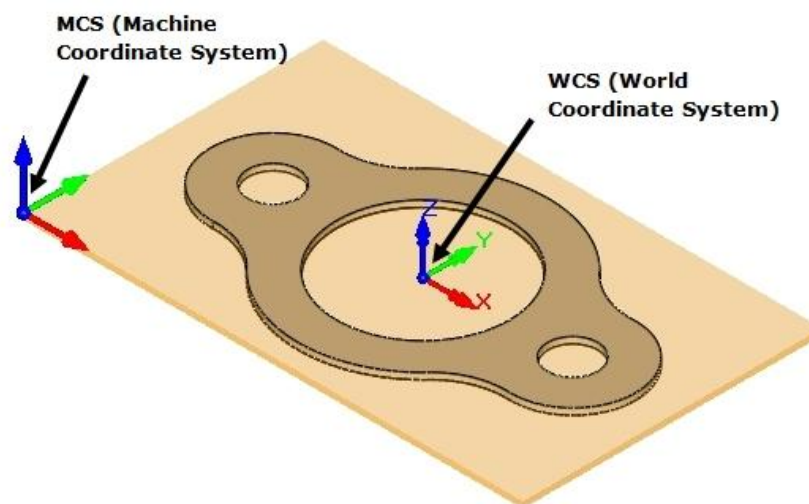
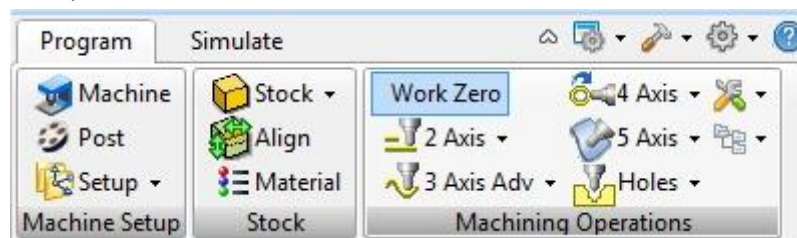


## Setup

21. **Setup Machine Coordinate System** - set the cutting direction. This orients the Machine Coordinate System to have the part aligned in the same way as it would be fixtured on the machine tool for cutting.

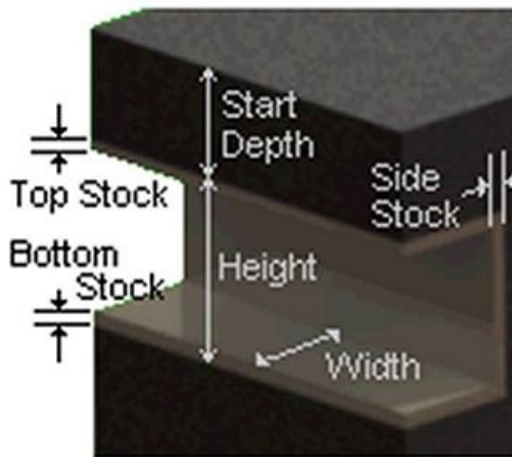


22. **Set Work Zero** - defines the workpiece (part or stock) origin. Work Zero translates the MCS origin from the Setup to the desired location.

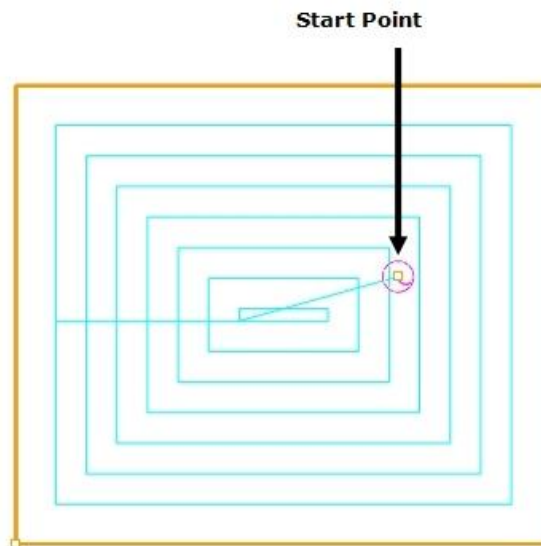


## 2 ½ Axis Machining Methods

23. **T-Slot Machining** \*\*- Machine T-Slots using a FaceMILL



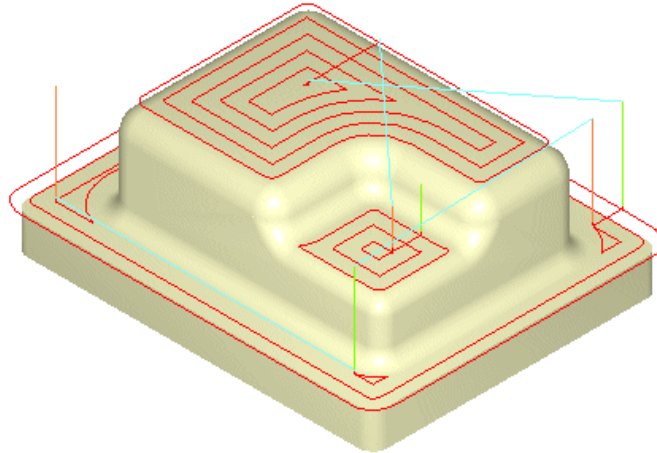
24. **Start Point Definition in Pocketing** – Allows you to select a point to set the start point for entry motion.



### 3 Axis Machining Methods

25. **Flats Only Machining \*** – Machines Flat Top areas only

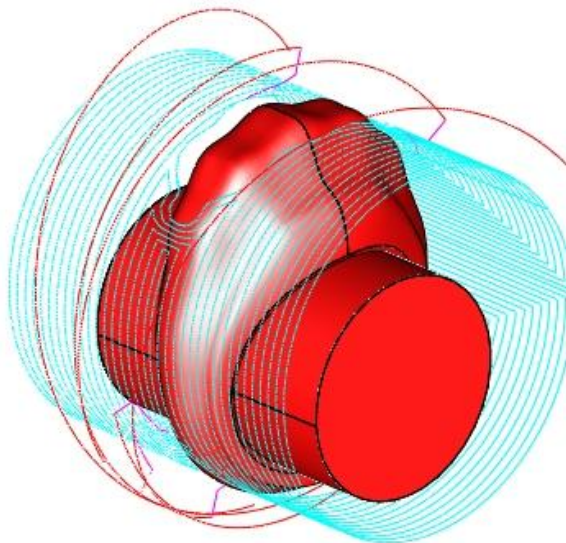




26. **Start Point Definition in Horizontal Roughing** - Allows you to select a point to set the start point for entry motion.

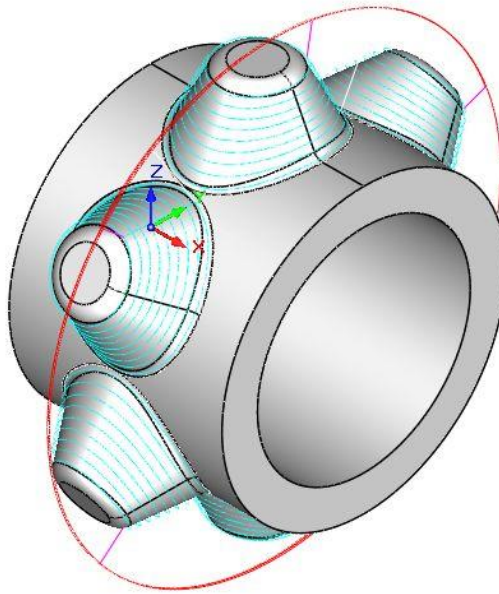
#### 4 Axis Machining Methods

27. **Radial Roughing Method \*\*** - similar to the 3 Axis Horizontal Roughing except that the levels in this case are concentric to the axis of rotation

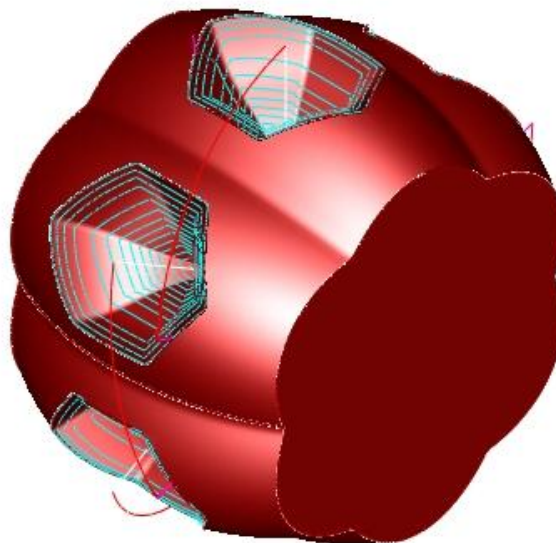


28. **Radial Finishing Method \*\*** - similar to 3 Axis Horizontal Finishing used for pre-finishing or finishing except that the levels in this case are concentric to the axis of rotation



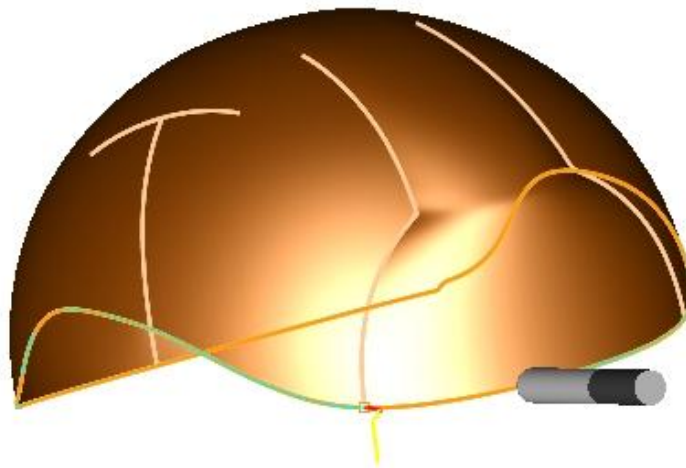


29. **Projection Pocketing Method \*\*** - similar to 3 Axis Projection Pocketing and is used for pre-finishing and finishing of pockets with sculpted bottoms and/or sides. The pockets are defined by regions, and successive inner offsets of these outer regions are generated. The tool moves along these offset curves while following the contours of the part below.

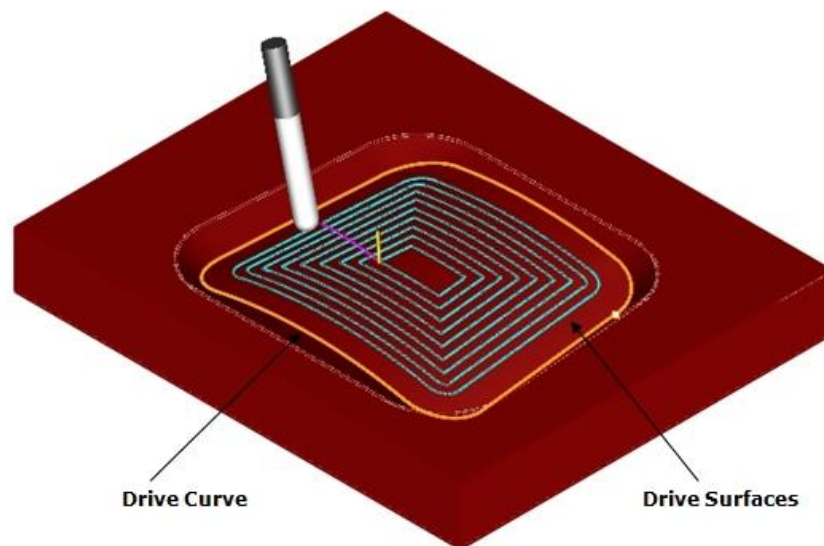


## 5 Axis Machining Methods

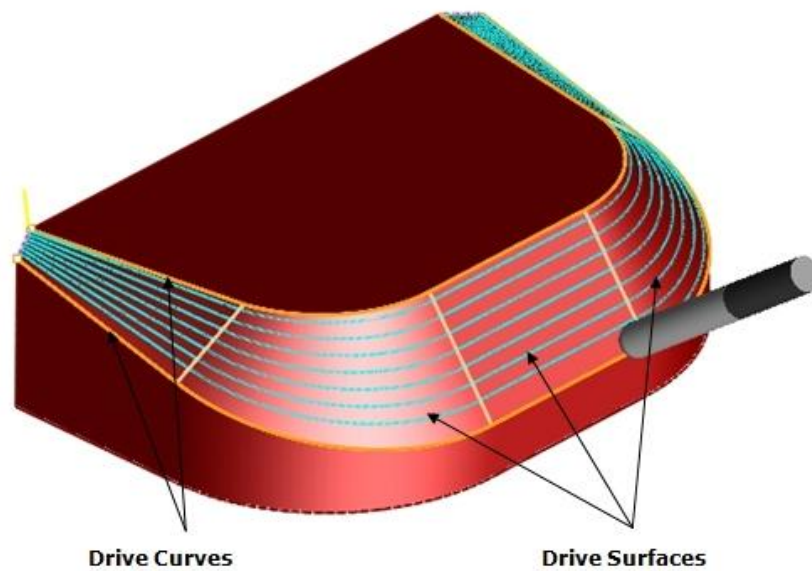
30. **Curve Projection Machining \*\*\*** - typically used for trimming blow molds and sheet metal dies.



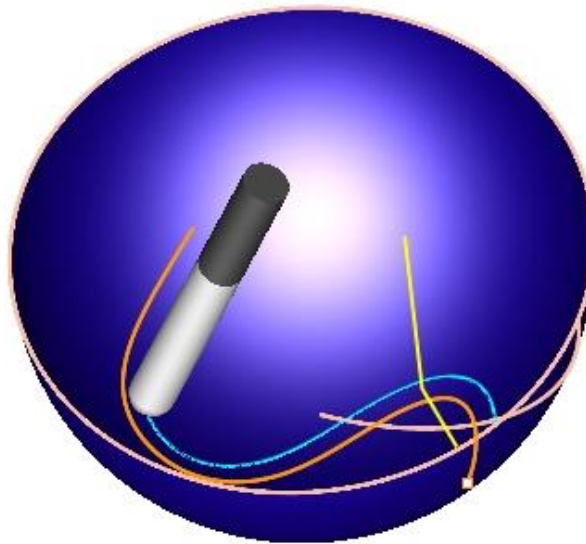
31. **Flow Curve Machining** \*\*\* - toolpath flows on the part surfaces following the curves.



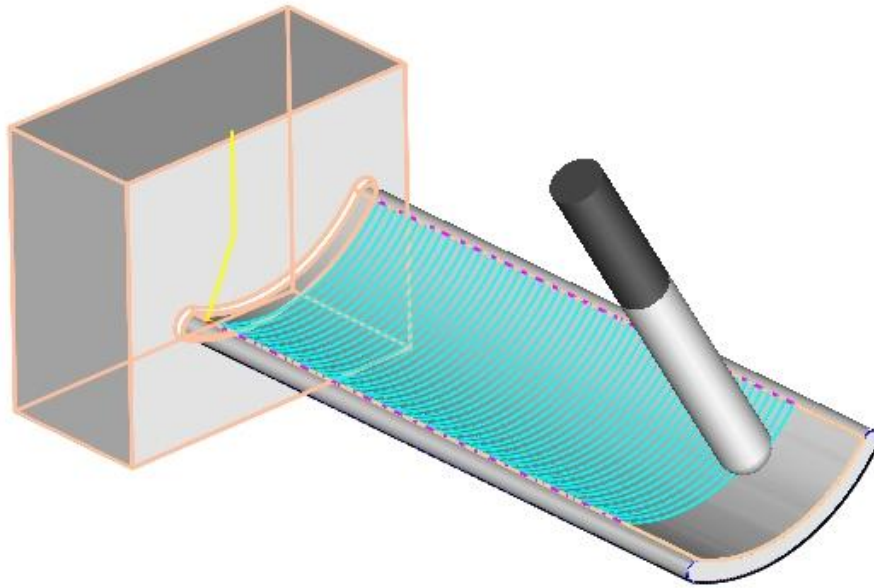
32. **Between 2 Curve Machining** \*\*\* - morphs between two curves. The toolpath makes a gradual transition from one curve to the other and the tool stays normal to the surface.



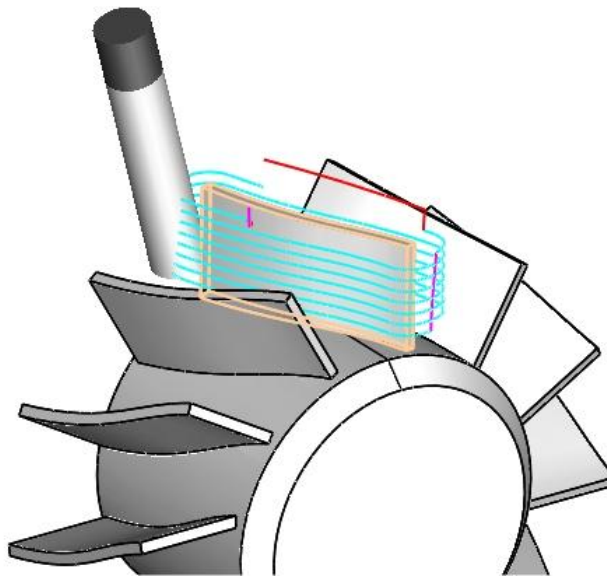
33. **Drive Curve Machining** \*\*\* - used for trimming blow molds and sheet metal dies and the tool follows the curve.



34. **Surface Normal Machining** \*\*\* - similar to parallel finishing where tool moves along a cut pattern, following the contours of the part geometry below and stays normal to the surface

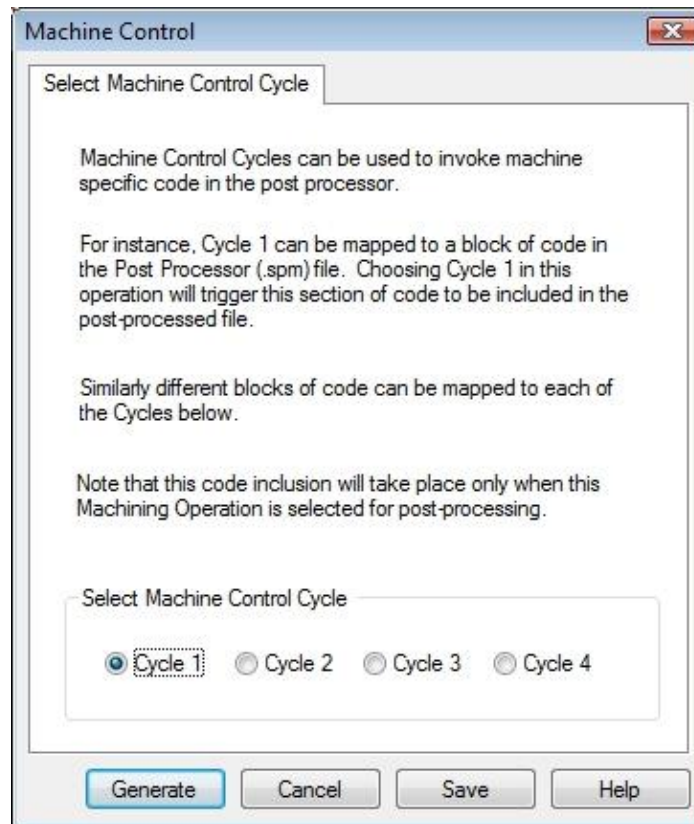


35. **Swarf Machining** \*\*\* - material removal is performed by the sides of the cutter.



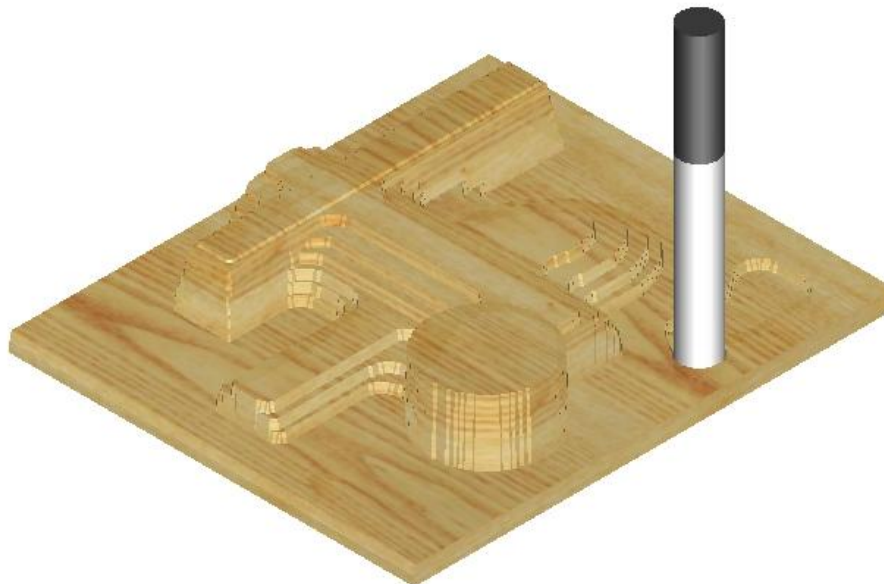
### Additional Machining Methods

36. **Machine Control Operation** \*- used to output a set of code or instructions to the machine.  
These instructions are specified in the post processor.



## Toolpath Simulation

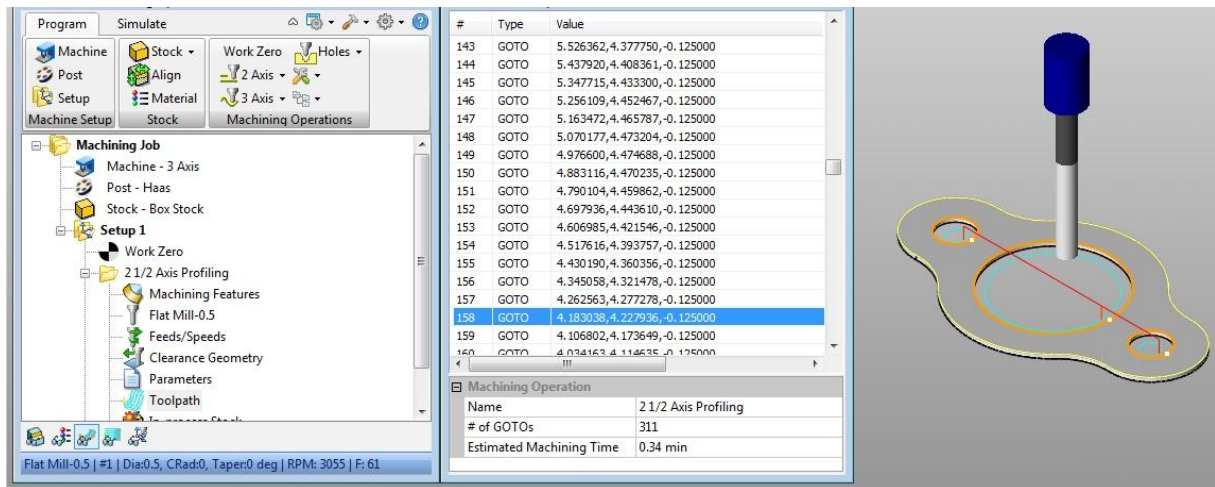
- 37. **Distance Based Simulation** – Allows you to specify a value and simulate by distance mode.
- 38. **Texture mapping for materials** - simulate machining of the generated toolpaths with material texture.



- 39. **Performance Improvements \*\*** - Productivity enhancement for toolpath simulation.

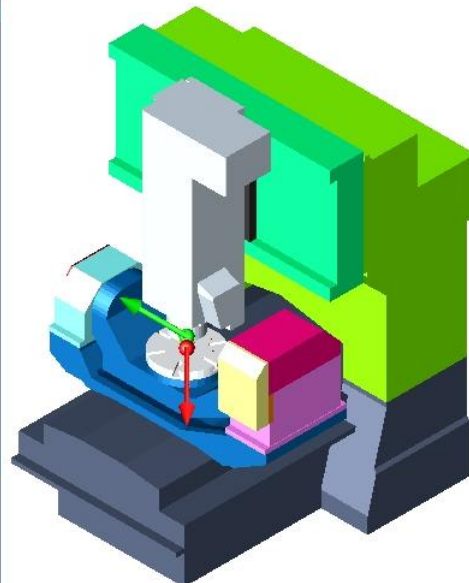
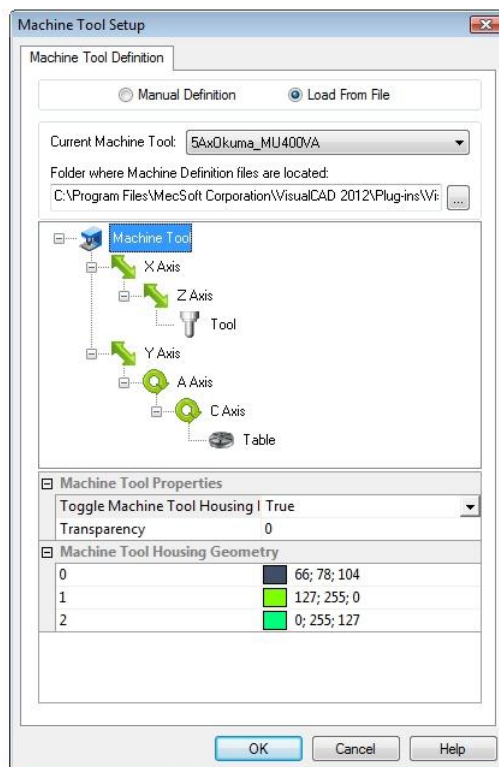


40. **Toolpath Viewer** - step through the toolpath motions using the toolpath viewer.

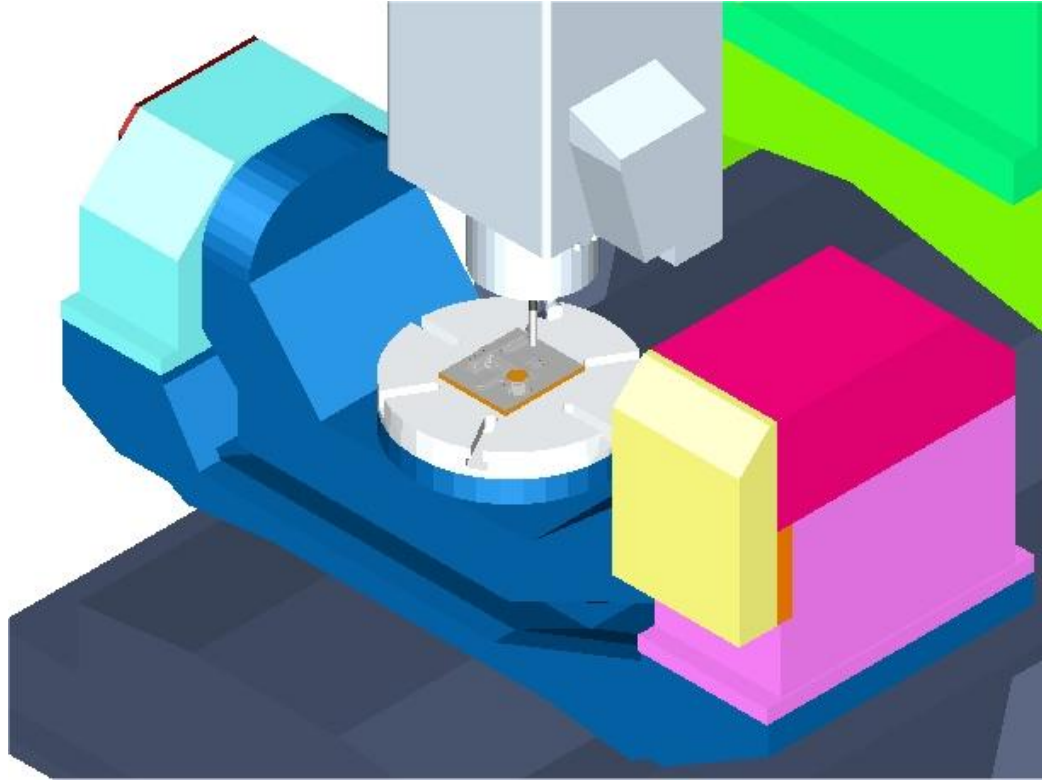


## Machine Tool Simulation

41. **Graphical definition of machines \*** - allows user to select a machine tool from a library of machine tools



42. **Visualization of machine motions \*** - simulate actual machining of the generated toolpaths with machine tool simulation.



## Post Processor Enhancements

43. **New output file naming rules** - allows you to set rules for posted file name when post processing machining operations.

Posted File Naming Conventions

When a Machining Operation(s) is selected for Posting, use

Part File Name + Machining Operation Name ▼

When a Setup is selected for Posting, use

Part File Name + Setup Name ▼

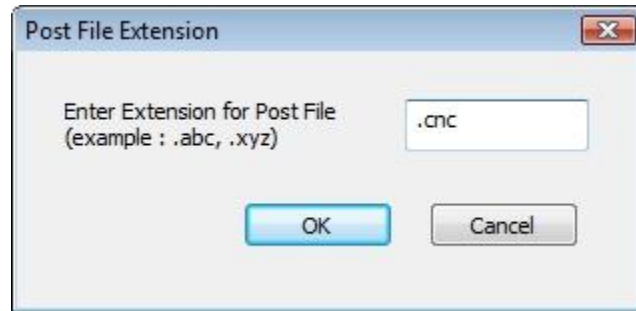
When posting all in file, use

Part File Name ▼

Posted File Extension: .nc ▼ Add New ...

44. **Add new posted file extension** – add an extension to the list by selecting Add new button.





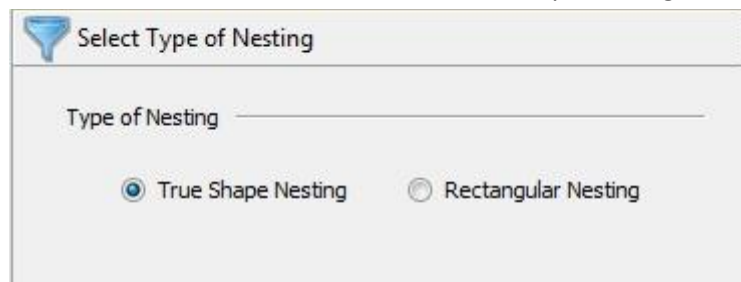
- 45. **Post changes for Knife, Plasma, Laser and Water Jet** - Turn on and off 3D device between transfer motions.
- 46. **5 Axis Post \*** - Output 5 axis toolpath motions.

### Other

- 47. **API for 3<sup>rd</sup> Party Tools** – Provides API to launch 3<sup>rd</sup> party applications like DNC & NC Editors developed by our partners from within RhinoCAM.

### Add on Modules

- 48. **Parts Nesting Module** – Add-on module for Block and True shape nesting



- 49. **FreeMILL Module** – Free 3D toolpath generation and posting.

\* Available in Professional and Premium configurations.

\*\* Available in Expert, Professional and Premium configurations.

\*\*\* Available in Premium configuration.