



# What's New in VisualCAM 2021 for SOLIDWORKS

Feb 9, 2021

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This document describes new features and enhancements introduced in the VisualCAM 2021 for SOLIDWORKS product.

**NOTE:** This information is provided in good faith but MecSoft reserves the right to modify or omit any of the items described in this document when VisualCAM 2021 is released.

# What's New in VisualCAM 2021 for SOLIDWORKS

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## What's New in VisualCAM 2021 for SOLIDWORKS

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This document describes the new functionality that is being introduced with the release of the VisualCAM 2021 for SOLIDWORKS product. This document is organized by listing and describing each of the enhancements incorporated into each of the constituent modules of VisualCAM.

### VISUALCAM 2021

VisualCAM 2021 is a plug-in that runs inside SOLIDWORKS DESIGN product and hosts the following modules:

1. MILL
2. TURN
3. GCODE EDITOR
4. PROFILE-NEST

Each of these modules can be licensed and invoked separately of the other modules. This section describes the various enhancements and improvement to each of the modules.

### COMMON ENHANCEMENTS

This section describes the common enhancements and changes to VisualCAM 2021.

1. A new version of the windowing system for VisualCAM has been integrated into the 2021 product
2. New simulation libraries from Machineworks has been incorporated into all the machining modules. These libraries have improved multi-threaded performance significantly as well as fixed many reported issues.

### LICENSING ENHANCEMENTS

The following enhancements have been implemented in the licensing system for VisualCAM.

1. Ability to automatically fix node-locked licenses that are locked out due to internet issues has been introduced
2. Support for Centos 7.0 has been added to the MecSoft license server product

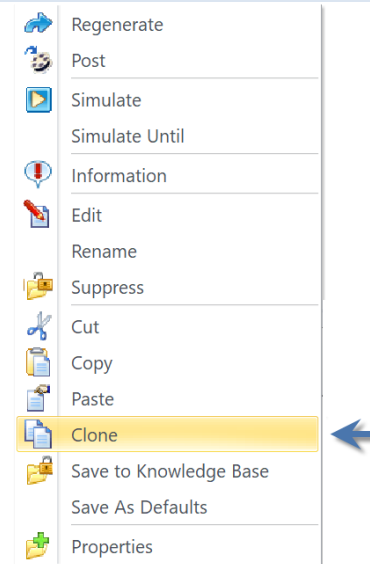
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## WHAT'S NEW IN THE MILL MODULE

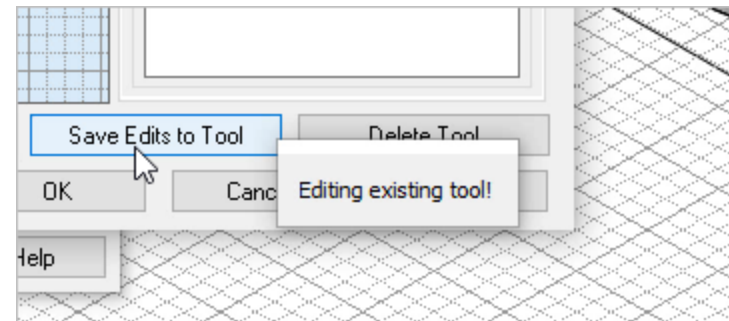
This section describes the enhancements and changes to the MILL module.

### USABILITY ENHANCEMENTS

1. A clone command for Machining Operations was implemented.

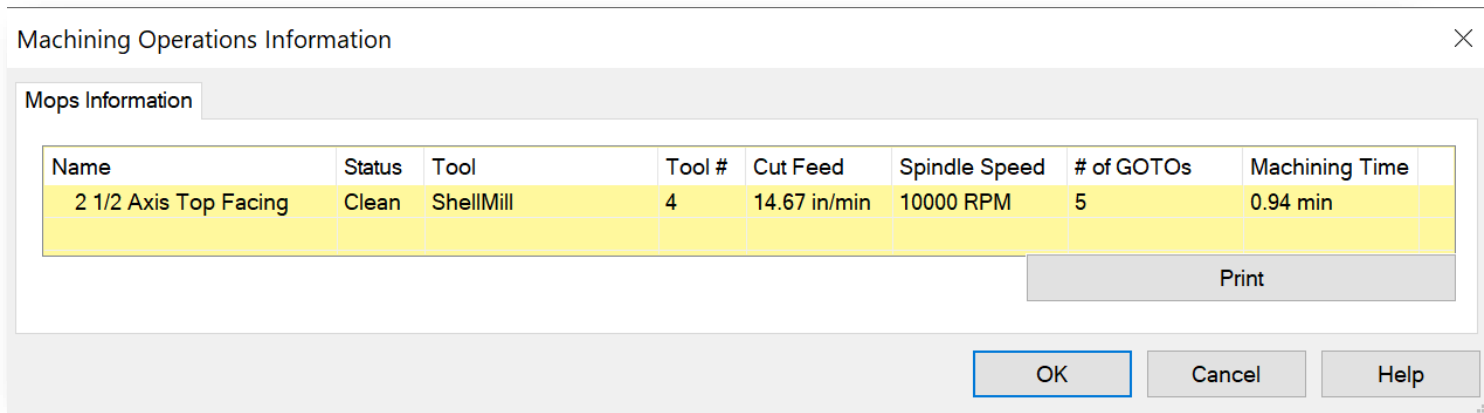


2. A new pop-Up message display window was implemented. These windows display informational messages and do not require user interaction.



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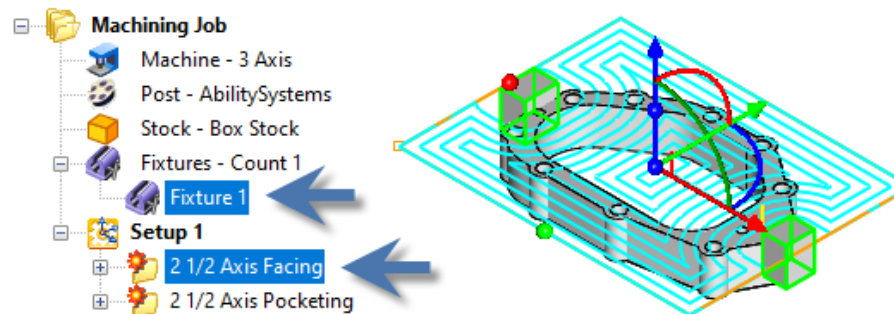
- The spindle speed associated with a Machining Operation is now displayed in the operation information dialog



- Dialog pictures have been made more machining specific throughout the system.

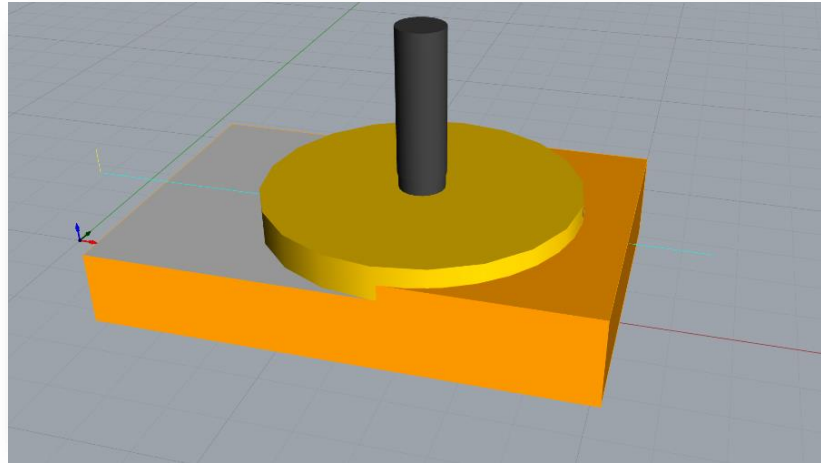
## FIXTURES ENHANCEMENTS

- Fixtures are now associated more tightly with machining operations, such that when the geometry of the fixtures are updated, the associated operations are marked as needing regeneration.

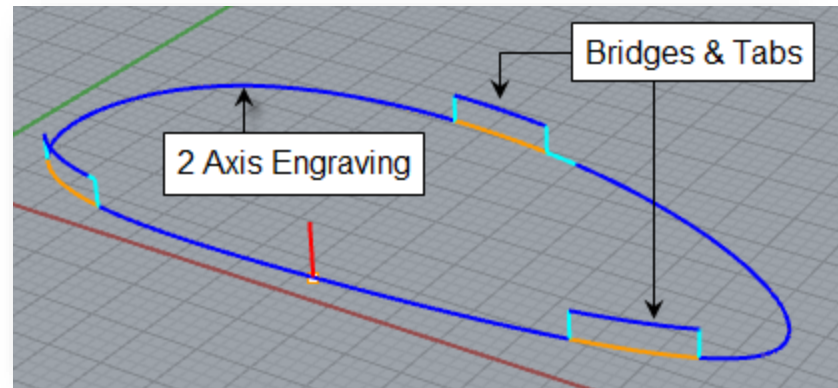


### 2-AXIS ENHANCEMENTS

1. A new machining method called Face Top Machining has been implemented. When using this method, the system computes the optimum angle to machine the top of the stock model using the minimum number of cuts.



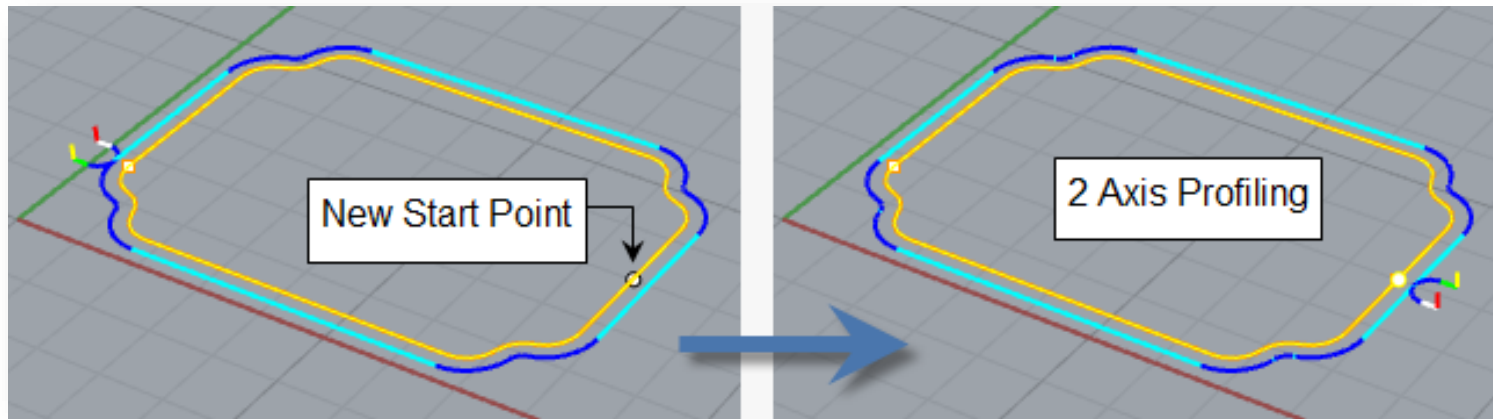
2. Bridges can now be created in the Engraving operation. Both rectangular and triangular bridges can be created.



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3. User selected Start Points for 2 Axis Profiling operations were implemented

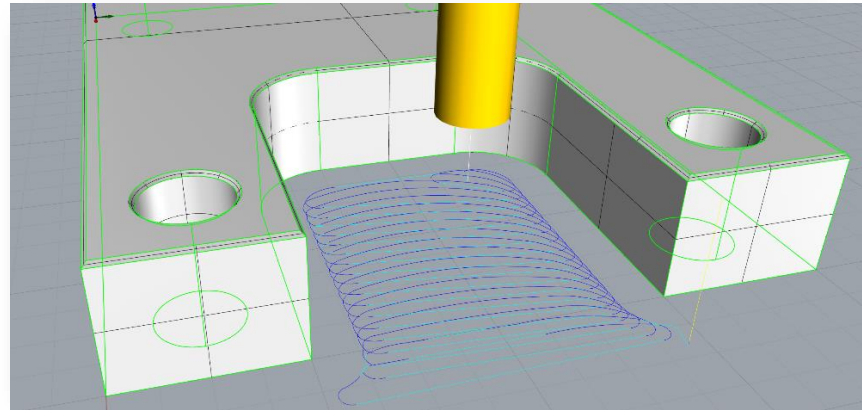


4. A setting to automatically round external corners by tool radius in Profiling and Pocketing machining methods has been implemented. This can be useful when creating inlays.

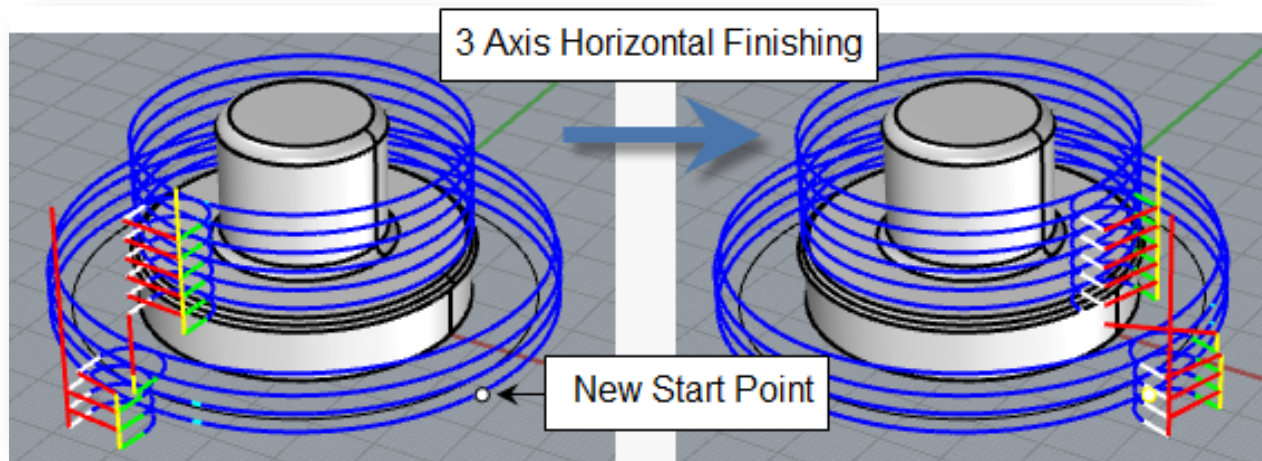


### 3-AXIS ENHANCEMENTS

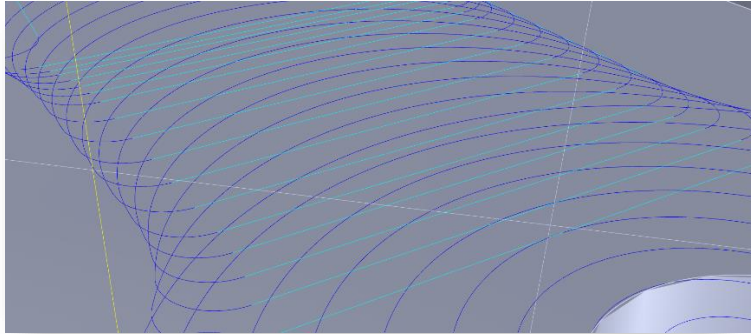
1. A new machining method called Adaptive Roughing machining method has been implemented. Adaptive Roughing allows the cutter to move in such a way as to remove material at a constant engagement. This method has the ability to save tool and machine life due to smooth cutting being performed. (This method is a separately licensed method and needs to be purchased separately)



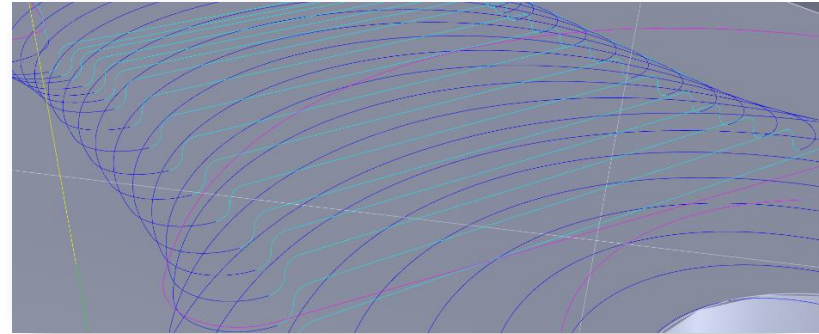
2. User selected Start Points in 3 Axis Horizontal Finishing was implemented



3. Cut transfers were enhanced to enable the user to add a tangential lift as well as to reduce the federate for High Speed machining toolpaths



**High Speed toolpath with transfer motions at same height as toolpath**

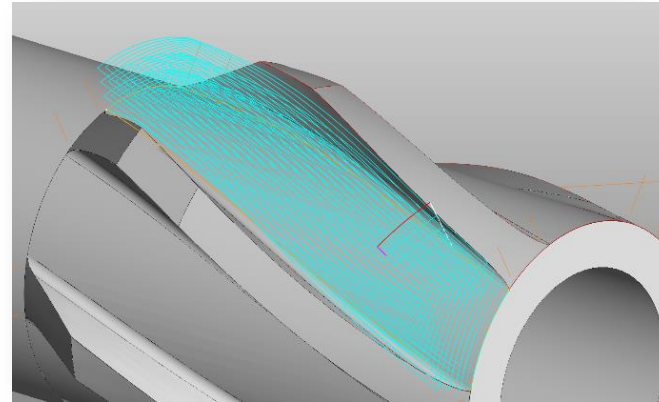


**Transfer motions with a tangential lift added**

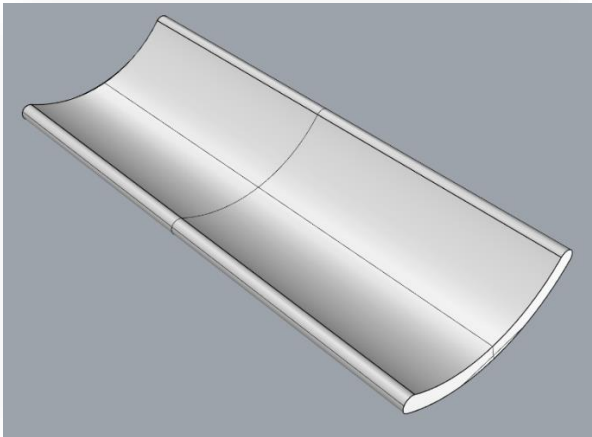
4. The Clear Flats option in horizontal Finishing was enhanced to remove unwanted toolpaths

### 4 AXIS TOOLPATH ENHANCEMENTS

1. Multiple roughing cut levels in 4 Axis Projection Pocketing was introduced



2. Helical pattern in Drive Surface Machining was introduced



**Drive Surfaces used in 4 Axis Drive Surface machining**

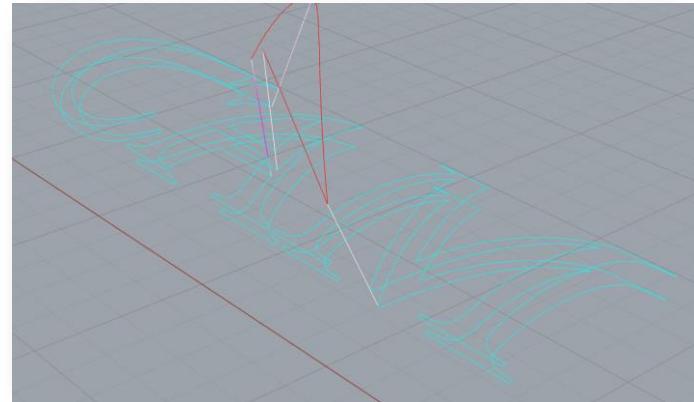


**New helical toolpath created to machine the surfaces**

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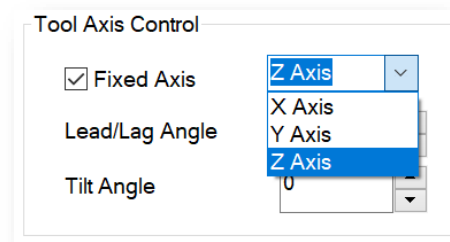
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3. An option to choose between Zig and Zig Zag in 4 Axis Engraving, when performing multiple passes has been implemented. Additionally, the Cut Levels dialog has been made similar to the 2 ½ Axis Cut Level dialog.



### 5 AXIS TOOLPATH ENHANCEMENTS

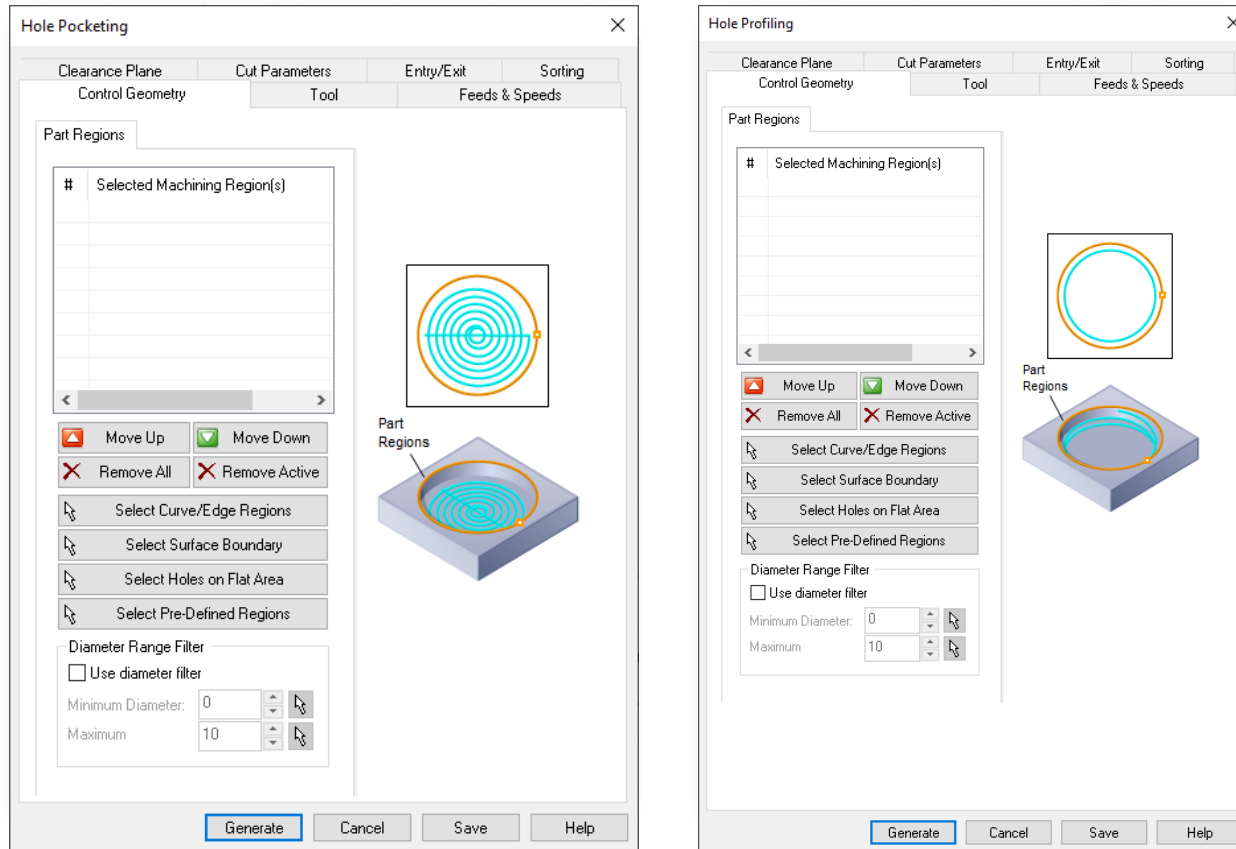
1. Additional controls for tool axis control has been implemented in all 5 Axis Machining methods. This allows better control of the tool axis in tight spaces for simultaneous 5 Axis machining.



2. New Moduleworks toolpath generation libraries for 5 axis machining have been integrated with the product.

## HOLE MAKING ENHANCEMENTS

1. Holes selection behavior was changed in the Hole Pocketing and Hole Profiling operations

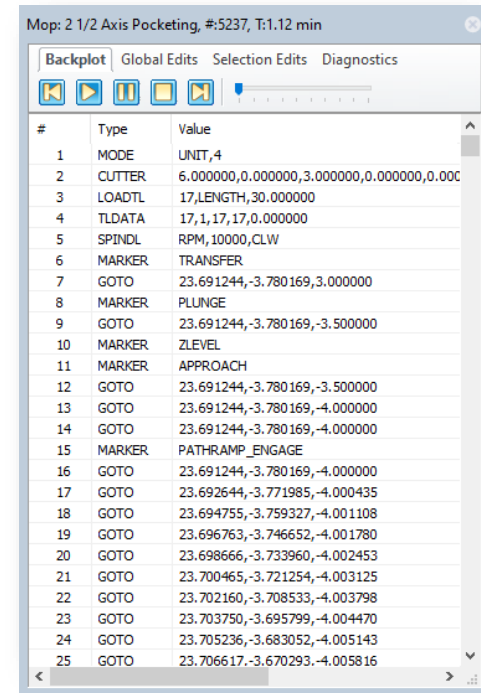


***Dialog for selection of holes with filters in both hole pocketing and hole profiling***

## What's New in VisualCAM 2021 for SOLIDWORKS

### TOOLPATH EDITOR ENHANCEMENTS

1. A separate toolpath Back-plot mode was added, with the current line being back-plotted is highlighted in the toolpath editor window.



2. A separate Diagnostics tab was added to the toolpath editor and the following functions were implanted:
  - a. Toolpath diagnostic reporting dialog was implemented. This diagnostic dialog displays diagnostics such as tool collisions, head unwinds etc.
  - b. Error navigation buttons were implemented for ease of navigation from one error to the next.

### FEEDS/SPEEDS ENHANCEMENTS

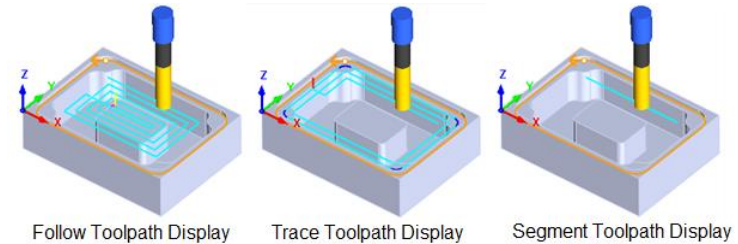
1. Feeds & Speeds information stored with the tool are now written out to the CSV format tool libraries.

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### SIMULATION ENHANCEMENTS

1. The graphics display was streamlined when simulation switches from one operation to the next in the operation tree
2. Follow, Trace and Segment toolpath display modes have been implemented



### MACHINE TOOL SIMULATION ENHANCEMENTS

1. Additional machine tool models have been added as part of the installed machine tool simulation library.

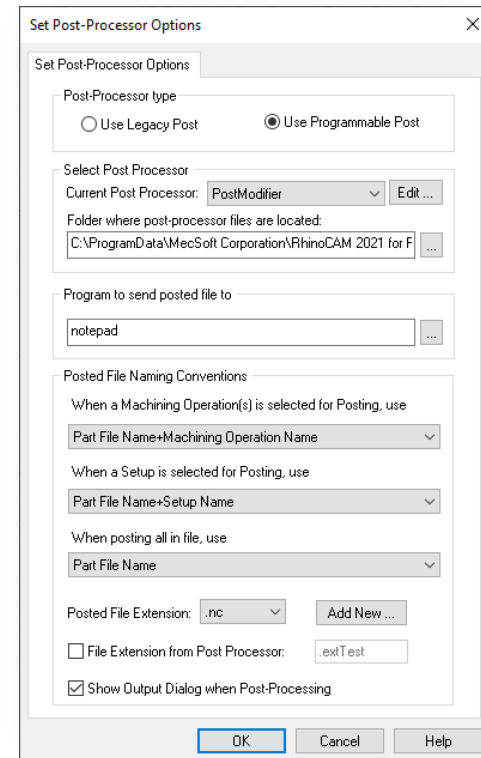
### KNOWLEDGE BASE ENHANCEMENTS

1. Ability to use the saved stock or to create a stock model based on saved rules has been implemented
2. Ability to create stock based on current geometry as well as using color filters has been implemented.

## What's New in VisualCAM 2021 for SOLIDWORKS

### POST PROCESSOR ENHANCEMENTS

1. A new programmable post-processor has been introduced. This module is a major enhancement to the post processor engine. Users can use the Python programming language to create posts.

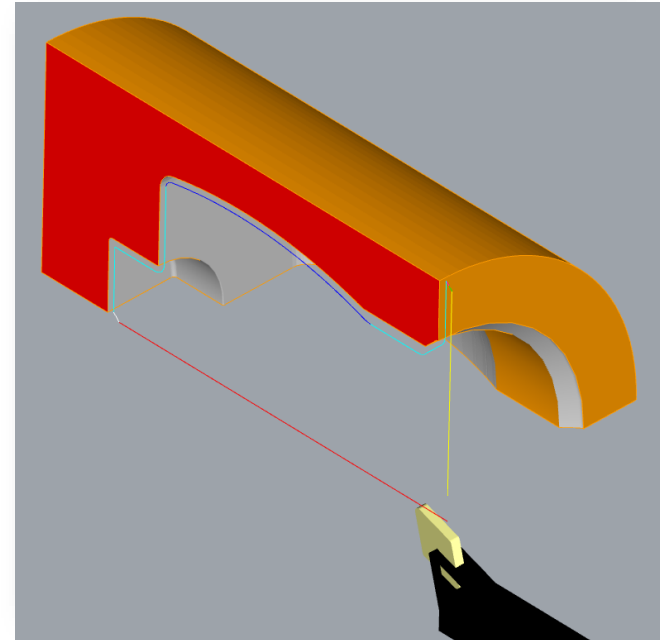


2. Post file extension definition can now be selected from the spm file in the case of the legacy post processor
3. The ability to output macros for Work Zero Offset was implemented for the legacy post processor



### WHAT'S NEW IN THE TURN MODULE

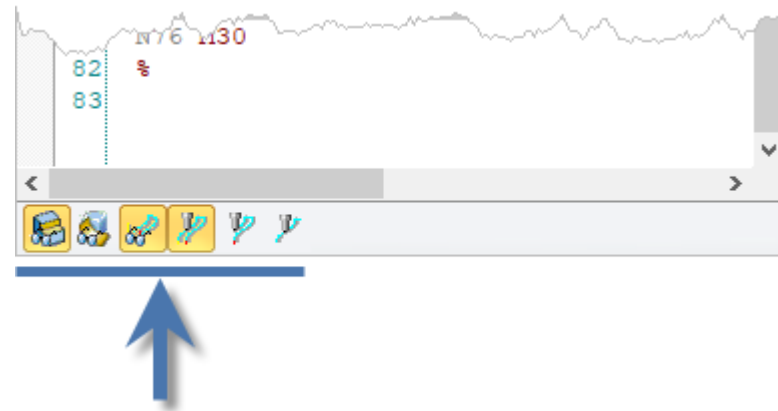
1. All ID operations now retract the tool back along the rotational axis to clear the face of the part to prevent gouging of the part when an OD operation is followed by an ID operation.



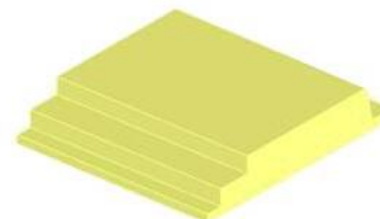
2. Arc fitting in all Turn toolpath methods has been implemented

## WHAT'S NEW IN THE G-CODE EDITOR MODULE

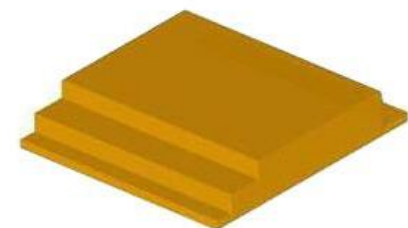
1. The G-code editor display toolbar was introduced with the following functions:
  - Hide/show part visibility button to toggle display of part in Simulate tab
  - Hide/show toolpath visibility button to toggle display of stock in Simulate tab
  - Display of the G-code by Z levels



2. Allow cut material simulation by Z levels if the G-code was created using multiple Z levels
3. Find and Replace commands were implemented
4. Stock from selection was implemented



3D Geometry Selection for Stock

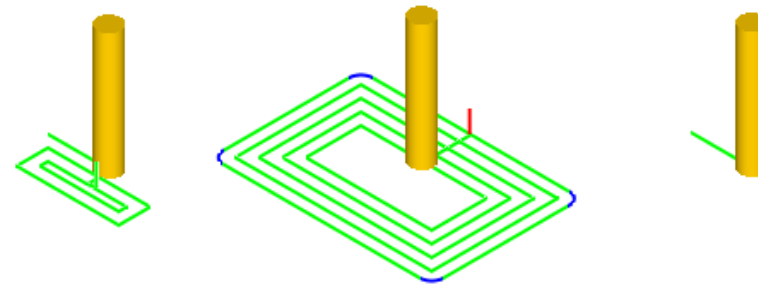


Stock Created from 3D Geometry

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5. Follow, Trace and Segment G-code display modes were introduced to enable better visibility of the G-code statements during simulation.



6. Additional file extension for G-code file types were added

### WHAT'S NEW IN THE PROFILE-NEST MODULE

1. Allow renaming of sheet names when using curves to define sheet Enhancement request
2. Added an option to choose between True Shape & Rectangular Nesting
3. The ability to update length, width and bottom-left corner position for user defined sheets for Sheet selection dialog was added

### BUGS FIXED

Numerous bugs have been fixed to make the product more reliable and robust.

1. Issues with load from file dialog for feeds/speeds in TURN module
2. In G-Code Editor module, brackets "" cause the toolpath to not display and to pause during simulations
3. Bug in Rotate, Mirror & Scale tabs in Transform dialog in G-code Editor module was fixed
4. Simulating a Setup with a Machining Operation Set that does not have any operations inside the mop set results in a serious unhandled error
5. RMB and rename under tools tab in Objects browser does not make the text editable
6. Simulating a mop inside a mop set does not show in-process stock from the mop set above it
7. In AFM Drilling, drill depth override field is missing in both 2019 and 2021, was present in 2017
8. Images from bug FN-759 "2021 Dialog Icon Enhancements" were implemented
9. Arcs are flipped when face edge is selected as drive region in AlibreCAM for attached test case

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10. Toolpath Min Z and Max Z variables output the coordinate values in WCS when the coordinate system is in a different orientation
11. G-Code Editor module - Clipping plane issue with cut material simulation
12. G-Code Editor Module: Issues with simulating multiple g-code files
13. G-Code Editor Module: Simulation fails after g-code has been simulated, deleted and loaded back
14. G-Code Editor Module - Arcs in XZ and YZ planes are displayed as strange motions
15. G-Code Editor Module - Text appears very small on a high resolution monitor
16. Library Open Failure Error that happened in some cases in the licensing module was fixed
17. Filleting operation gouges part region when max depth/cut value set is less than corner radius
18. Spiral cut pattern with Horizontal Roughing ignores the engage/retract settings and does a plunge for the engagement
19. Drill operation outputs spindle speed mode as CSS (G96) instead of CRS (G97) when programmed after a TURN operation
20. Toolpath is offset away from part region when tool name is over 60 characters in length
21. Path Ramp fails to apply in 2 axis roughing when using spiral cut pattern for cavity regions
22. Setting Start point to inside in pocketing does not start on the inside when Always keep tool down is selected
23. Issues with High Speed Cut pattern in 3 axis horizontal roughing - toolpath gouges part geometry
24. Manipulator triad display is left behind even when no geometries are selected
25. Memory leaks issues were fixed in core methods that are used for the Feature Detection
26. Generating chamfer operation for hole feature, results in incorrect toolpath
27. Surface and Fixture colors options do not apply to TURN module" was fixed.
28. Issue "If stock edge display is disabled, then the stock edge colors should also be disabled" was fixed.

Numerous other smaller bugs and under the hood changes were made.