What's New in CAMWorks 2021 Plus

November 2021

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What's New in CAMWorks 2021Plus SP3

Supported Platforms

Supported Platforms for 64-bit	
Solid Modeler:	The 64-bit version of: - SOLIDWORKS 2021 - CAMWorks Solids 2021 - SOLIDWORKS 2020 - CAMWorks Solids 2020
Operating System:	64-bit version of: - Windows 10 - Windows 8.1 - Windows 7 (SP1 or higher) [*Home Editions are not supported] **Note:** CAMWorks 2021Plus is supported only on 64-bit Operating systems.

Resolved CPRs Document

Purpose of Document:	The Resolved CPRs (*CAMWorks Problem Report*) document has been updated to report the software errors that have been resolved in the current Service Pack (2021Plus SP3).
Path to Document:	To view the document, select: <Drive>:*ProgramFiles\CAMWorks2021Plusx64\CAMWorks_VC141\Lang\English\ CW2021PlusBuildInfo.pdf.*

What's New in CAMWorks 2021Plus SP2

Supported Platforms

Supported Platforms for 64-bit	
Solid Modeler:	The 64-bit version of: - SOLIDWORKS 2021 - CAMWorks Solids 2021 - SOLIDWORKS 2020 - CAMWorks Solids 2020
Operating System:	64-bit version of: - Windows 10 - Windows 8.1 - Windows 7 (SP1 or higher) [*Home Editions are not supported] **Note:** CAMWorks 2021Plus is supported only on 64-bit Operating systems.

Resolved CPRs Document

Purpose of Document:	The Resolved CPRs (*CAMWorks Problem Report*) document has been updated to report the software errors that have been resolved in the current Service Pack (2021Plus SP2).
Path to Document:	To view the document, select: <Drive>:*ProgramFiles\CAMWorks2021Plusx64\CAMWorks_VC141\Lang\English\ CW2021PlusBuildInfo.pdf.*

What's New in CAMWorks 2021Plus SP1

Supported Platforms

Supported Platforms for 64-bit	
Solid Modeler:	The 64-bit version of: - SOLIDWORKS 2021 - CAMWorks Solids 2021 - SOLIDWORKS 2020 - CAMWorks Solids 2020
Operating System:	64-bit version of: - Windows 10 - Windows 8.1 - Windows 7 (SP1 or higher) [*Home Editions are not supported] **Note:** CAMWorks 2021Plus is supported only on 64-bit Operating systems.

Resolved CPRs Document

Purpose of Document:	The Resolved CPRs (*CAMWorks Problem Report*) document has been updated to report the software errors that have been resolved in the current Service Pack (2021Plus SP1).
Path to Document:	To view the document, select: *Start>>All Programs>>CAMWorks2021Plusx64>>Resolved CPR's.*

New - Functionality to display Tool Moves in User-Assigned Colors for various Toolpath Segments

Purpose:

To provide the functionality to filter Mill and Turn tools/assemblies based on user-defined text strings

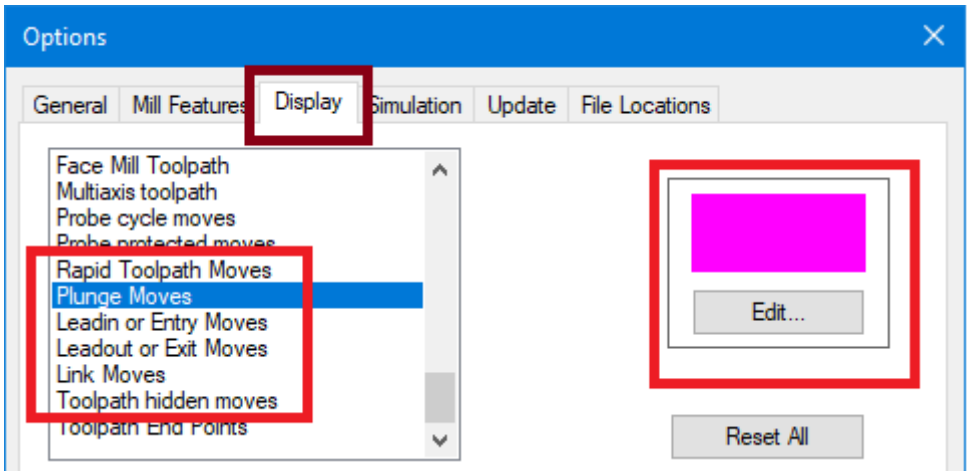
Implementation:

Enhancements added:

In the previous versions of CAMWorks, the following enhancements with respect to toolpath moves (Rapid moves, Plunge Moves, Leadin moves, Leadout moves, Link moves, Toolpath hidden Moves) were introduced:

- Options to enable/disable (hide) the display of specific toolpath moves that comprise the toolpaths
- Option to change/reassign the display color for the toolpath moves that comprise the toolpaths
- Option to display of hidden toolpath moves in a user-specified color

The settings to assign the user-specified colors are available within the ***Display*** tab of the ***CAMWorks Options*** dialog box.



Settings in Display tab of Options dialog box for assigning desired colors for Toolpath Moves

Toolpath Types for which these Enhancements are applicable:

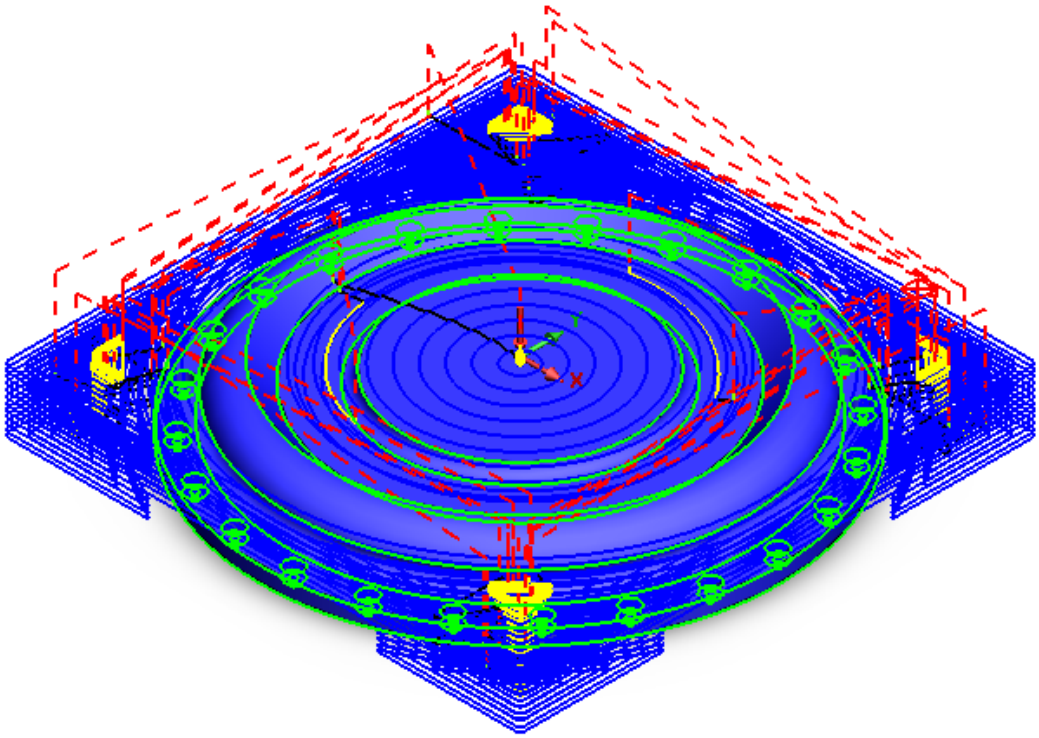
Currently, these enhancements for toolpath moves are available only for toolpath segments of the following Mill toolpath types:

- 3 Axis Mill
- Multiaxis Mill
- VoluMill toolpaths (Both 3Axis and 2.5 Axis Mill)

Scenarios in which the Toolpath Moves can be viewed in the Graphics Area of SOLIDWORKS

These toolpath moves can be viewed in the graphics area whenever you click on the corresponding Operation nodes in the *Operation* tree

Illustrative Example



Illustrative Example of an Area Clearance Toolpath with Leadin moves displayed in yellow color and Rapid Toolpath moves displayed in red color

What's New in CAMWorks 2021Plus SP0

Supported Platforms

Supported Platforms for 64-bit	
Solid Modeler:	The 64-bit version of: - SOLIDWORKS 2021 - CAMWorks Solids 2021
Operating System:	64-bit version of: - Windows 10 - Windows 8.1 - Windows 7 (SP1 or higher) [*Home Editions are not supported] **Note:** CAMWorks 2021Plus is supported only on 64-bit Operating systems.

Resolved CPRs Document

Purpose of Document:	The Resolved CPRs (*CAMWorks Problem Report*) document has been updated to report the software errors that have been resolved in the current Service Pack (2021Plus SP0).
Path to Document:	To view the document, select: *Start>>All Programs>>CAMWorks2021Plusx64>>Resolved CPR's.*

General

New - Option for Filter Mill and Turn Tools/Assemblies using Text Strings

Purpose:

To provide the functionality to filter Mill and Turn tools/assemblies based on user-defined text strings

Implementation:

In *CAMWORKS*, the options to filter Mill and Turn tools/assemblies based on following parameters are available within the ***Tool Select Filter*** dialog box:

- Tool Type
- Diameter and End Radius /Insert Radius
- Tool material
- Holder Designation, type, and summary
- Protrusion Length

From *CAMWORKS 2021Plus* version onwards, and additional option to filter Mill and Turn tools based on user-defined text strings will be available within the *Tool Select Filter* dialog box. This option is labelled ***Containing text***. This filter has following features:

i. This text string search is not case sensitive.

ii. Partial match for text string search is supported.

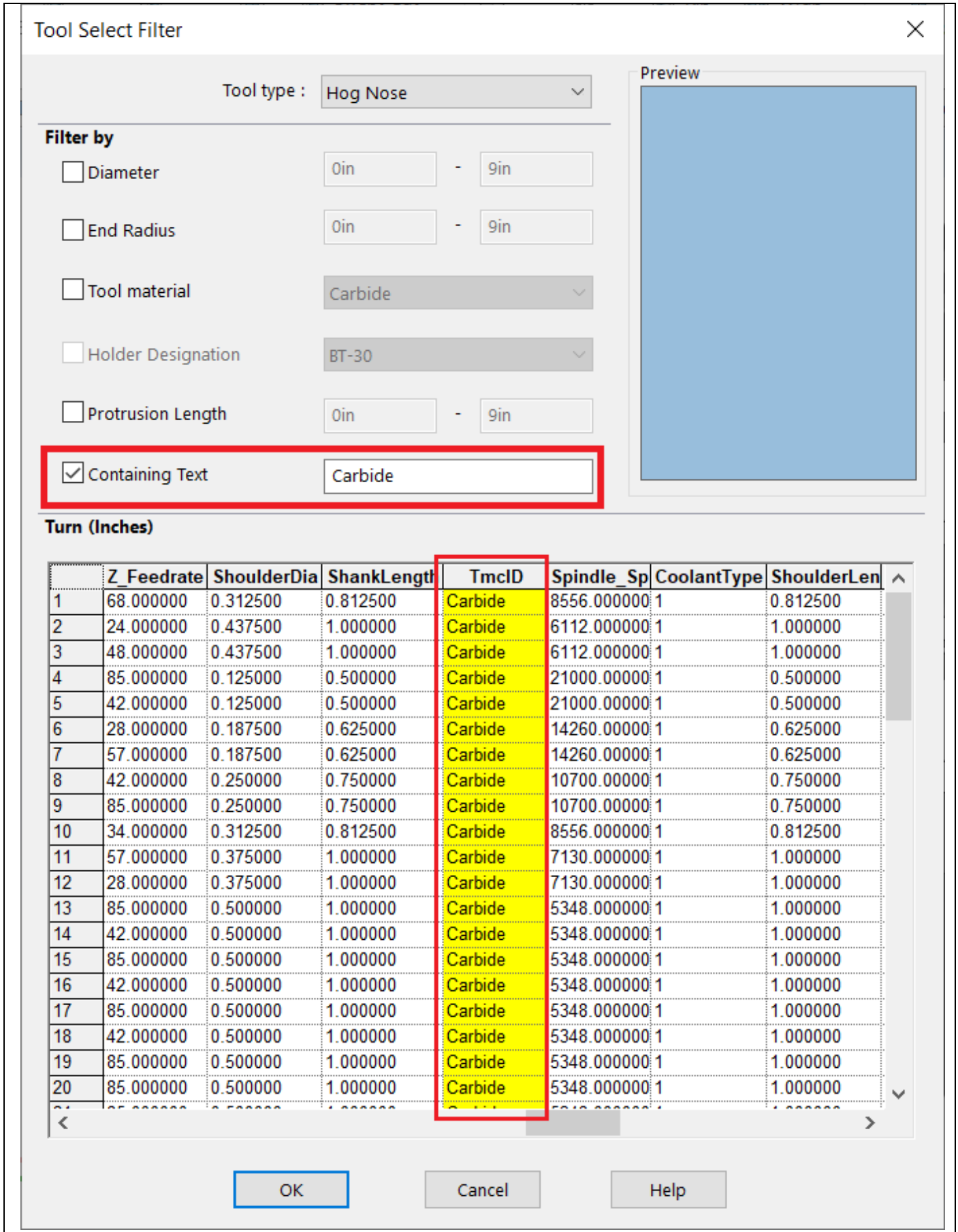
iii. The default text within the text field of this filter will be an asterisk symbol (*). This symbol indicates that listed tools are currently not filtered based on any text string. You need to delete this asterisk character before inputting the text string.

iv. Special characters like quotes ("), space ( ), hyphen (-), backslash (\), underscore (_), comma (,), hash (#) etc. are supported for the text string.

v. The text string you enter will be cross-checked for a match with parametric text fields that constitute the definition of the tools. All tools having one or more parameters with text matching the user-defined text string will be filtered and displayed.

vi. The list of tools displayed in the user interface will be filtered based on the input text string when you tab out of the text string field or shift the mouse focus to another parameter within the user interface.

vii. For tool entries listed and filtered based on the input text string, the text fields of tool entries containing the matching text will be highlighted.



	Z_Feedrate	ShoulderDia	ShankLength	TmcID	Spindle_Sp	CoolantType	ShoulderLen
1	68.000000	0.312500	0.812500	Carbide	8556.000000	1	0.812500
2	24.000000	0.437500	1.000000	Carbide	6112.000000	1	1.000000
3	48.000000	0.437500	1.000000	Carbide	6112.000000	1	1.000000
4	85.000000	0.125000	0.500000	Carbide	21000.00000	1	0.500000
5	42.000000	0.125000	0.500000	Carbide	21000.00000	1	0.500000
6	28.000000	0.187500	0.625000	Carbide	14260.00000	1	0.625000
7	57.000000	0.187500	0.625000	Carbide	14260.00000	1	0.625000
8	42.000000	0.250000	0.750000	Carbide	10700.00000	1	0.750000
9	85.000000	0.250000	0.750000	Carbide	10700.00000	1	0.750000
10	34.000000	0.312500	0.812500	Carbide	8556.000000	1	0.812500
11	57.000000	0.375000	1.000000	Carbide	7130.000000	1	1.000000
12	28.000000	0.375000	1.000000	Carbide	7130.000000	1	1.000000
13	85.000000	0.500000	1.000000	Carbide	5348.000000	1	1.000000
14	42.000000	0.500000	1.000000	Carbide	5348.000000	1	1.000000
15	85.000000	0.500000	1.000000	Carbide	5348.000000	1	1.000000
16	42.000000	0.500000	1.000000	Carbide	5348.000000	1	1.000000
17	85.000000	0.500000	1.000000	Carbide	5348.000000	1	1.000000
18	42.000000	0.500000	1.000000	Carbide	5348.000000	1	1.000000
19	85.000000	0.500000	1.000000	Carbide	5348.000000	1	1.000000
20	85.000000	0.500000	1.000000	Carbide	5348.000000	1	1.000000

Options to choose Origin of Mill Part Setup in Origin tab of Part Setup Parameters Dialog Box

New - Display Color Settings for Toolpath End Points

Purpose:

To provide a functionality whereby user-assigned color settings can be applied to Toolpath End Points viewed in the graphics area

Implementation:

Viewing Toolpath End Points in the Graphics Area

For operations for which toolpaths have been generated, the Toolpath End Points can be viewed in the graphics area in the following scenarios:

i. When executing the ***Step Through Toolpath*** command (provided that the *Show Toolpath End Points* toggle button is in 'ON' mode)

ii. When you edit a toolpath using the ***Edit Toolpath Dialog Box*** (provided that the *Show Toolpath End Points* toggle button is in 'ON' mode)

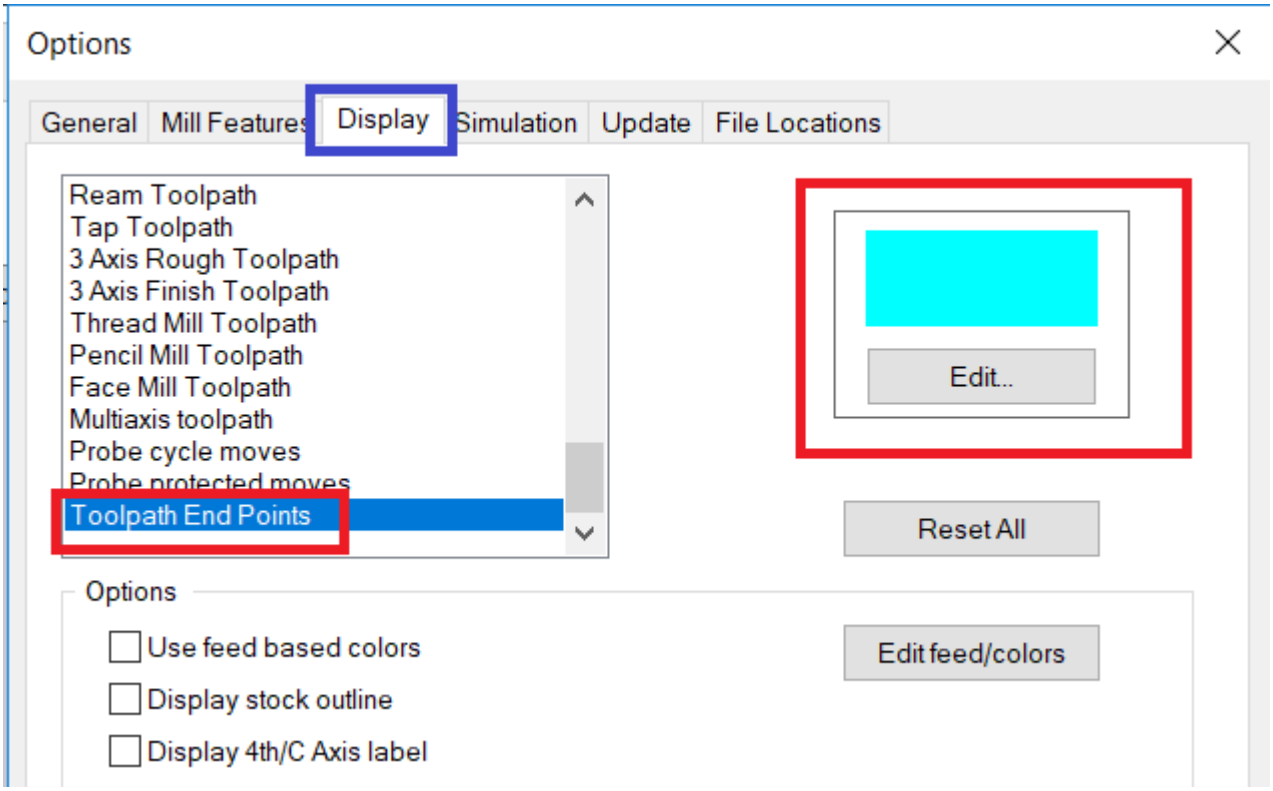
iii. When you execute the ***Advance Edit Toolpath*** command to edit the toolpath of a Mill operation using the *Advanced Edit Toolpath Dialog Box* (provided that the *Show Toolpath End Points* toggle button is in 'ON' mode)

In previous version of CAMWorks, there was not setting available to change the default color settings for Toolpath End Points. From *CAMWorks 2021Plus* version onwards, the color display settings for Toolpath End Points can be customized using the *Color Settings* parameters available under ***Display*** tab of the ***CAMWorks Options*** dialog box.

i. Navigate to the *Display* tab of the *CAMWorks Options* dialog box.

ii. *'Toolpath End Points'* will be one of the options listed in the Color Settings list box under this tab. Scroll down within this list box and select the *'Toolpath End Points'* option.

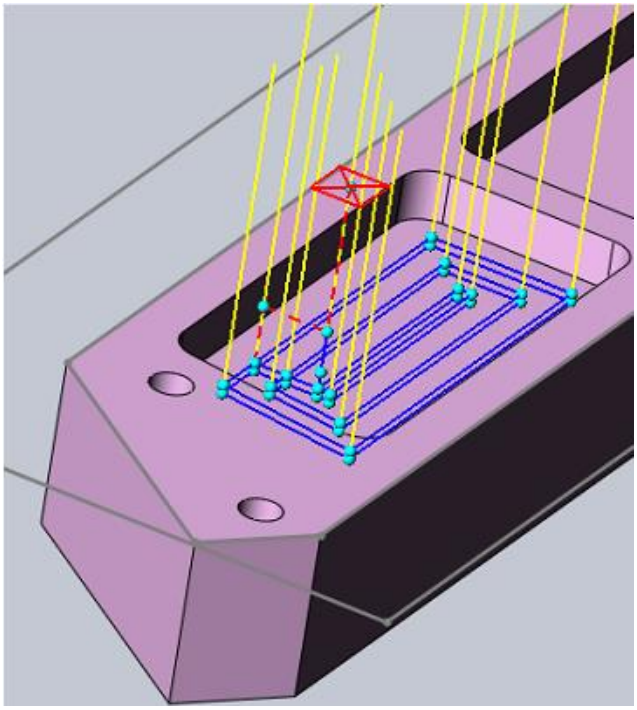
iii. The currently assigned color for Toolpath End Points will be displayed adjacent to this list box. (Under default settings, this color will be Cyan for *'Toolpath End Points'* option.)



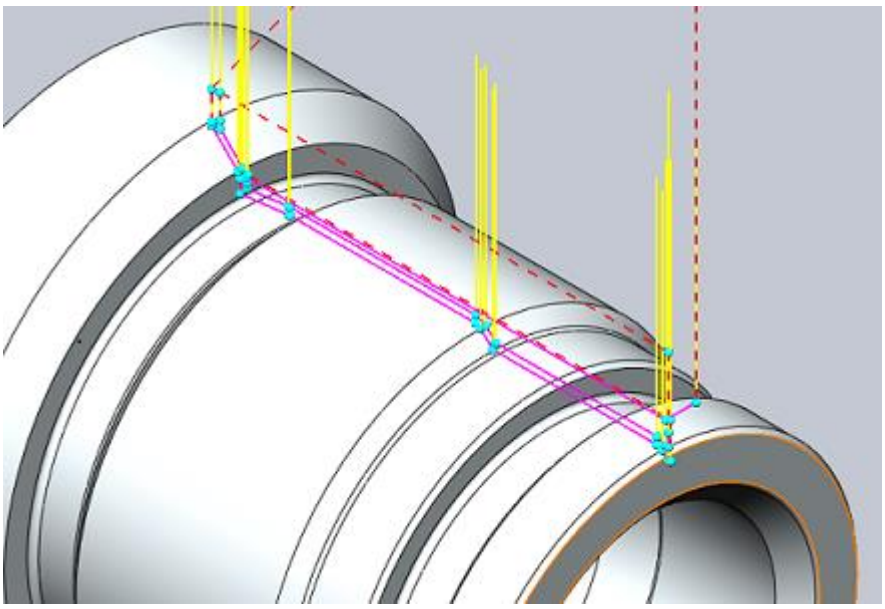
'Toolpath End Point' option in Color Settings list box under Display Tab of options Dialog Box

iv. Click on the ***Edit*** button below the color display. Clicking on this button displays the dialog box for color reassignment. Use the settings within this displayed dialog box to assign the color of your choice.

v. Click on the ***OK*** button to apply the changes and close the dialog box.



Sample Mill Toolpath showcasing Toolpath End Points in Cyan color



Sample Turn Toolpath showcasing Toolpath End Points in Cyan color

New - CAMWorks Task Pane with Web Browser Controls to Facilitate Communication

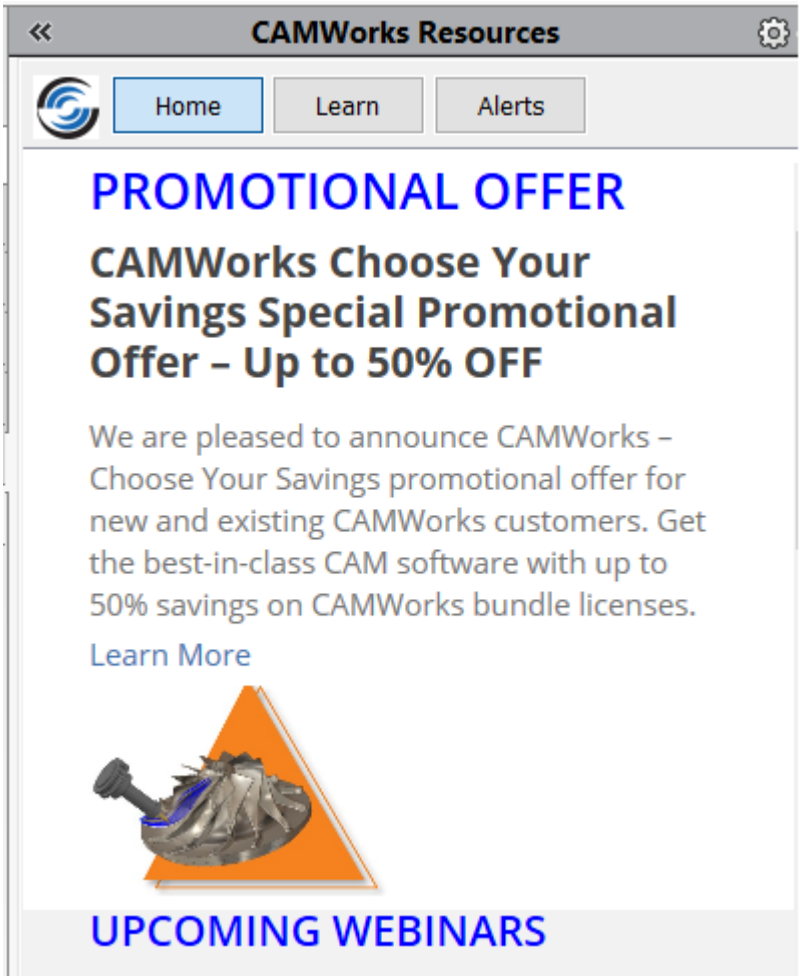
Purpose:

To provide an interface within the ***CAMWorks*** application to facilitate better communication with end users about effective utilization and potential of CAMWorks, product updates and versions, learning tools and resources

Implementation:

Location of CAMWorks Task Pane

A new task pane named ***CAMWorks Resources*** has been added to ***SOLIDWORKS/CAMWorks Solids*** task panes area on the right-hand side of the application.



CAMWorks Resources Task Pane in Task Panes Area of SOLIDWORKS/ CAMWorks Solids

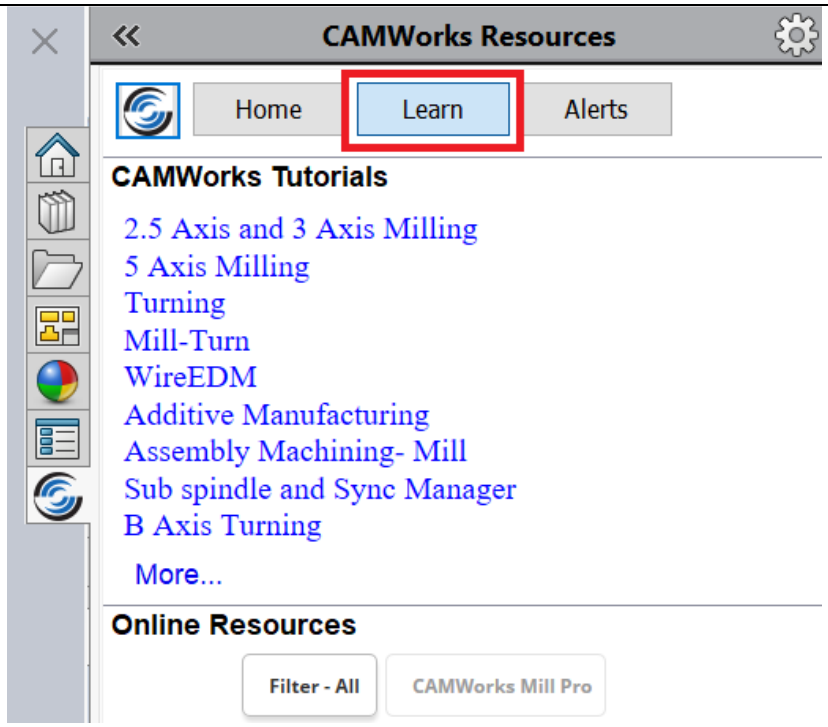
There are three tabs provided within this task pane:

1. **Home tab**

Click on the various tiles displayed within this tab to know about the various practical and potential industrial applications of CAMWorks. These include CAMWorks success stories, case studies, blogs, webinars, announcements, promotional offers, etc.

2. **Learn Tab**

This tab lists the various learning resources (both in-app resources as well as online resources) available to users for acquainting themselves with the finer details and nuances of CAMWorks. The aim is to help users exploit the full potential of CAMWorks.



Learn Tab of CAMWorks Task Pane with Learning Resources listed

3. Alerts Tab

The purpose of the ***Alerts*** tab is to provide an interface for users to view and download the CAMWorks versions released periodically. All the versions are listed in descending chronological order of release.

Alerts tab of CAMWorks Task Pane

Important Notes:

- An active Internet connection is required to access information within the CAMWorks task pane.
- When you click on the  icon adjacent to the ***Home*** tab, the default web browser will launch the CAMWorks website.

Mill

Improved - Renaming and Rearrangement of existing CNC Parameters for Clarity

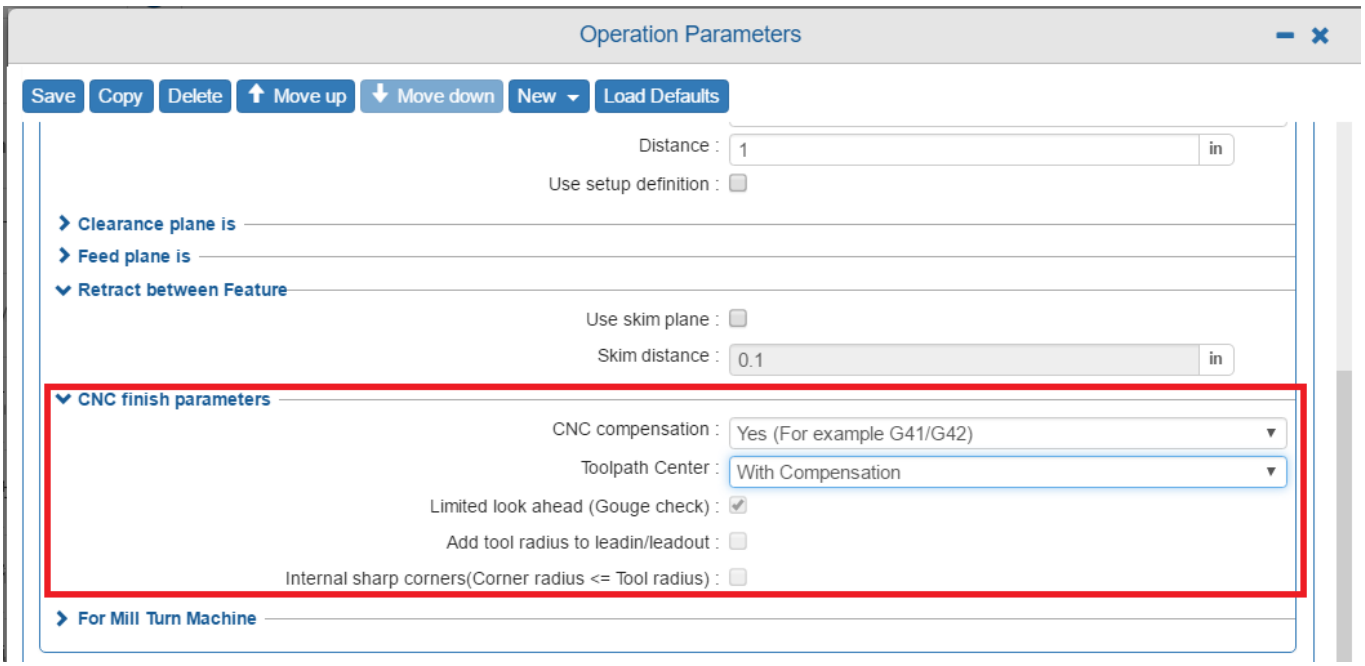
Purpose:
Renaming and rearranging of existing CNC Finish parameters to ensure intuitive nomenclature and facilitate easier understanding by users

Implementation:
In CAMWorks Mill mode, the following ***CNC Finish parameters*** in ***NC*** tab of ***Operation Parameters*** dialog box have been renamed:

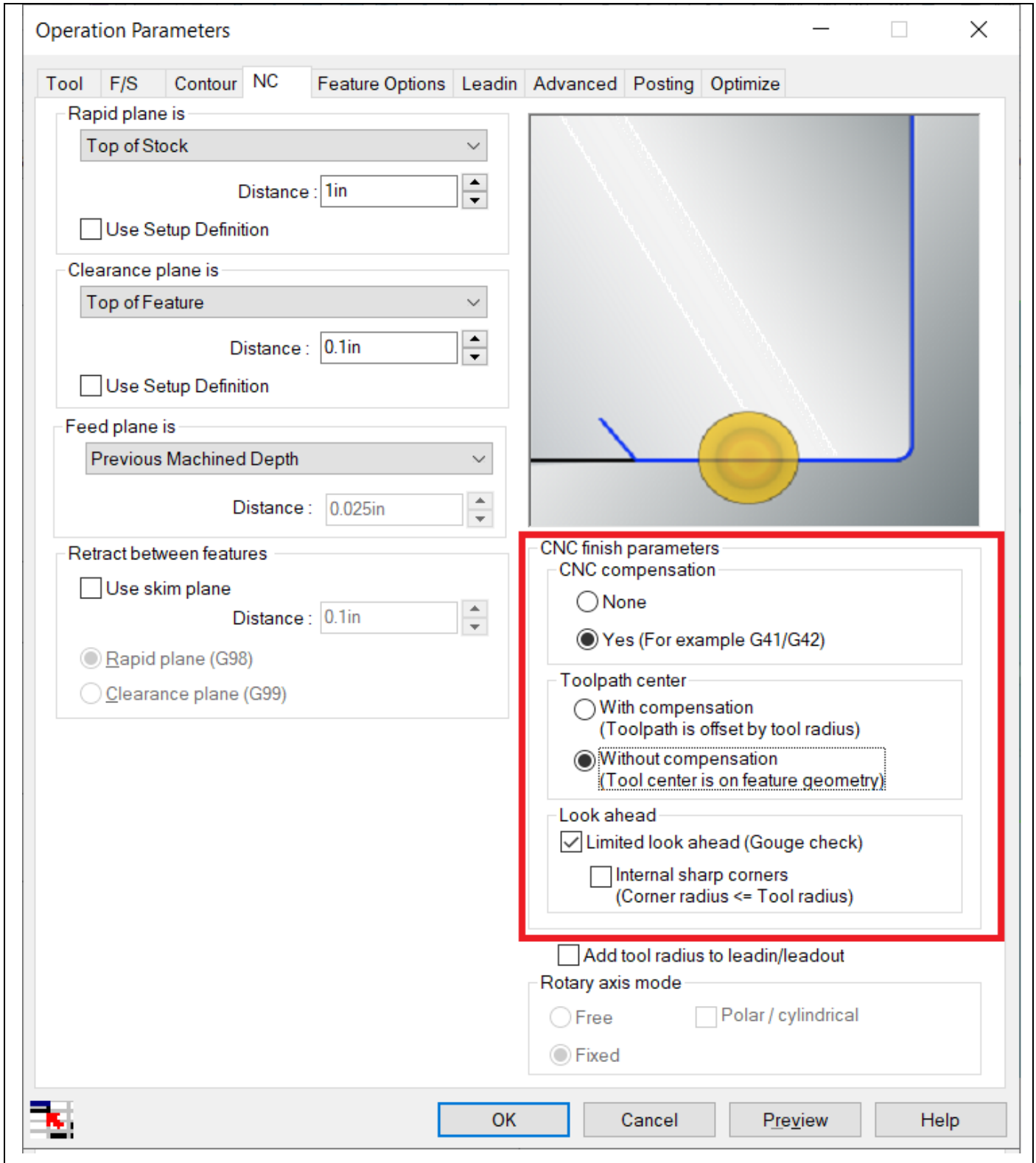
	Previous Labels of CNC Parameters	Renamed Labels of CNC Parameters
1.	Off	None
2.	On	Yes (For example G41/G42)
3.	With Compensation	With compensation (Toolpath is offset by tool radius)
4.	Without compensation	Without compensation (Tool center is on feature geometry)
5.	Gouge check	Limited look ahead (Gouge check)
6.	Sharp corner (Corner radius <= Tool radius)	Internal sharp corners (Corner radius <= Tool radius)
7.	Add tool radius to leadin/leadout	Add tool radius to leadin/leadout

Post renaming, the existing parameters of ***Gouge check*** and ***Sharp corner*** have been moved inside a new sub-group box labelled ***Look ahead*** within the ***CNC Finish parameters*** group box.

In the ***Technology Database*** too, the corresponding ***CNC Finish Parameters*** have been renamed in the ***NC*** tab for Mill operations.



Renamed CNC Finish Parameters under NC tab of Operation Parameters UI of Technology Database



Renamed CNC Finish Parameters under NC tab of Operation Parameters dialog box

New - Option to display Hidden Toolpath Moves in a User-assigned Color

Purpose: To provide the option whereby users can enable the display of hidden toolpath moves in a user-specified color

Implementation:

For 3 Axis Mill, Multiaxis Mill and VoluMill toolpaths, the toolpath moves (Rapid moves, Plunge Moves, Leadin moves, Leadout moves and Link moves) can be viewed in the graphics area in the following scenarios:

- Whenever you click on the corresponding operation node in the *Operation* tree
- When you execute the *Step Through Toolpath* command
- When you edit a toolpath using the *Edit Toolpath* Dialog Box
- When you edit a toolpath by executing the *Advanced Edit Toolpath* command

In the previous versions of CAMWorks, the following enhancements with respect to toolpaths were introduced:

- Options to enable/disable the display of specific toolpath moves that comprise the toolpaths
- Option to change/reassign the display color for the toolpath moves that comprise the toolpaths

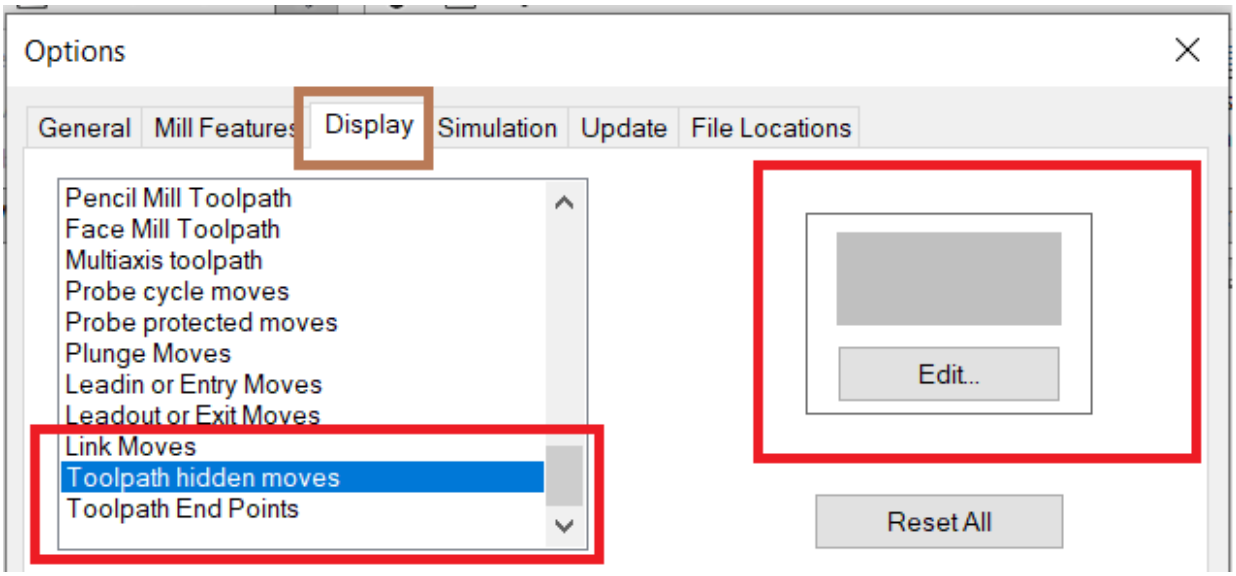
In *CAMWorks 2021Plus* version, an additional option has been introduced for toolpath moves which has been explained below.

Assigning Display Color for Hidden Toolpath Moves

You can choose to either display or not display such toolpath hidden moves in the graphics area. In case you choose to display hidden moves in a specific color, you can do so by using settings available within the ***Display tab of the CAMWorks Options*** dialog box.

The color display settings for such hidden moves can be customized using the ***Color Settings*** parameters available under ***Display*** tab of the ***CAMWorks Options*** dialog box.

To change the display color associated with a hidden toolpath moves, highlight the ***Toolpath Hidden moves*** option within the ***Color Settings*** list box. The currently assigned color for this option will be displayed adjacent to the list box. (Default color for 'Toolpath Hidden Moves' is gray.) Click on the ***Edit*** button below it. Clicking on this button displays the dialog box for color reassignment. Use the settings within this dialog box to select the color of your choice. Once the desired color settings are assigned, click on the ***OK*** button to apply the changes, and close the dialog box.



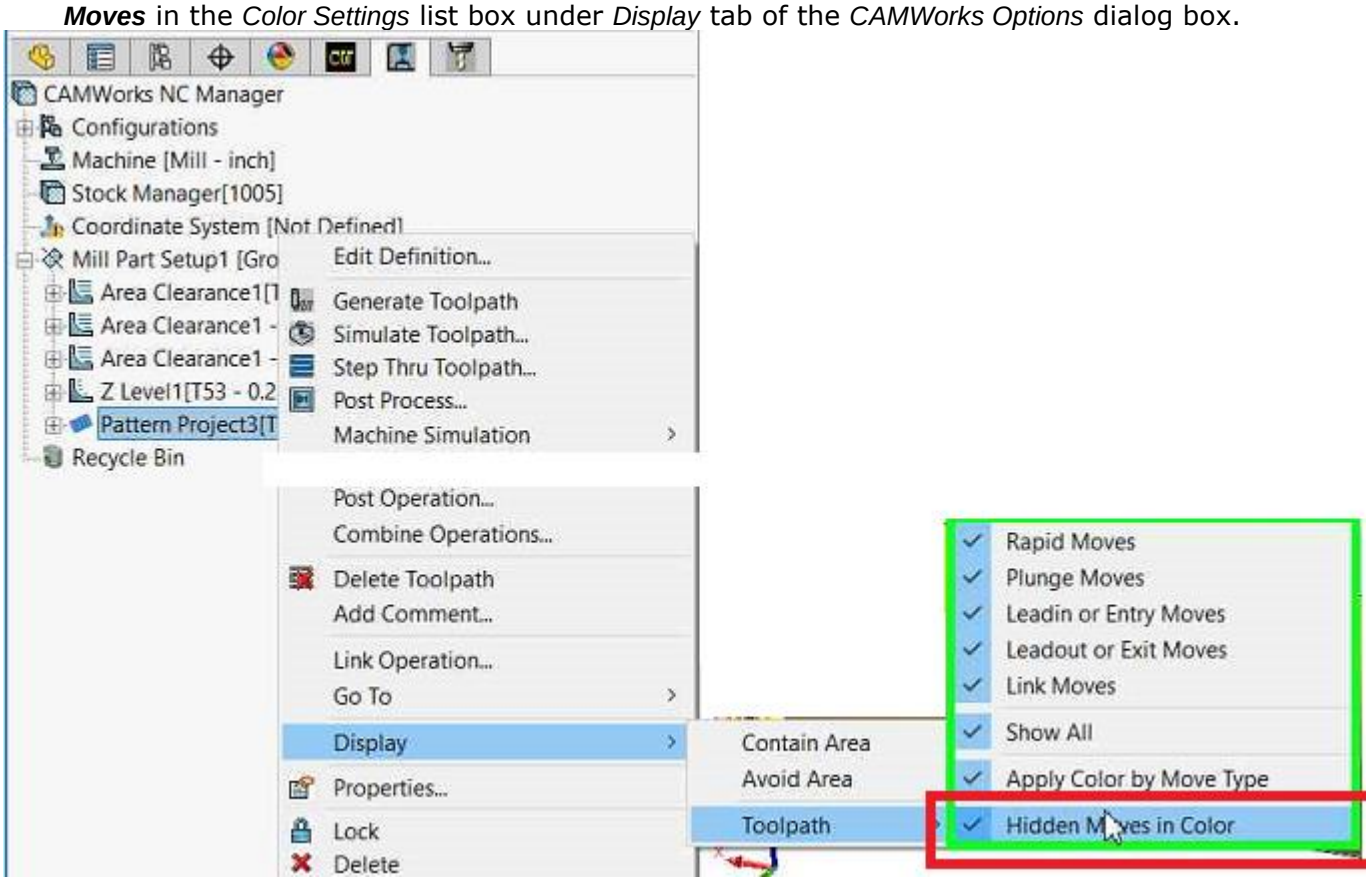
'Toolpath Hidden Moves' option in the Display tab of CAMWorks Options Dialog Box

Enabling the Display of Hidden Toolpath Moves using the 'Hidden Moves in color' Option

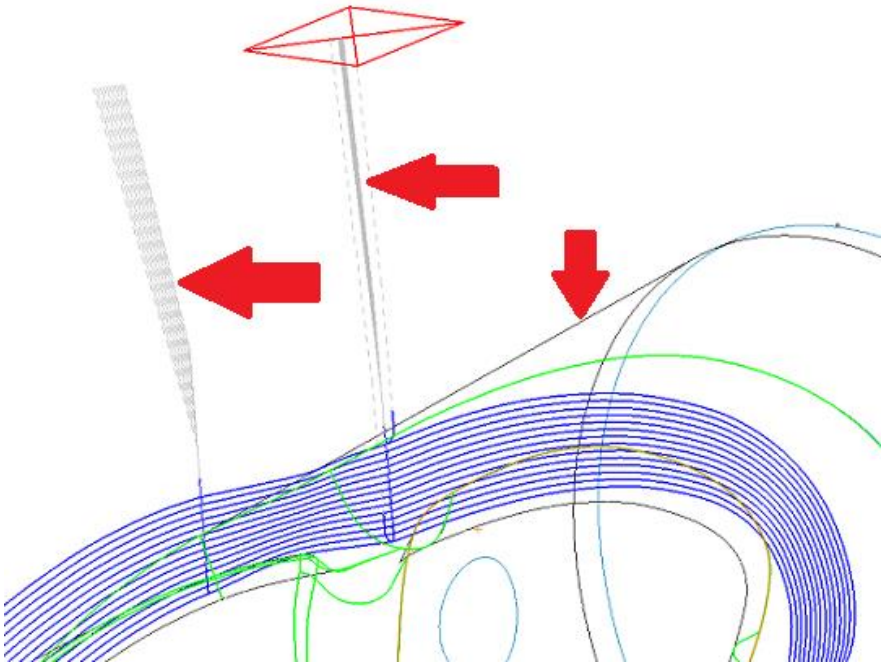
If one or more toolpath move options displayed in the cascading menu does not have a check mark adjacent to it, then it will be considered as a hidden toolpath move.

- If the ***Hidden moves in color*** option in the cascading menu is not checked, then none of the toolpath moves currently marked as hidden will be displayed in the graphics area.
- If the ***Hidden moves in color*** option in the cascading menu is checked, then all the hidden

toolpath moves will be displayed in the graphics area in the color assigned for ***Toolpath Hidden Moves*** in the *Color Settings* list box under *Display* tab of the *CAMWorks Options* dialog box.



'Hidden Moves in Color' option within Cascading menu for Toolpaths



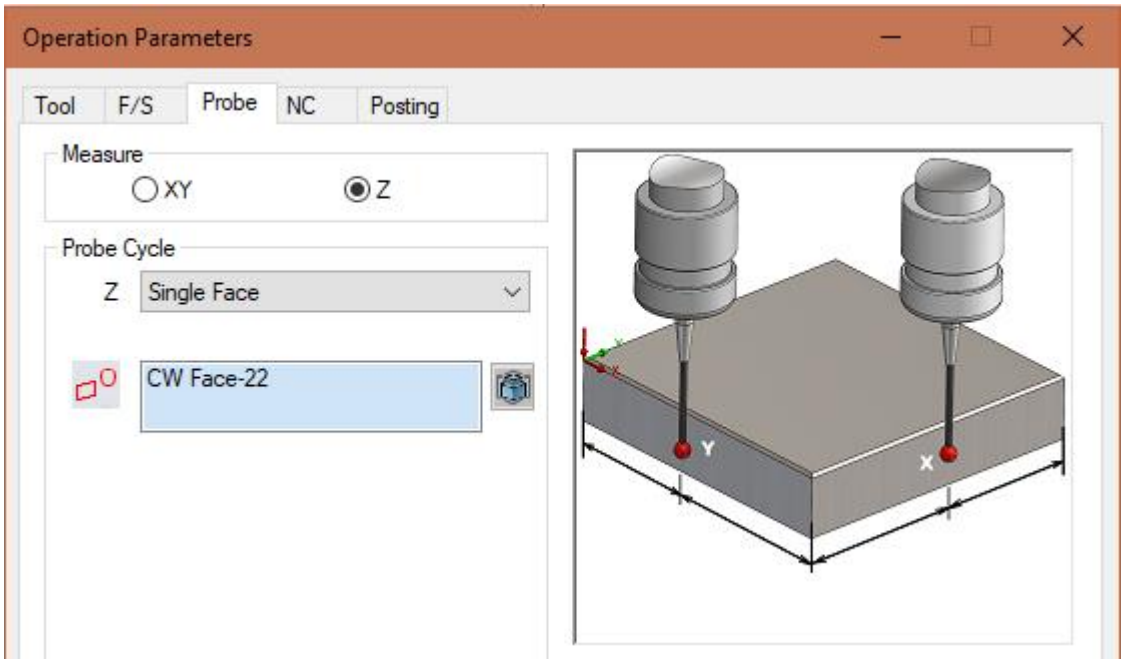
Hidden Toolpath Moves Displayed in Gray Color within Graphics Area

New - Support for non-planar surfaces for Z Axis Probe Cycles

Purpose: To allow non-planar surfaces to be selected during Z Axis Probing

Implementation:

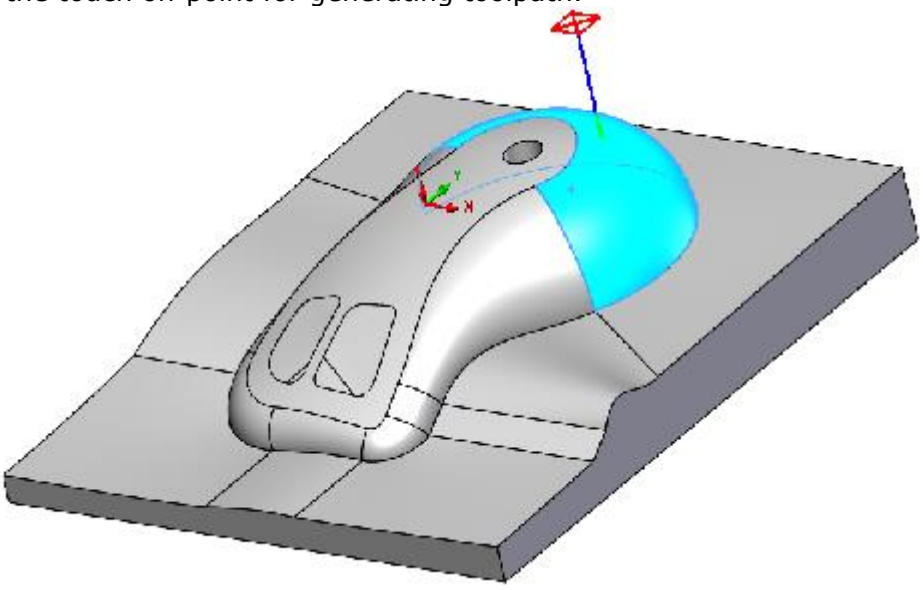
When Z Axis probing option is selected in the *Probe* tab of *Operation Parameters* dialog box, the only Probe Cycle option available is ***Single Face***.



Z Probe Cycle selected in Probe tab of Operation Parameters Dialog Box

In previous versions of CAMWorks, only planar surfaces could be selected during Z Axis Probe Cycles. This was limiting as Z touch offs could happen on any surface.

From *CAMWorks 2021Plus* version onwards, non-planar surfaces too are supported for Z Probe cycles. The default touch off point that will be considered for toolpath generation will be the top-most point of the selected face in Z direction. If you moves the touch off point, then a ray would be fired in the direction of the -Z axis to find the intersection point. This intersection point will then be used as the touch off point for generating toolpath.



Example of Non Planar Surface that can now be Probed with Z Axis Probe Cycles

Turn/ Mill-Turn

New - Turn Toolpath Support for Prime Inserts

Purpose:

Support for Prime Inserts and Holders within CAMWorks

Implementation:

What is PrimeTurning™?

PrimeTurning™ is a pattern of high-speed turning (Roughing and Finishing) using patented insert shapes. The profiles of the Prime Inserts are patented and offered by Sandvik. The geometry of these inserts is available on the Sandvik web portal in the form of *.stp and *.dxf files.
There are two types of Prime Inserts viz. Type A and Type B.

Type A **Prime Insert**	Type B **Prime Insert**
	

Advantages of PrimeTurning™

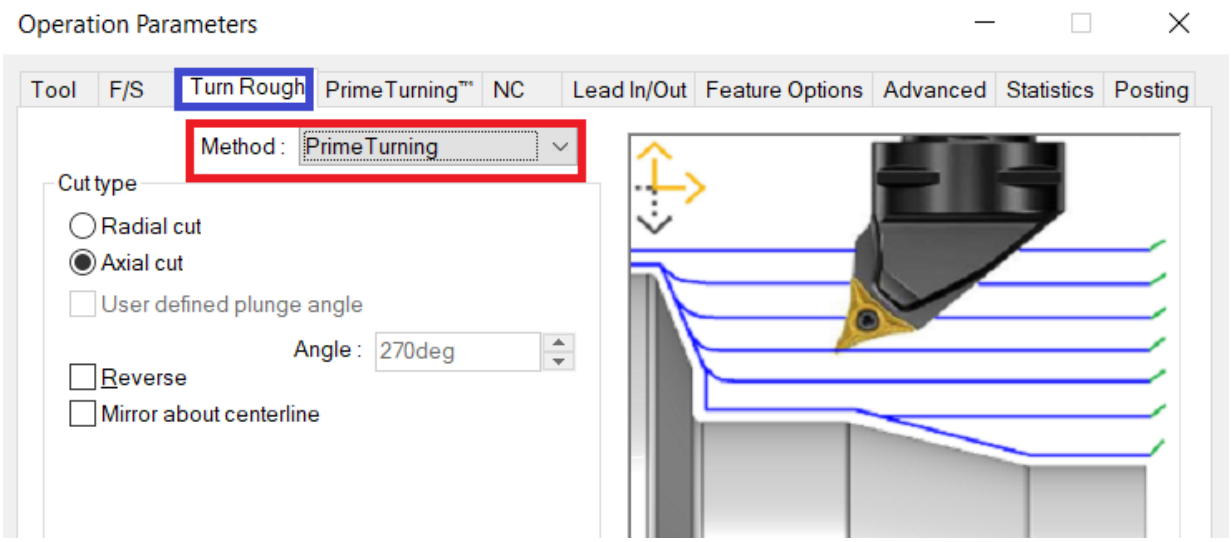
i. High material removal rate compared to conventional turn patterns
ii. Improved tool life
iii. Bidirectional material removal. (Zigzag)

Turn Operations in CAMWorks that Support PrimeTurning™

- Turn Rough
- Turn Finish

Activating PrimeTurning™ for Supported Turn Operations

For Turn Rough and Turn Finish operations, *PrimeTurning*™ functionality can be activated by selecting the ***PrimeTurning*** option in ***Method*** dropdown list of the corresponding *Turn Rough* or *Turn Finish* tabs.



Set Method to 'PrimeTurning' in Turn Rough/Turn Finish Tab of Operation Parameters

Tool Inserts to be used for PrimeTurning™

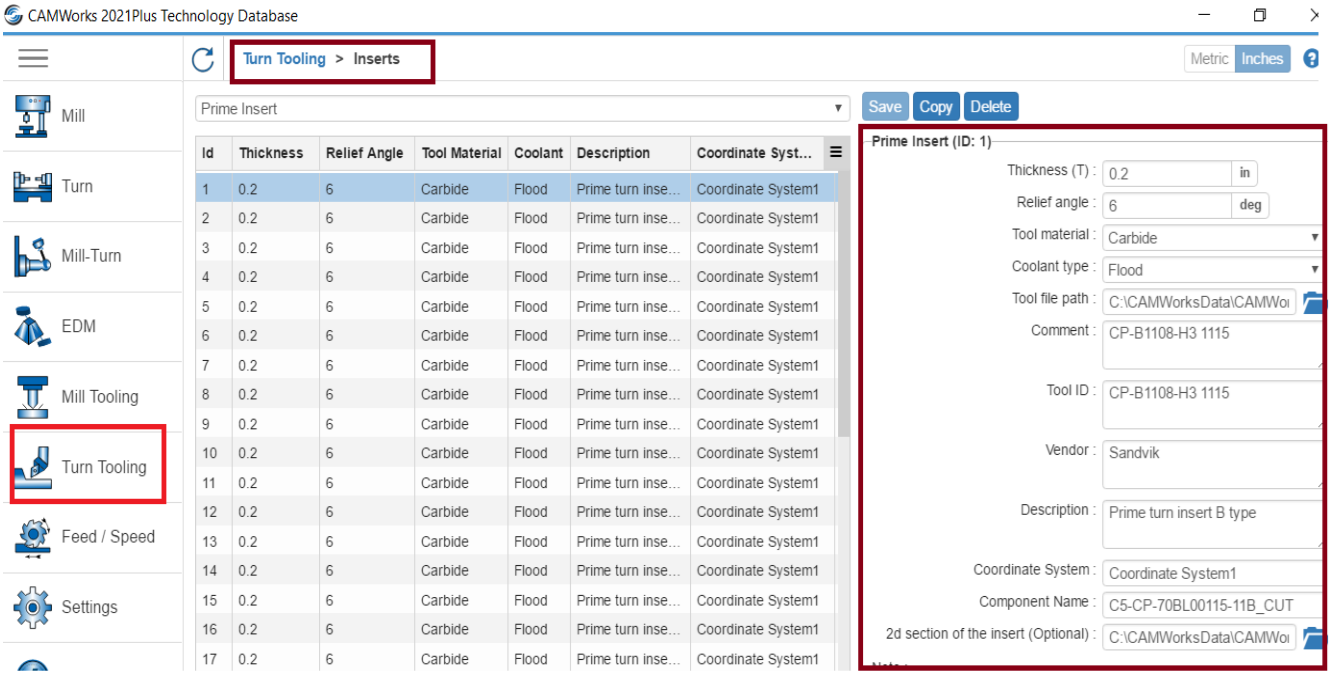
When the Turning method is set to ***PrimeTurning***, only Prime Inserts can be assigned to these operations.

Support for Prime Inserts in CAMWorks

CAMWorks supports Prime Inserts for *PrimeTurning*™ operations. Almost all the Prime Inserts offered by Sandvik are shipped with CAMWorks and are available at the following location (after installation of CAMWorks):

Drive:\CAMWorksData\CAMWorks2021Plusx64\Tooling\PrimeTurnTools

These Prime Inserts available within the Technology Database can be viewed in its corresponding user interface available under Turn Tooling.



Prime Inserts UI within Technology Database (Available in Turn Tooling Menu)

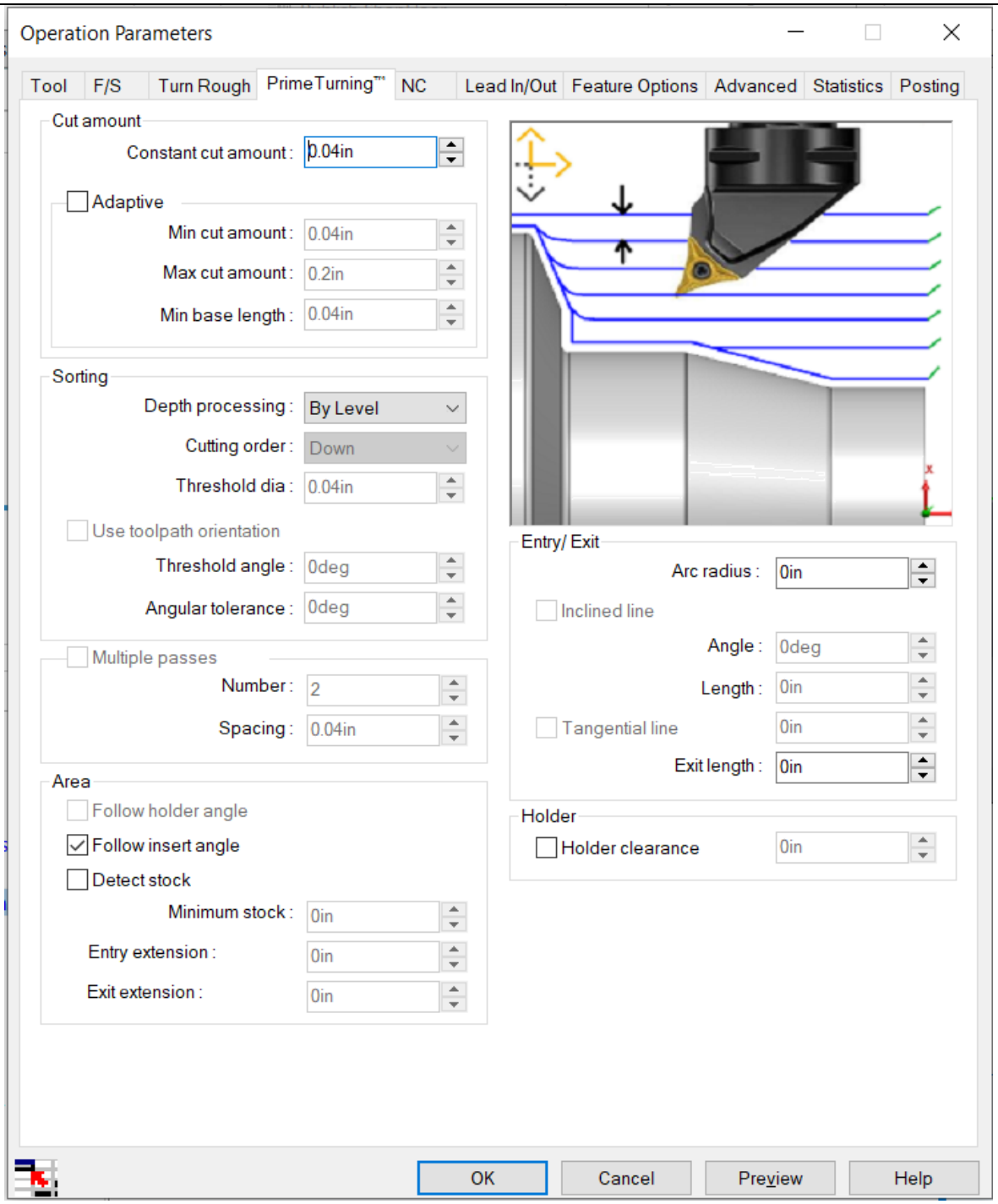
License Module for PrimeTurning™ Functionality

To use *PrimeTurning*™ functionality, your license must be configured to run the *PrimeTurning*™ module. Contact your reseller if you wish to have your license reconfigured to activate this module.

Note:
If your current license is not configured to run the *PrimeTurning*™ module, then none of the parameters associated with the *PrimeTurning*™ functionality will be displayed within the CAMWorks user interface.

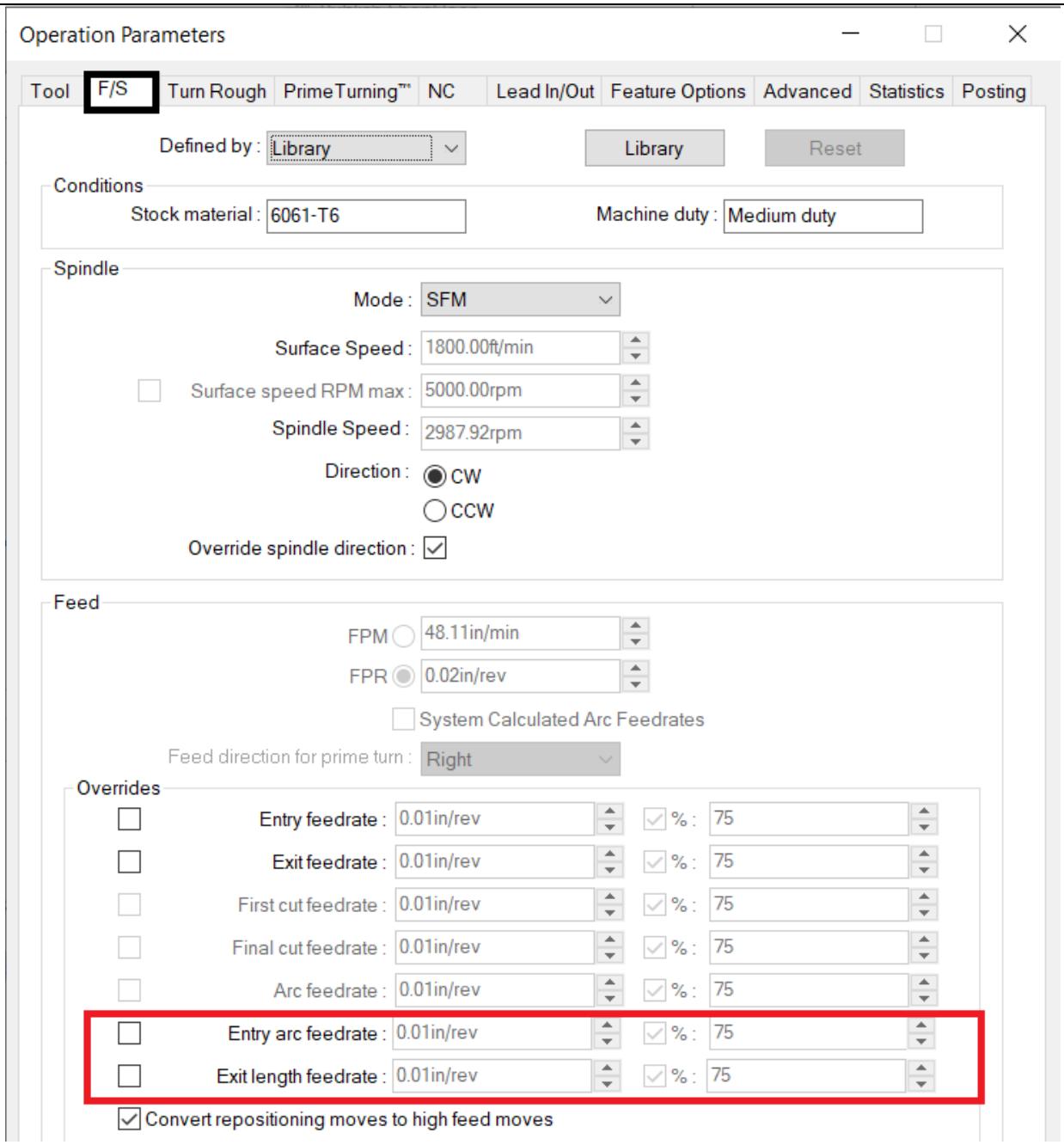
Parameters and User Interfaces associated with PrimeTurning™

Once *PrimeTurning*™ functionality is activated for supported Turn operations (by selecting PrimeTurning in the ***Method*** dropdown list of the operation specific tab), the ***PrimeTurning*** tab will appear within the ***Operation Parameters*** dialog box. Use the parameters within this tab to edit/assign settings associated with PrimeTurning™.



PrimeTurning™ Tab within Operation Parametmeters Dialog Box

The parameters which are applicable for *PrimeTurning*™ remain enabled while the other parameters are disabled on the different tabs of Operation Parameters. Also, some feed/speed parameters specific to *PrimeTurning*™ are enabled.



New Parameter "Entry arc feedrate" and "Exit length feedrate in F/S tab when PrimeTurning™ is Active

(Observe that most other parameters within this tab are disabled as they are not applicable for *PrimeTurning*™)

Technology Database

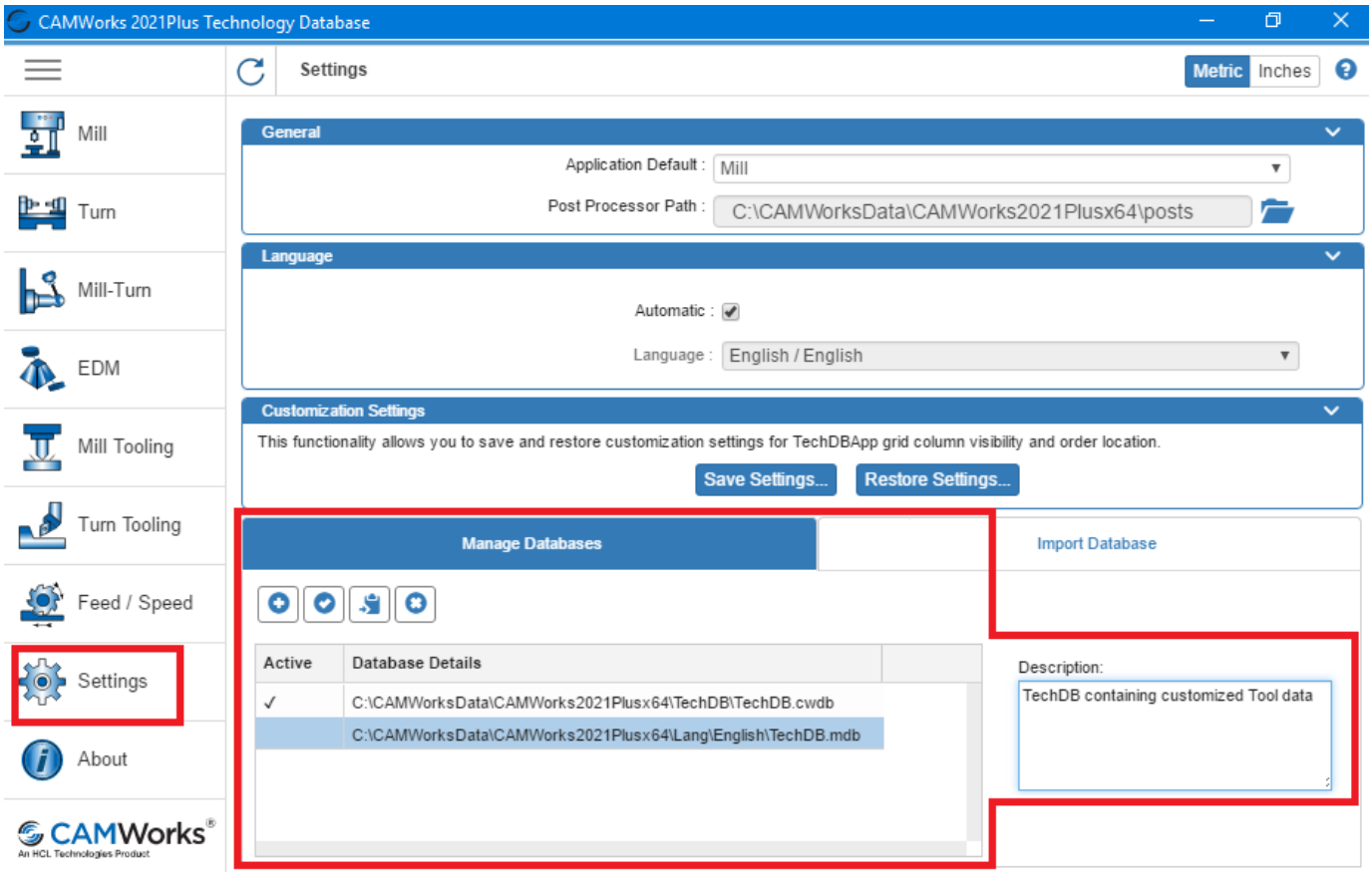
New - **Option to create a list of Multiple available TechDBs and assign Active TechDB from that list**

Purpose:

To provide the option whereby users can create a list of available TechDBs (in all supported formats) on the local machine or network and allow any one selected TechDB from that list as the active TechDB

Implementation:

In the ***Settings*** user interface of the TechDB App, the formerly ***Link Database*** tab has been renamed to ***Manage Databases*** tab.
In addition to all existing functions served by the ***Link Database*** tab, the ***Manage Databases*** tab allows you to add multiple TechDB data source files (in all supported formats) and list them as available TechDBs. Though multiple TechDB data files can be listed within this tab, only one among them can be assigned as the active TechDB linked to the application. The active TechDB can be visually identified by the check mark in the corresponding Active column field adject to that TechDB entry.

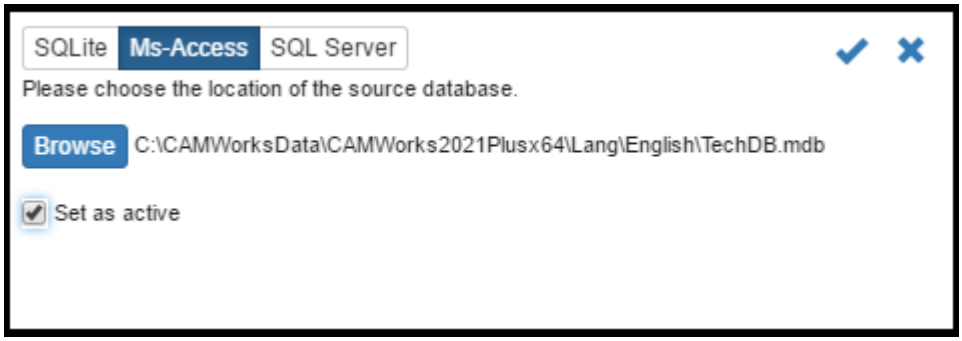


'Manage Databases' Tab in Settigs User Interface of TechDB App

Add TechDB Command Button 

Use the ***Add*** button to add a new TechDB data file (in any one of the supported formats) to the list of available TechDBs listed in the ***Manage Databases*** tab. Clicking on this displays a pop-up window. Select the format of the database to be added by clicking on the applicable option at the top of the window. For example, if you intend to add an ***MS Access*** based TechDB, click on the *MS Access* button located at the top of the pop-up window.

Once the database format is selected, click on the ***Browse*** button within this window. Select the file. Click on the ***Open*** button of the *Windows File Explorer*. The *Windows File Explorer* will close, and the user interface will revert to the pop-up window. The path to the newly selected TechDB file will be displayed adjacent to the ***Browse*** button.
Place a check in the ***Set as active*** checkbox at the bottom of the pop-up window in case if you want to set the database file as active one.



Pop-up window for adding a new TechDB source file

Click on the ***OK*** button to confirm the selection. Observe that the newly selected TechDB will be listed in the list of available Technology Databases. (If the ***Set as active*** checkbox was checked within the pop-up window, then the new database will have a check mark adjacent to its name within the list of available Technology Databases.

Set as Active (Command Button)

In case of multiple TechDB entries within the list of available Technology Databases, only one TechDB entry can be set as the default TechDB.
If desired, you can set database within this list as the active TechDB. To do so, highlight the desired entry within the list of available Technology Databases and click on the ***Set as active*** button.

Copy TechDB (Command Button)

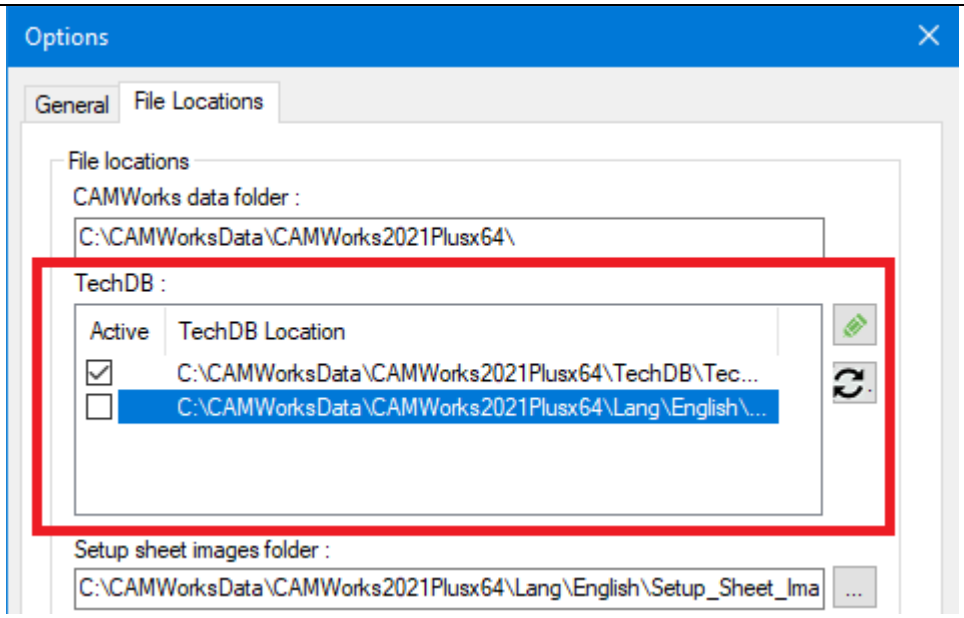
If desired, you can create copies of Technology Databases listed within the list of available Technology Databases.
To create a copy, highlight the TechDB from the list of available Technology Databases whose copy you wish to create and click on the ***Copy*** button. Use the displayed window to set the folder path and name of the copy and click the ***Save*** button.
Observe that the newly created copy will now be listed in the list of available Technology Databases.

Remove TechDB (Command Button)

Execute the ***Remove TechDB*** command if you wish to remove any TechDB listed within the list of available Technology Databases. To remove a database from the list of available Technology Databases, highlight that entry within the list and click on the ***Remove TechDB*** command button.
Executing this Remove TechDB command does not delete the selected TechDB file. It only removes the database from the list of available Technology Databases.
Note that only TechDB entries that are not assigned as the active TechDB can be removed from the list of available Technology Databases.

Implementation within CAMWorks Application

The TechDB Settings available under ***File Locations*** tab of ***CAMWorks Options*** dialog box within the ***CAMWorks*** application has been updated to display the list of TechDBs defined in the ***Manage Databases*** tab of TechDB App.



TechDB group box under File Locations Tab of CAMWorks Options Dialog Box

The active TechDB can be identified by a checkmark in its corresponding ***Active*** column field. If you wish to change the TechDB assigned as the active TechDB, then ensure that no active part or assembly programmed using the active TechDB is open and then place a check in the Active column of the desired entry and apply the changes. Not that this change will be limited to the CAMWorks application and will not be reflected in corresponding TechDB settings.

If you wish to apply the changes in the TechDB settings too, then click on the ***Launch the TechDB App to Manage List of Connections*** button to the right of the group box. This action will launch the *TechDB App* with *Manage Databases* tab in focus. Assign the desired TechDB file as the active TechDB and close the *TechDB App*. Click on the ***Update the TechDB List*** button to sync the TechDB listings in the TechDB group box with those in the *Manage Databases* tab. Observe that the group box now reflects the newly assigned TechDB as the active file.