PEPS Version 2023 Innovations

 27. January 2023

Camtek

PEPS Version 2023
Innovations

Tabel of contents

PEPS Version 2023
Innovations

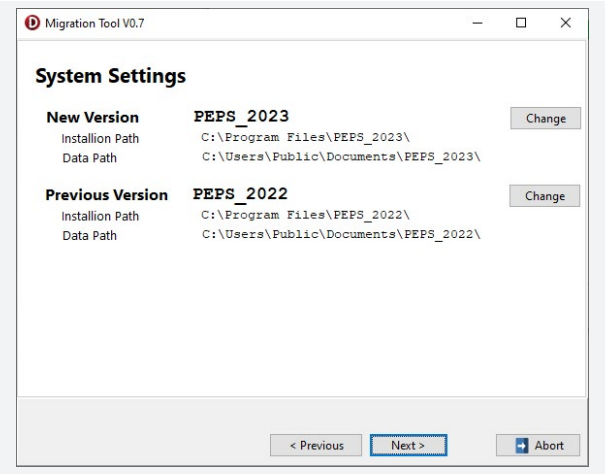
Software Installation

New “Migration Tool” adopts settings from previous version

The PEPS installation has been extended. The new **Migration Tool** recognizes existing PEPS installations and automatically adopts the system settings, user menus, postprocessors and databases used.

Advantages:

- Significantly simplified update installation
- Existing user settings are adopted
- Automatic transfer of the postprocessors, postprocessor settings and technology databases to the newly installed version



CAD Data import

Update of the CAD interfaces

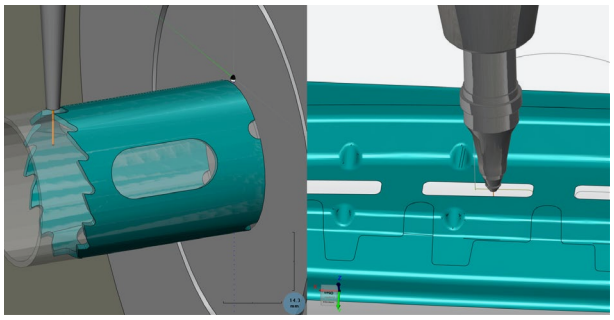
- The following CAD interfaces have been updated:
- Parasolid – Version 35
- CatiaV5
- CatiaV6
- INVENTOR – Version 2023
- JT – Version 10.5
- Siemens NX – Continuous Release 2206
- Pro-E 13 / CREO 9
- SOLIDWORKS 2023
- SolidEdge 2023

PEPS Version 2023
Innovations

CUT-Expert

New development for laser & water jet cutting

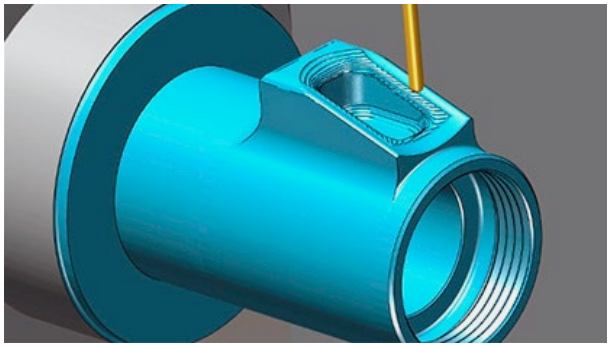
With version 2023, Camtek presents the completely newly developed **6 axes simultaneous & waterjet cutting** module.



Turning Module

Update to 64 bit

The module for **Turning** has been updated in version 2023 and adapted to 64 bit.



Wire EDM Module

Postprocessor – AC CUT UNIQUA Dynamic

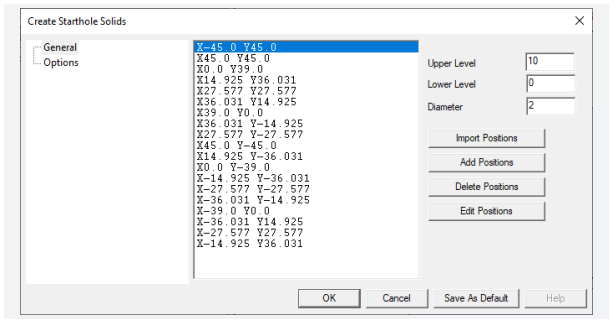
The Postprocessor for the **AC CUT UNIQUA Dynamic** wire EDM machine from AgieCharmilles has been expanded and optimized.

New Technology Databases for CT Orange and AC CUT PXX0 Pro UNIQUA

New technology databases are available for the wire EDM machines **CT Orange** and **AC PXX0 Pro CUT UNIQUA Dynamic.**

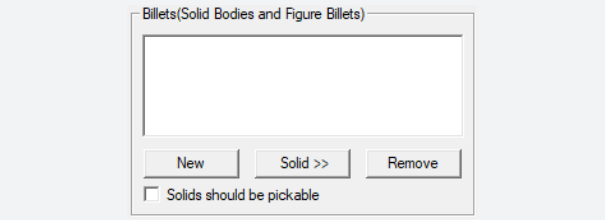
Start hole Wizard – Automatic generation of starting hole geometries

The new **Start hole Wizard** makes it much easier to define start hole geometries. In addition, an interface for importing files with starting hole coordinates has been integrated.



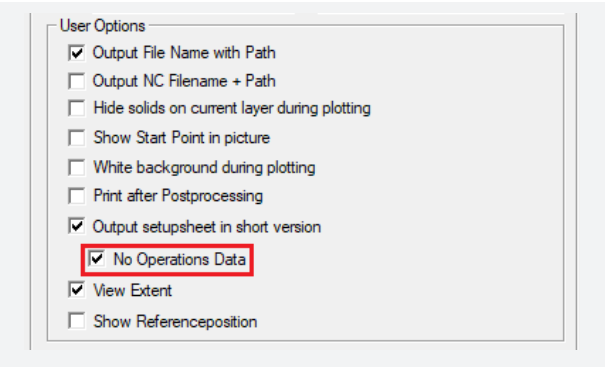
Billet Dialog – Order of billet options adjusted

The order of the buttons for the billet definition has been adjusted.



Setup Sheet – The standard formatting of the setup sheet has been improved

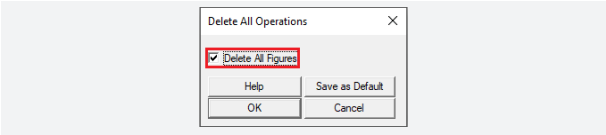
The standard formatting of the setup sheets has been revised and further improved in the Wire EDM module. The new **No operation** data option provides a brief setup sheet without listing the machining operations.



PEPS Version 2023
Innovations

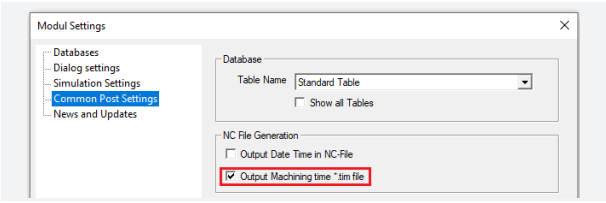
Delete all Operations – Delete all Figures

The **“Delete All Operations”** function has been expanded to include the **“Delete All Figures”** option.



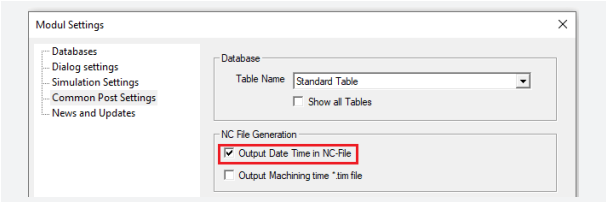
Module Settings – New Option „Output Machining time *.tim file“

This new option creates an additional file (*.tim) with detailed time calculations for each individual roughing and finishing cut during a postprocessor run. For accurate time calculation, we recommend using technology databases.



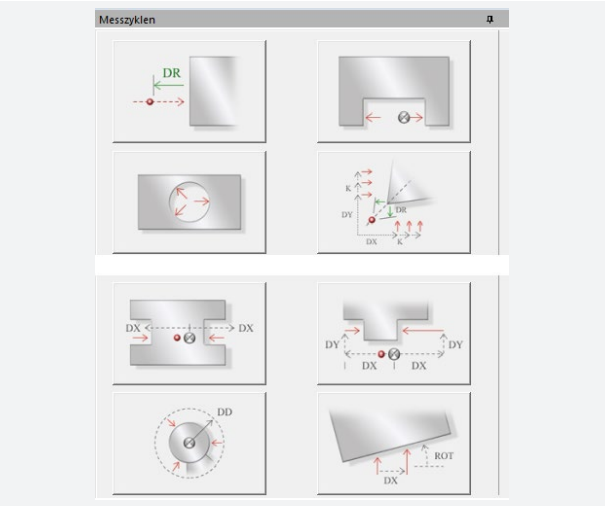
Module Settings – New Option „Output Date and Time in NC File “

Where possible, the new option can output the current **date** and **time** to the NC data file.



Measuring cycles – New measuring cycles

As of V2023, measuring cycles are available for the following machine adaptations: AC CUT X00, AC CUT Exx0, AC CUT Pxx0, CT Millennium, CT Robofil, AC CUT Pxx0 Pro UNIQUA, Mitsubishi, Fanuc and Sodick. The figure below shows a measuring cycle dialog:



WIRE-Expert Feature Recognition

WIRE-Expert Feature Recognition – Default “Accuracy” adjusted

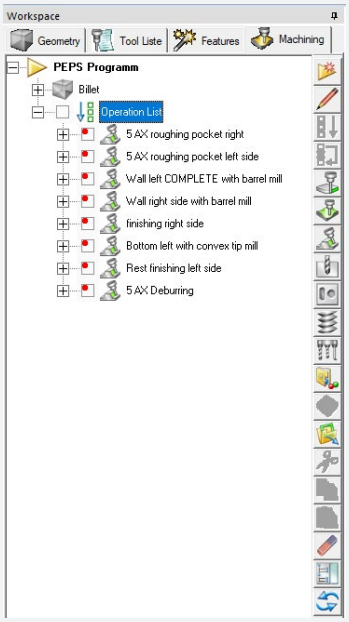
The default “Accuracy” of the Feature Recognition has been adjusted so that Feature Recognition is more tolerant of problematic geometry. In most cases, the user no longer needs to adjust the preset “accuracy”.

PEPS Version 2023
Innovations

Milling Module – General innovations

Workspace – New “Vertical Icon Bar” frees up space

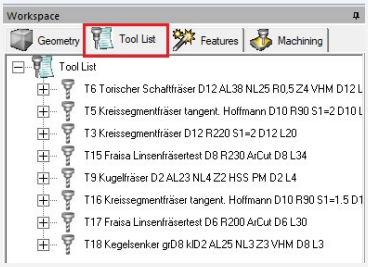
The new **vertical icon bar** creates space in the Workspace and convinces with a better overview and simplified operation. All machining strategies from **drilling** to **5 axis milling** can now be called up effortlessly with just one click.



Workspace – Separate tab for Tool list

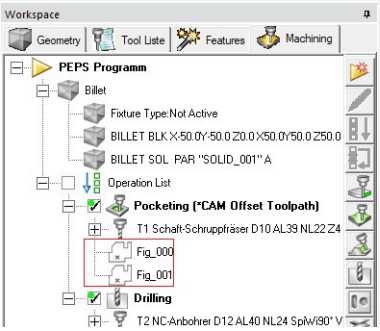
The **Tool list** was transferred from the **Machining** tab to the new **Tool list** tab.

Advantage:
More overview and simplified usability.

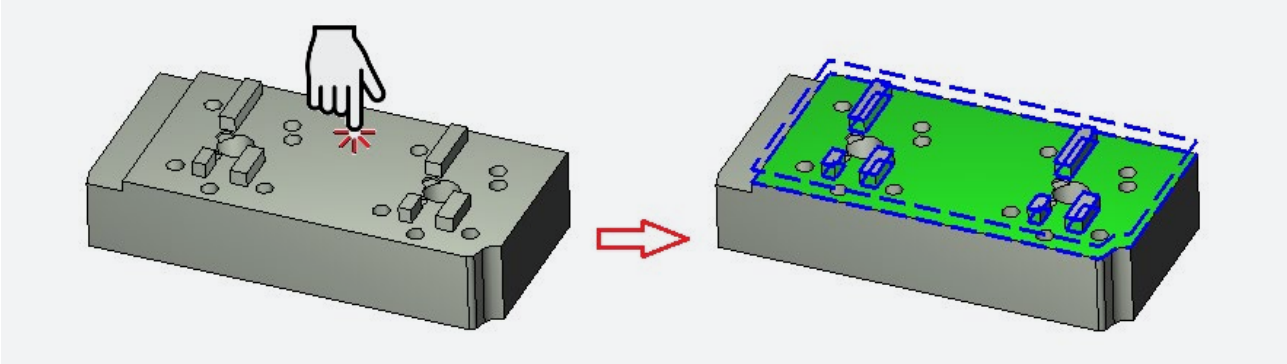


Workspace – Display of Figures and Groups used

As of V2023, the **Figures** and **Groups** used for **2,5D Milling** and **Drilling** operations are listed below the machining operation. **Figures** and **Groups** can be edited by right-clicking on the corresponding entry.

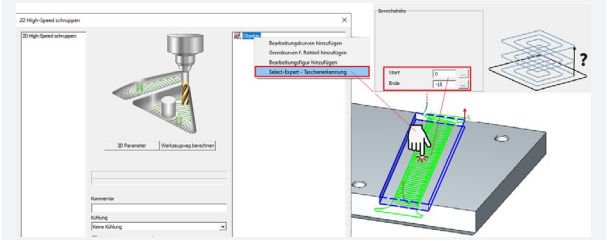


2,5D Milling and Drilling – „Select Expert“-Technology



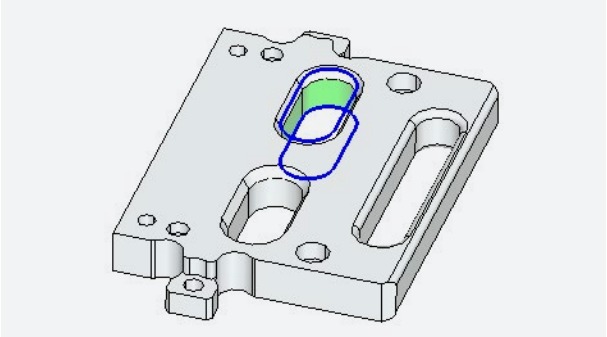
2D High Speed Roughing – Start and End depth is transferred

As of V2023, the start and end heights recognized by the **“Select Expert”** are also transferred to the corresponding input fields in the **2D High Speed Roughing** dialog. This simplifies programming significantly.



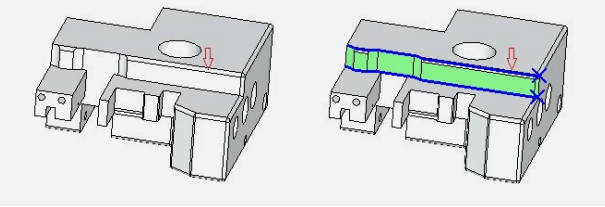
Roughing Strategies – Start Height = Top of Chamfer or Blend

When roughing chamfered or blend pockets, the top edge of the chamfer/ blend is now considered the Start Height. The area to be machined is automatically extended upwards.



Profile Machining – Start Height = Top of Chamfer or Fillet

When Profiling chamfered or blend features, the **top edge** of the **chamfer/blend** is now considered the **Start Height.** The area to be machined is automatically extended upwards.

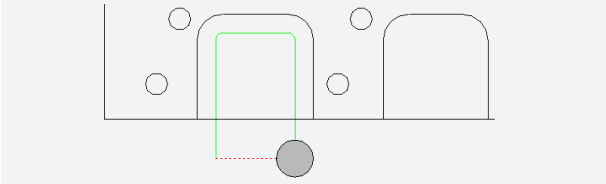


PEPS Version 2023
Innovations

Module Milling – 2,5D Milling Dialogs

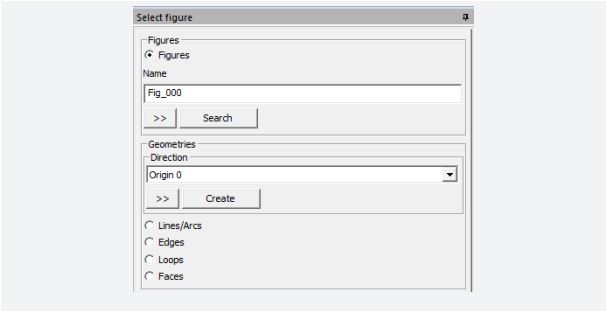
Profile Milling Dialog – Extend Toolpath

The ability to extend “open” toolpaths has been adjusted and improved.



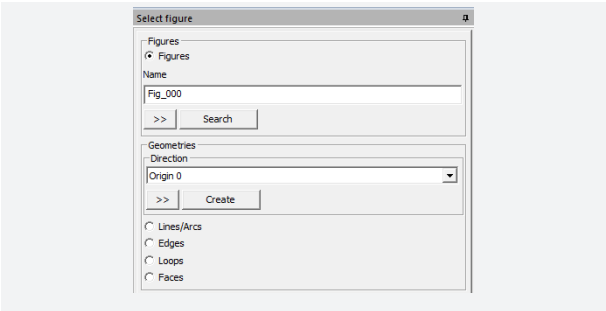
2,5D Milling Dialogs – Figure selection has been improved

A new **Figure selection** dialog has been introduced. The new dialog simplifies the figure selection and additionally allows the creation of Figures by converting **Lines/Arcs, Edges, Loops** and **Faces.** The conversion takes place directly in the dialog, on freely selectable machining planes (origins). Any **3D curves** are automatically converted into planar geometries by a projection.



2.5D milling Dialogs – Automatic Selection of identical geometries

The new dialog for figure selection allows the automatic selection of all identical geometries. The user selects one figure and the system automatically finds all identical geometries.



Milling module – Drilling and Canned Cycles

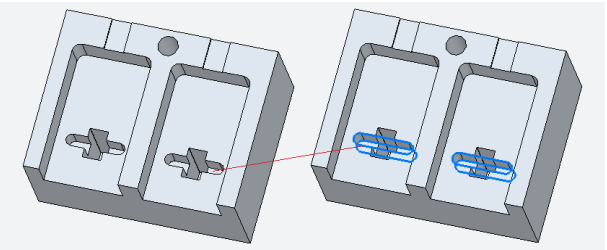
Helical Milling & Circular Pocketing – “Select Expert” transfers pocket diameter

The **Helical Milling & Circular Pocketing** machine cycles have been expanded. “Select Expert” now also passes the “Hole diameter” parameter to the corresponding dialog. The machine cycles **Helical Milling & Circular Pocketing** have been expanded. **“Select Expert”** now transfers the determined “bore diameter” to the corresponding dialog box.

MILL-Expert

Automatic Feature Recognition – Merging interrupted grooves

The **Automatic Feature Recognition** has been supplemented by a function that recognizes interrupted **Groove** geometries and combines them with one another so that one single **Groove** geometry is created.

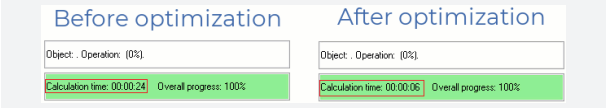


PEPS Version 2023
Innovations

3D and 5 Axis Milling

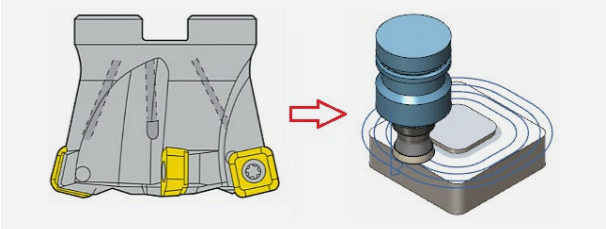
3D Roughing – Adaptive Roughing – Calculation time reduced by up to 40 %

The **Adaptive roughing** cycle has been improved. The enhancements significantly improve adaptive roughing performance. On average, the calculation time is 40 % faster than the previous version.



3D Roughing – Generic revolved tool for roughing

A new feature has been added to the **3D Roughing** strategy. A new generic revolved tool type is now supported for all roughing types. A custom shape for the cutting and non-cutting tool parts can be defined using the existing tool-profile definition options. Compared to the previous implementation, there is now support for arbitrary-shaped tools to avoid the simplifications that occurred when using the standard tool primitives. You now get a realistic picture of the material removal process during the cutting simulation that takes into account specific features of the tool shape during the toolpath calculation.

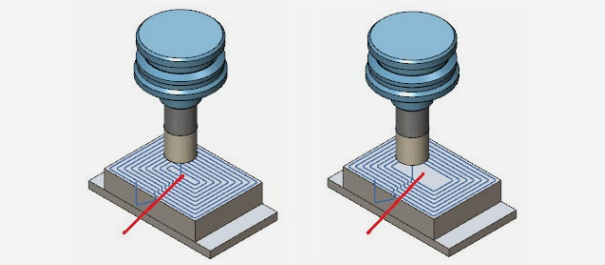


3D Roughing – Stock silhouette containment options

New feature has been added to the **3D Roughing** strategy. This feature limits the machining area by the silhouette of the machining surfaces. It is created in the machining direction. Compared to existing silhouette feature which is found on the Surface paths tab, the new option using stock silhouette allows the user to define a soft boundary where the tool can approach from outside the boundary. The older containment is treated as a hard boundary where the tool remains inside. The main advantage is easier toolpath control.

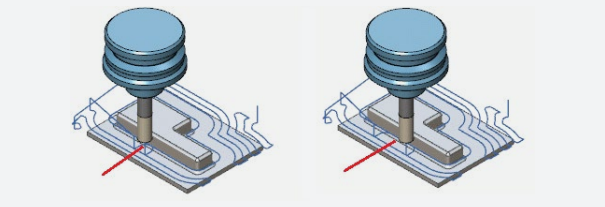
3D Roughing – Avoid Air Machining

A new feature has been added to the **3D Roughing** strategy. This option improves the offset roughing toolpath while machining open regions. With standard settings the toolpath may contain extra inner toolpath contours in an already machined area, which results in wasted cutting time. It is now possible to remove unnecessary toolpath contours in the center of the machining area of the part to reduce the cutting time and optimize the cutting conditions.



3D Roughing – Overlap for Profile Pass

A new feature has been added to the **3D Roughing** strategy. It is now possible to shift the original end point of the profile pass with respect to the start point to allow the tool to move beyond it. This prevents marks on already processed areas. This feature applies to closed tool path contours only. It delivers improved machining quality compared with previous versions of the software.



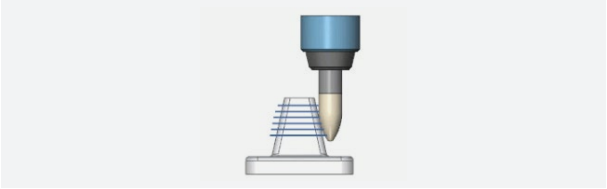
PEPS Version 2023
Innovations

3D Milling – Barrel tools support

The **3D Milling** finishing strategies now support **Barrel tools.** It is now possible to specify a desired tool configuration from a wide range of existing Barrel tool primitives.

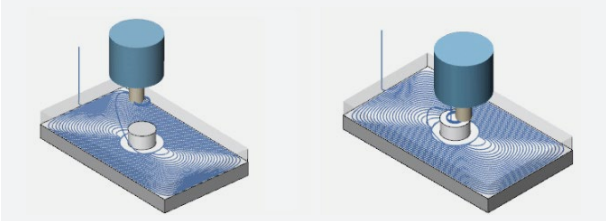
Benefits:

- Consistent toolpath that considers all specific features of the current tool shape
- Extend application boundaries



3D Milling – Ramp height limitation to maximum stock height

A new feature has been added to the **3D Milling** strategies. This feature trims the ramp height by the specified stock surface. The main benefit is that it reduces the air cutting time.



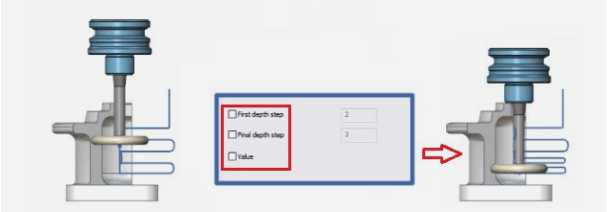
Constant Z – Additional depth step options for 3-axis undercuts

A new feature has been added to the **Constant Z** strategy. The additional depth step options are now available for 3-axis undercuts. The user can apply different combinations of the First/Final depth step and Value options.

First/Final depth step: Generate additional toolpath slices at the specified depth for the top and bottom areas.

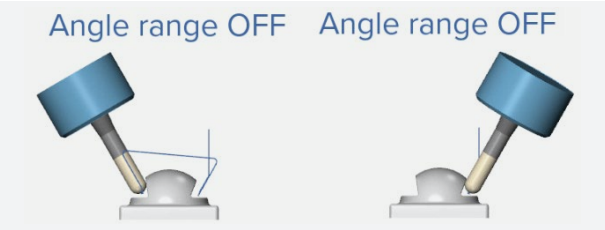
Value: Specify the slice height for a particular toolpath within the specified range of machining heights.

These new options offer more accurate undercut area processing for higher quality machining.



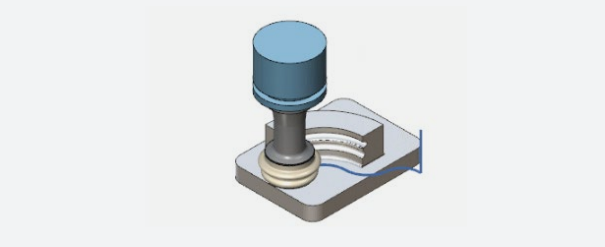
Constant Z – „Angle range“ support for 5-axis undercuts

A new feature has been added to the **Constant Z** „Undercuts“ strategy. The user now has the possibility to machine everything inside or outside the specified **angle range** interval also for 5-axis undercuts. In previous versions, the angle range was supported for normal operations only.



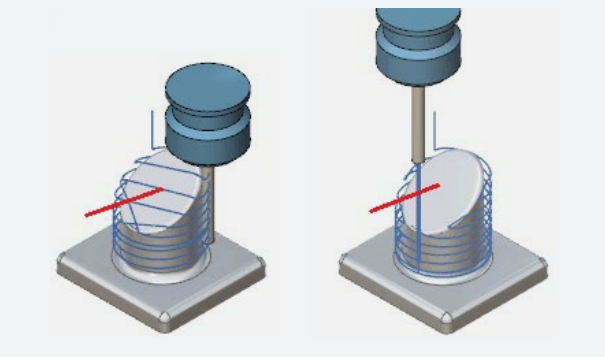
Constant Z – Generic revolved tool for undercuts

A new feature has been added to the **Constant Z** strategy. A newly implemented generic revolved tool type is now supported for „3-axis undercuts“ machining. This enables the user to form a complex profile of the finishing surface in a single iteration. It delivers a high surface quality and extends the application boundaries of a standard Constant Z cycle.



Constant Z – Zigzag Open Cuts

A new feature has been added to **Constant Z** strategy. **„Zigzag ordering“** can now be applied for open cuts when the **Spiral** cutting method is enabled. This avoids the creation of extra links and optimizes the overall machining time.



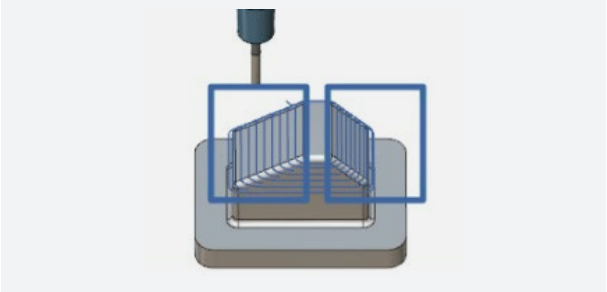
PEPS Version 2023
Innovations

Constant Z (HSM) – Max depth factor

A new feature has been added to the „High Speed Machining“ **Constant Z** strategy. The new feature provides more control over the creation of adaptive depth step slices. The **„Max depth factor“** enables you to specify criteria for creating the additional slices.

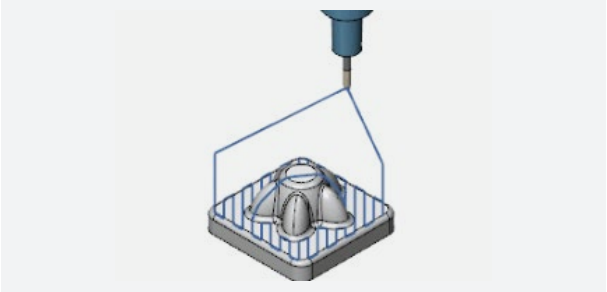
With this feature you can:

- Improve the flexibility of previously implemented solutions
- Increase the range of possible solutions to provide better machining quality



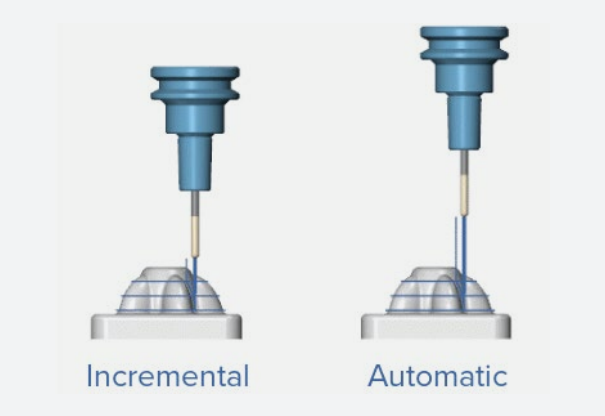
3D Milling – Homing sequence

A new feature has been added to the **3D Milling** strategies. The Horizontal and Vertical sequence enables the user to change the way the tool approaches the workpiece when the **Start from home position** option is selected. With this new option, the tool transition between the specified home position and the toolpath start point occurs parallel to the machining plane with a further vertical approach up to the slice level. In the previous implementation, only a direct transition was possible. This new feature enables users to specify the way in which the tool approaches the workpiece to extend the number of possible solutions.



3D Milling – Incremental clearance plane

A new feature has been added to the **3D Milling** strategies. This option allows the user to define an i**ncremental value** for the **clearance plane height** by taking as a reference point the maximum height of stock/machining surfaces/fixture curves. The main benefit is the reduction in manual input.

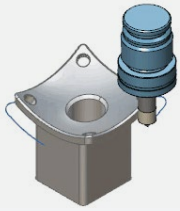


PEPS Version 2023
Innovations

5 Axis Simultaneously Milling

Swarf machining – Chamfer tool support

This is a new feature for **Swarf machining.** This feature enables now the possibility to choose between milling with conical part and with cylindrical part in case of chamfer mills. This it is helping to provide a better toolpath and less tilting movements having the possibly to choose the side of the cutter according the geometry.

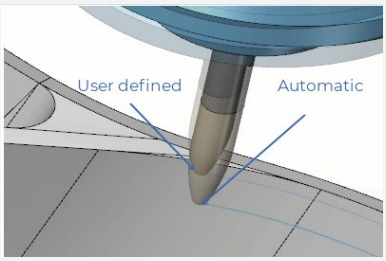


Multiaxis Finishing – Automatic Tool Axis Control Option

This is a new feature for **Multiaxis Finishing.** This feature adds a new mode called **Automatic** to the **tool axis control.** The contact point and the lead/lag angles are automatically defined according to each available tool.

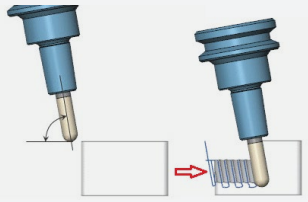
The advantages of this option are:

- Reduced programming time
- Simplified tool axis definition.



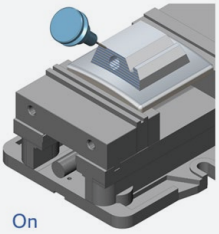
Multiaxis Roughing – Fixed tool axis

A new feature has been added to **Multiaxis Roughing.** The **Fixed tool axis** option offers machining with an arbitrary, user-defined tool orientation. This new option extends the range of possible solutions to increase the application boundaries of the Multiaxis Roughing strategy.



Geodesic Machining – Improved Hole Filling

Hole filling has been enhanced for **Geodesic** Machining. When the **Fill holes** option is selected, the boundaries of the filled holes are ignored by the automatic drive curve selection.

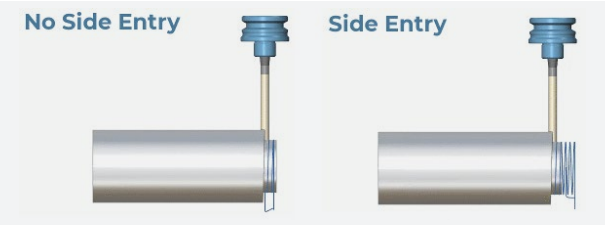


Turn Milling – Side entry

A new feature has been added to **Turn Milling.** This new option allows the tool to enter from the sides whenever possible.

Benefits:

Fewer ramping movements and steady side entry movements.

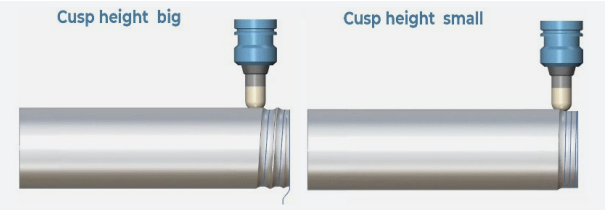


Turn Milling – Cusp Height Stepover

A new feature has been added to **Turn Milling.** You can now select the cusp height to adjust the stepover. This works for all supported tools and takes into consideration the axis offset.

Benefits:

Faster programming because no complicated manual calculations are needed.



PEPS Version 2023
Innovations

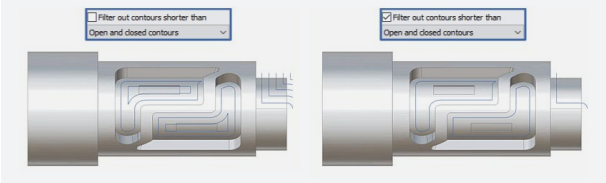
Rotary Machining – Filtering Contours Shorter Than User-Defined

A new feature has been added for **Rotary Machining.** When filtering contours that are shorter than the user-defined value, you can now apply the filter to:

- Open and closed contours
- Only closed contours
- Only open contours

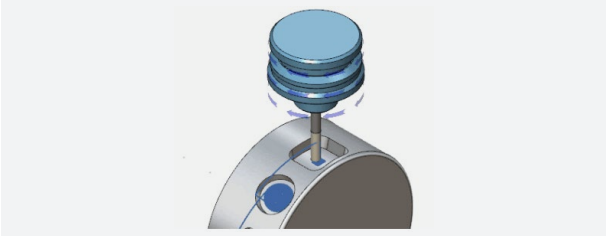
Compared to the previous version, it is now possible to filter just one type of contour (open or closed). Previously, it was only possible to filter both open and closed contours.

Benefits:
Users have more control over which contours are filtered and can therefore optimize the toolpath to achieve faster machining times.



Rotary Machining – Floor Finishing

A new feature has been added to **Rotary Machining.** The user can now select floor finishing which automatically finds cylindrical and conical floor surfaces. **Stepover** values and a **„Min. width“** can be selected. It works in combination with the selected machining limits to give the user more control over the generated toolpath.



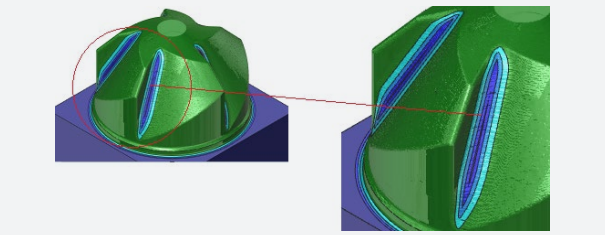
Rotary Machining – Finish Pass Overlap Function

A new feature has been added to **Rotary Machining.** The user can now select an overlap value for the finishing toolpath. This overlap function removes the cutter marks at the lead in and lead out positions. Therefore, the surface quality is improved.

Milling – Toolpath Simulation

Improved display quality of the remaining material display

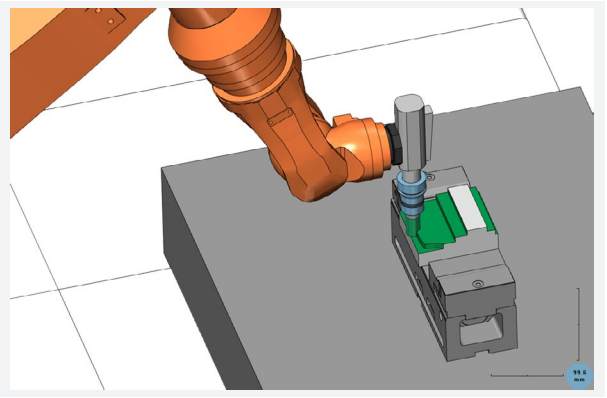
The display quality of residual material areas has once again been significantly improved. The residual material areas of different thicknesses now differ more clearly from one another.



PEPS Version 2023
Innovations

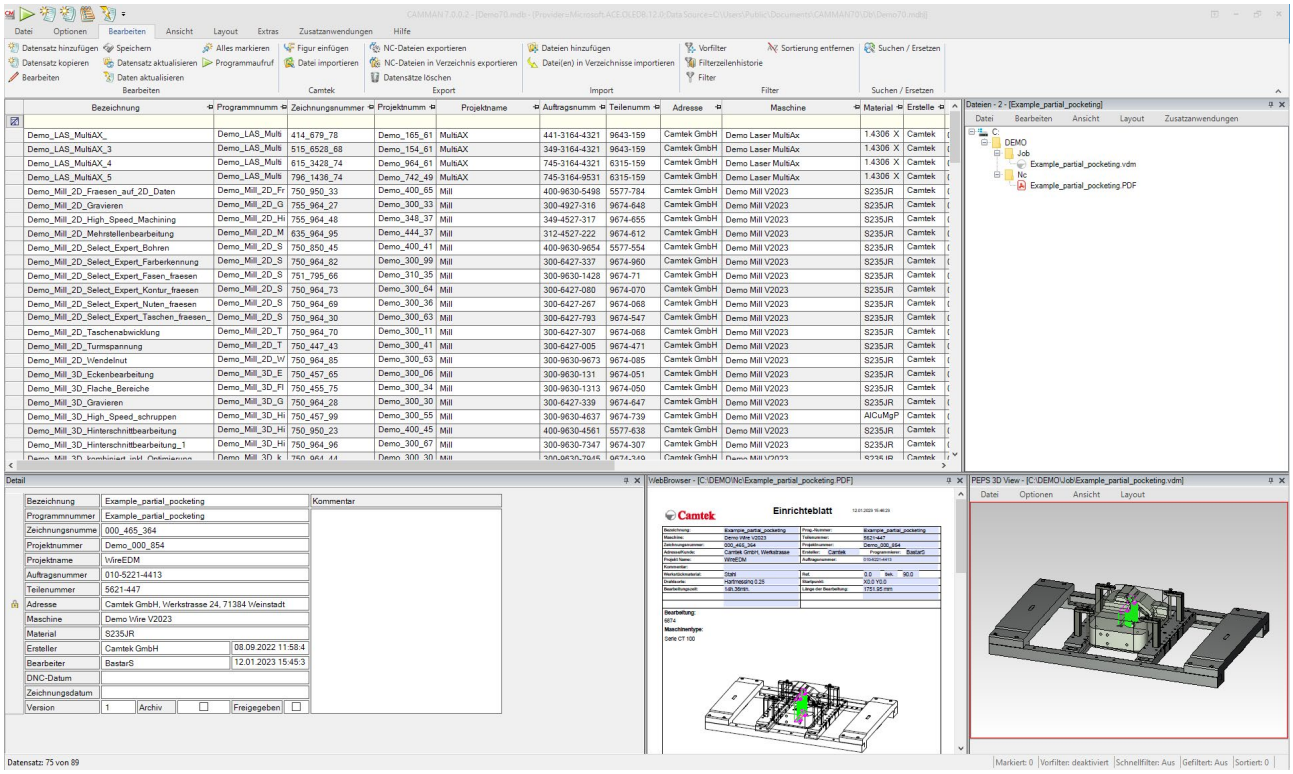
ROBOT-Expert

Optimized angle calculation for simultaneous machining with robots



CAMMAN V7 – Program Data Base

An updated version of the **CAMMAN** program management is available from version 2023. **CAMMAN V7** has been specially adapted for **MS Windows 11** and **PEPS 2023.** In addition, the user interface has been revised and modernized.



Note for CAMMAN users:
PEPS 2023 only runs with **CAMMAN 7.** Older CAMMAN versions are no longer supported.