The Future of CAM

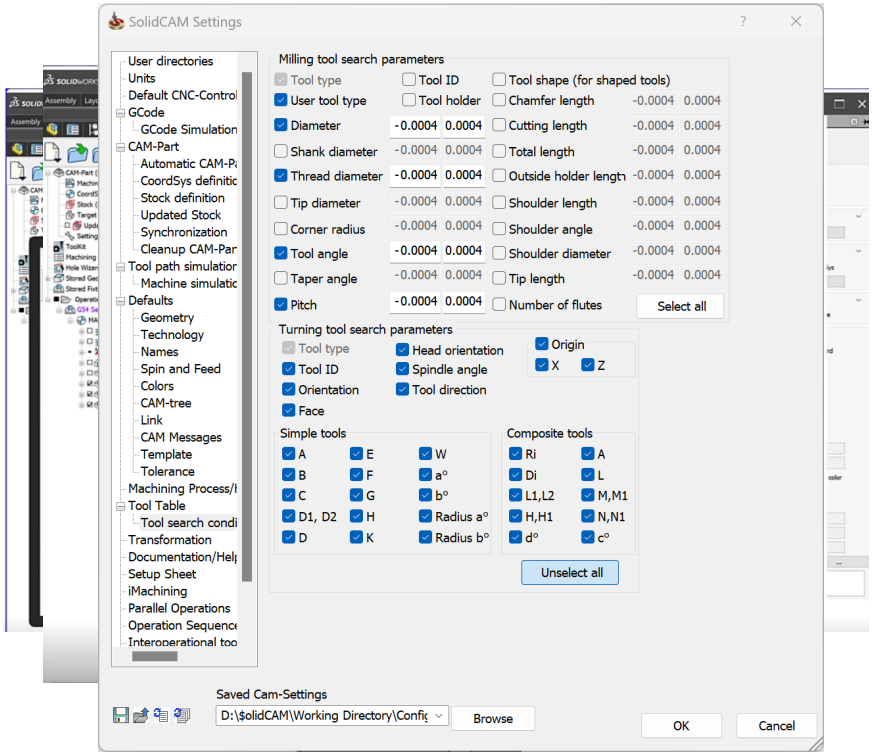
SolidCAM – The Solid Platform for Manufacturing

SolidCAM 2023 SP2
New Functionality

Nov 2023

SolidCAM 2023 – Hole Wizard Enhancements

- Advanced Feature Recognition
  - Recognize Once
  - Use repeatedly
- Feature Based Attributes
  - Dimensional Tolerances
  - Feature Color Attribute
- Tool Search Criteria Tolerances



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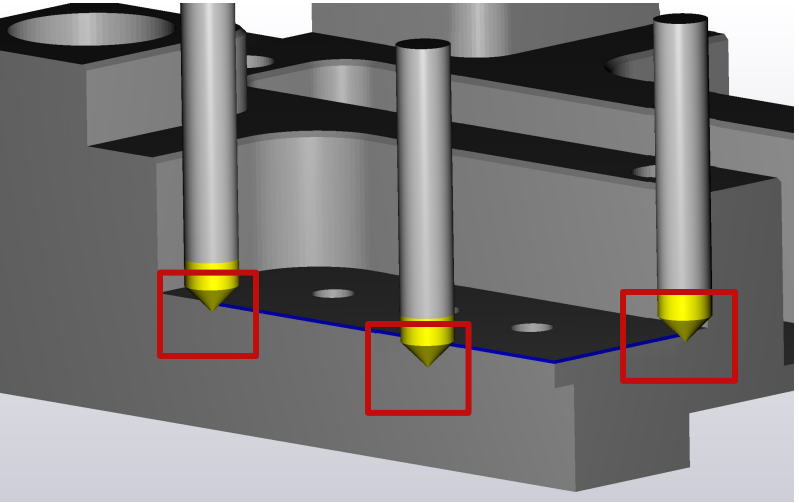
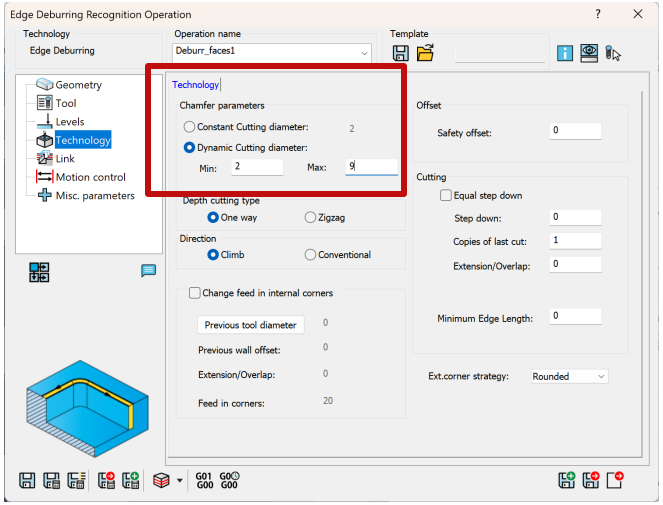
Edge Deburring Recognition –Dynamic Cutting Diameter





- Dynamic control between two cutting diameters
- Allows for less wear on the cutting edge by not cutting constantly on the same cutting point of the tool

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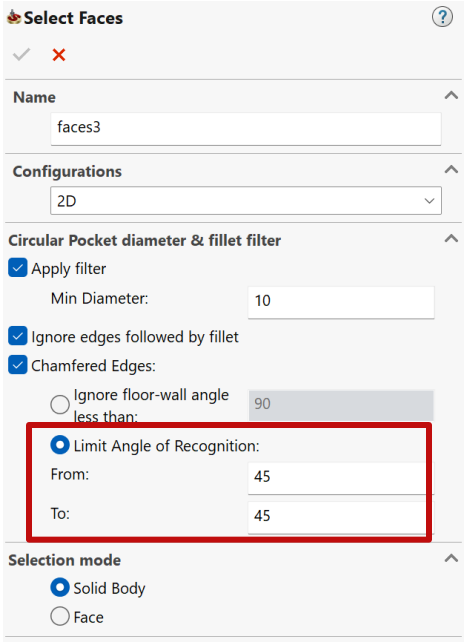
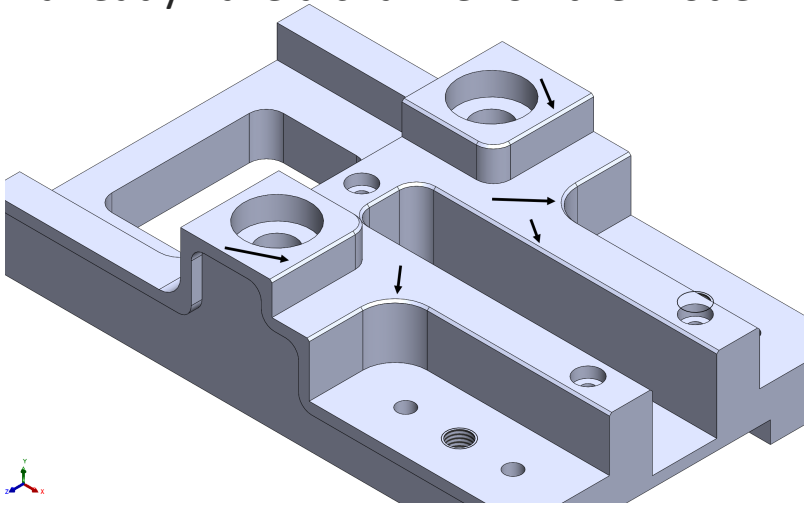
Edge Deburring Recognition –Angle Filter For Specific Angle

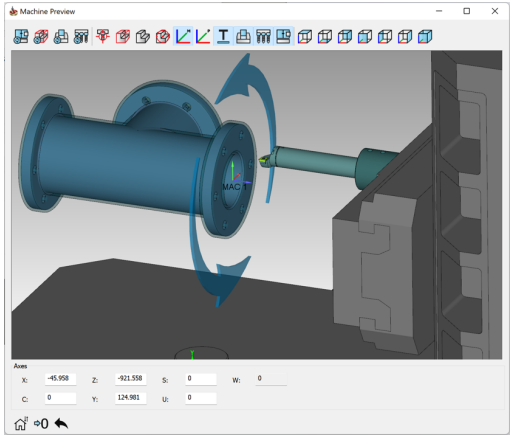


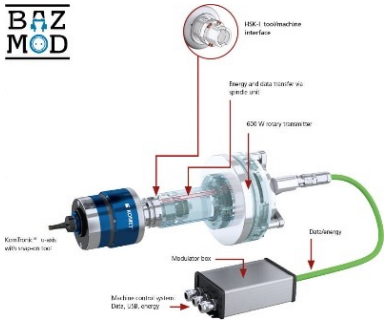
- Filtering to a specific angle allows for choosing only edges that have a specific angle
- This is very helpful for edges that already have a chamfer on the model

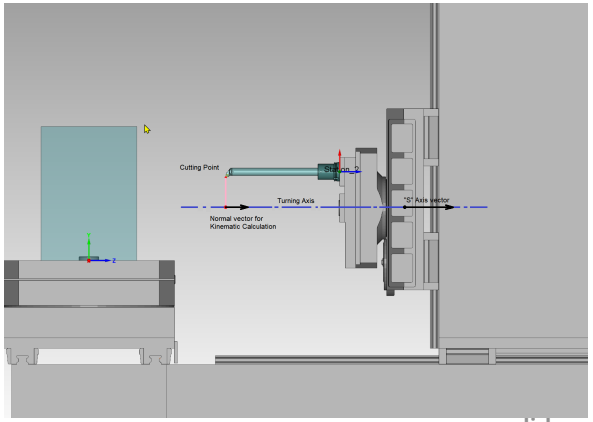


SolidCAM 2023 – U-Axis support

- **New axis type** “Sub Linear Axis” can be Simultaneous or Indexial
- **Tool vector** for kinematic calculations is the Drive Unit Axis vector as normal to plane vector.
- The **tool tip point** for positioning is the projection of the Cutting Point to the Turning Axis.







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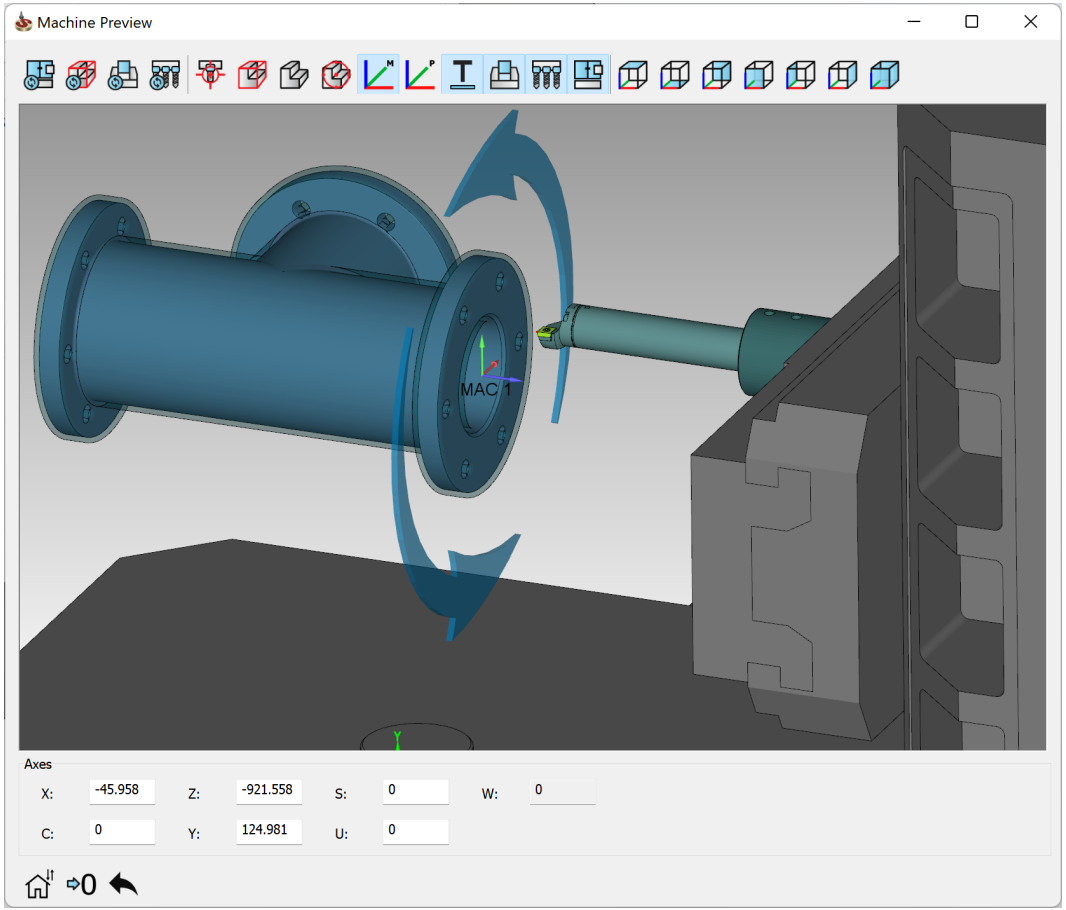
SolidCAM 2023 - U-axis machining Support



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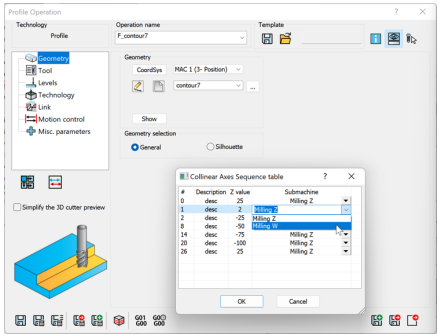
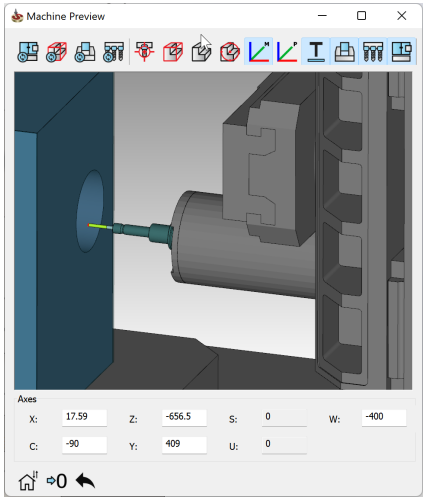
SolidCAM 2023 – Collinear axes support

- In order to support the **CNC machines for heavy and gas & oil industries**, we are implementing support of machines with **collinear axes**.

- Those CNC machines are designed to hold **heavy parts** and make **deep holes machining**

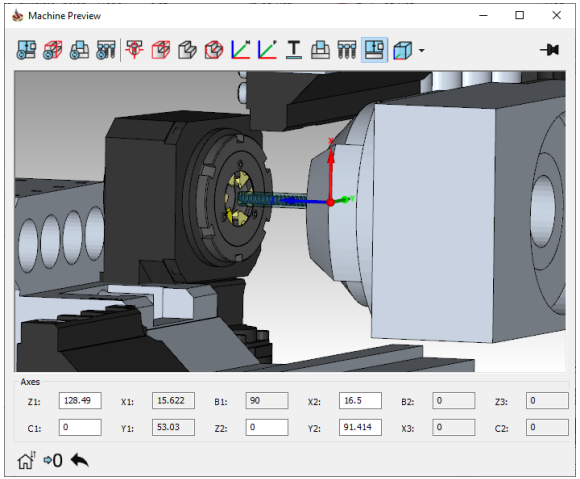




SolidCAM 2023 – Thread Whirling for SWISS type

- **Thread Whirling** is a form of the thread milling process. Inserts are mounted on the inside of a cutting ring that rotates around a cylindrical component to cut a thread.

- It is a productive method often used on Swiss-type CNC machines for thread parts that need to be **produced quickly** and at **tight tolerances** or for threads with a **high length-to-diameter ratio**.



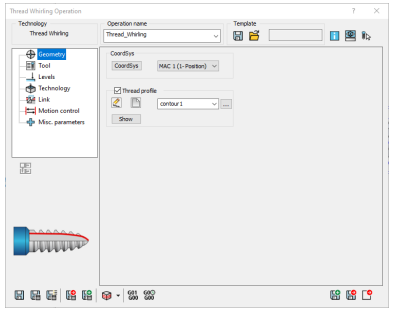
- Typical parts for thread whirling are **medical bone screws, implants, feed screws and other microcomponents**.

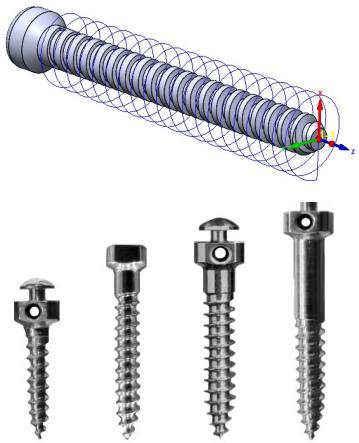
SolidCAM 2023 – Thread Whirling for SWISS type

- Newly supported threading technology that allows the machining of high-quality threads without the risk of bending or vibrations.

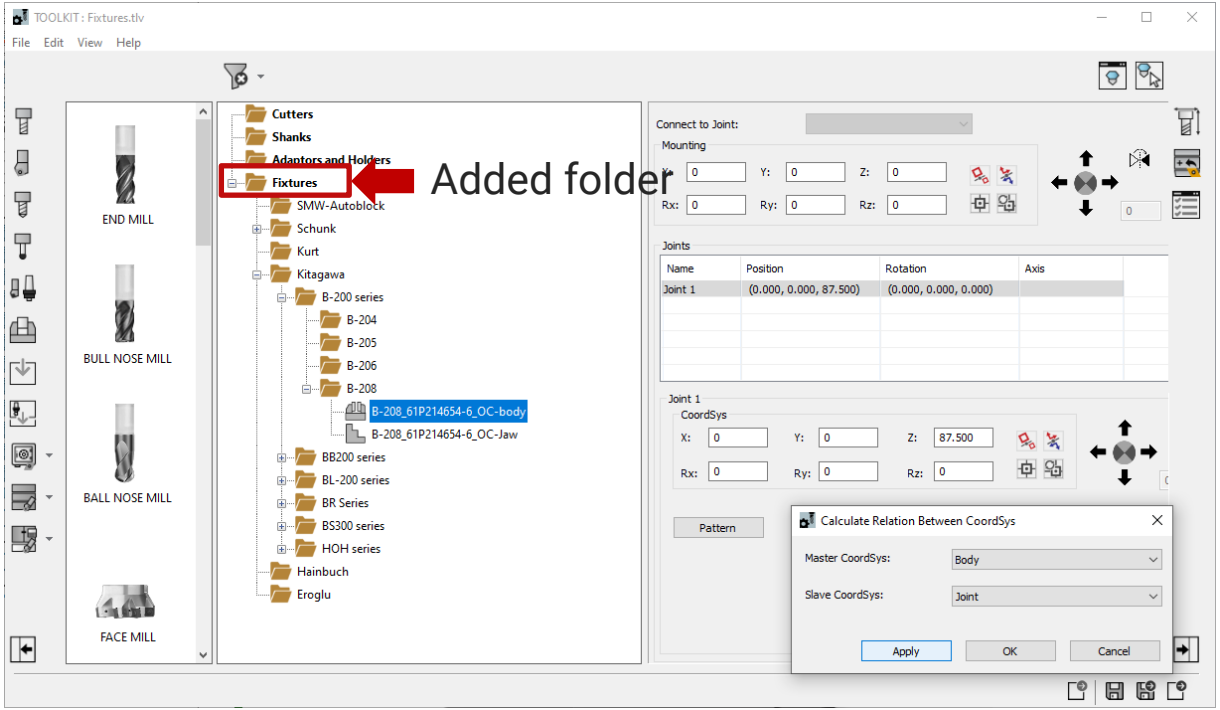
- In combination with a swiss type machine, it is a very suitable technology for parts with a high length-to-diameter ratio such as bone screws, implants, feed screws, and other microcomponents.

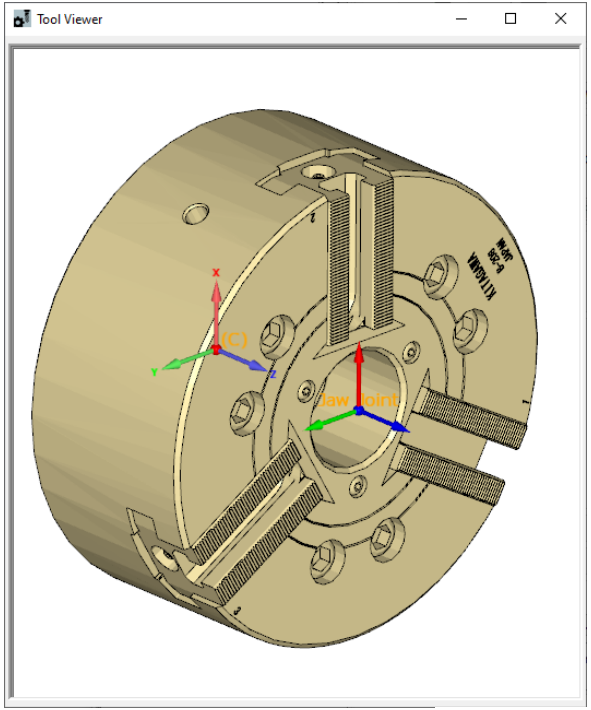
- The operation is based on the thread milling module with additional features such as thread with custom profile, machining the thread in Z-axis segments, simplified G-code structure and more.





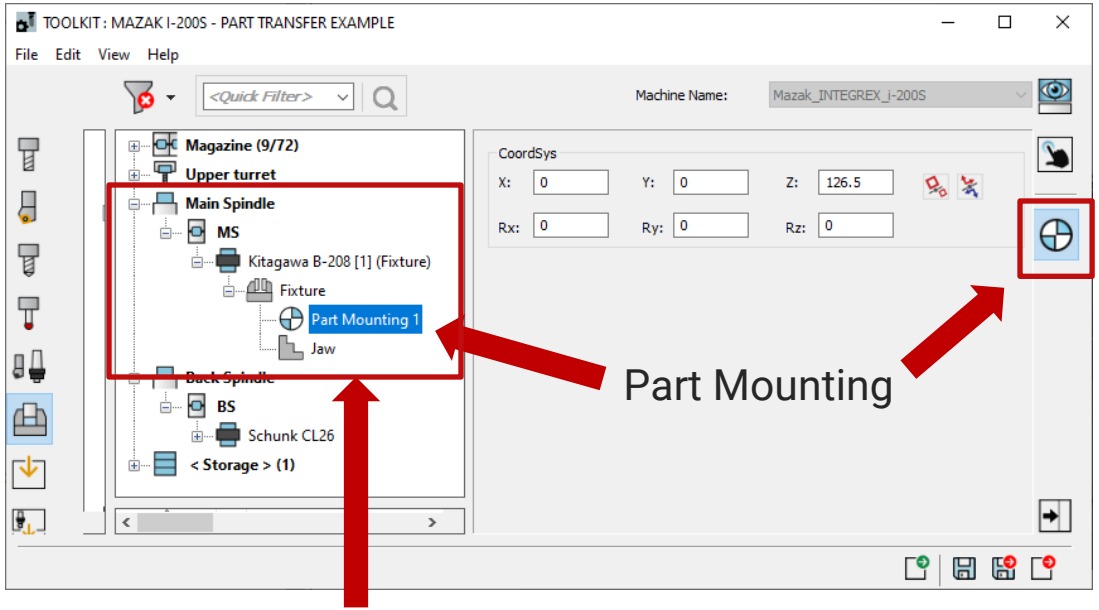
SolidCAM 2023 – Added Fixtures in ToolKit



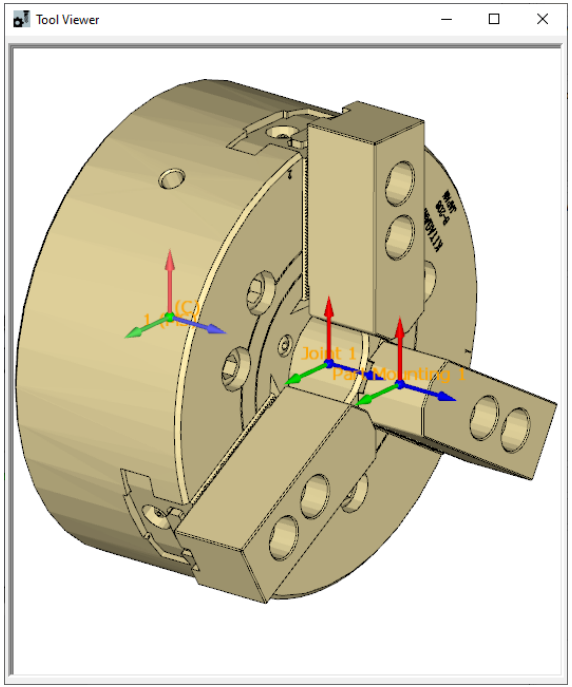


- In **SolidCAM2023** added a possibility to define, manage and store fixture components into a vault (.tlv), assemblies (.tls) or machine assembly (.tlm) library.

SolidCAM 2023 – Added Fixtures in ToolKit



Structure of standard lathe chuck



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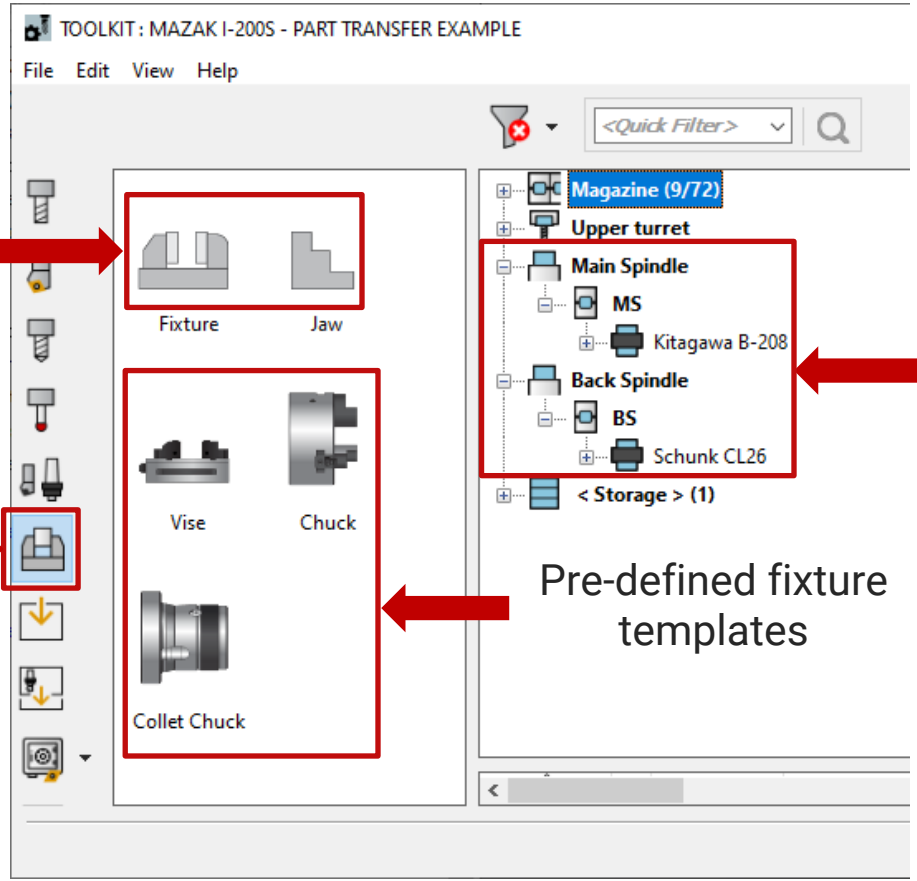
SolidCAM 2023 – Added Fixtures in ToolKit



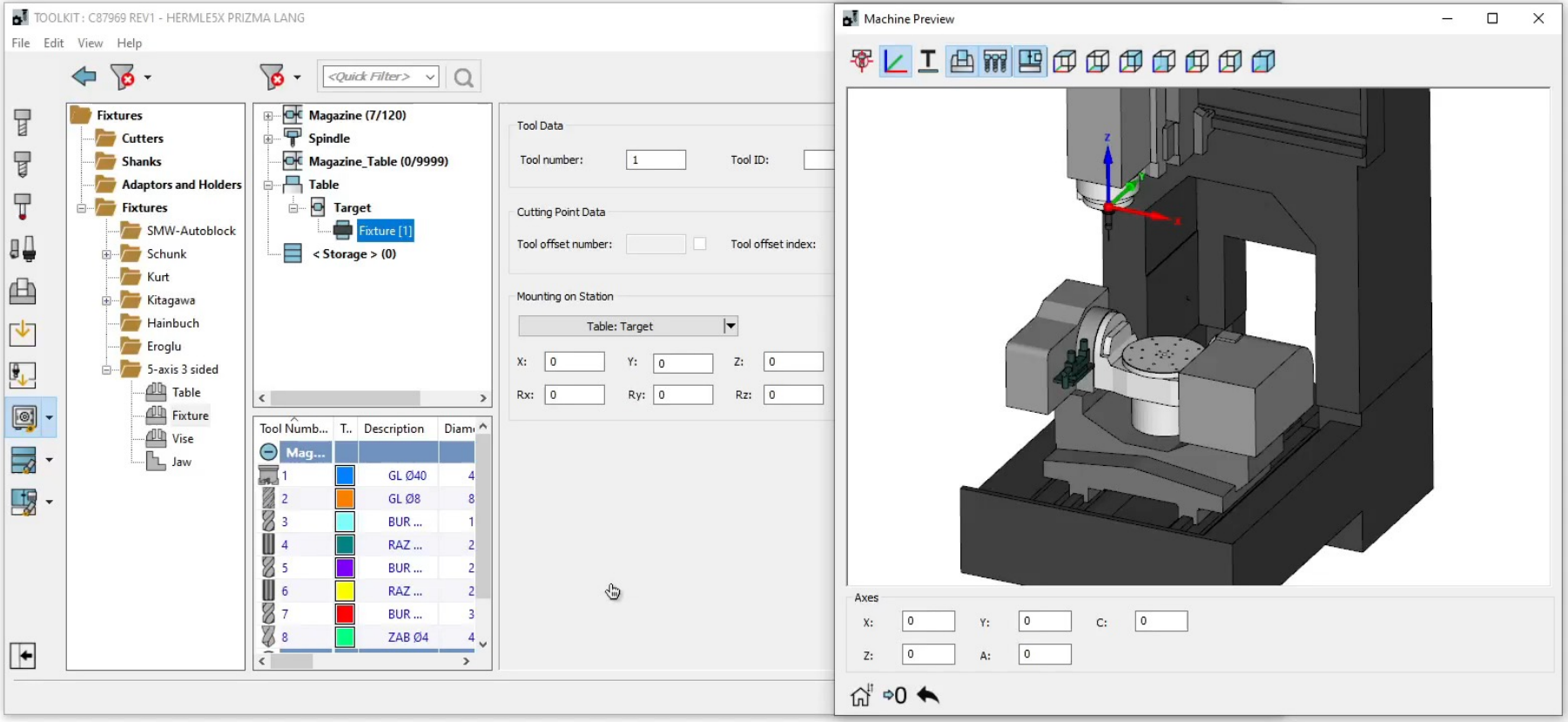
The main fixture items

Added fixture icon

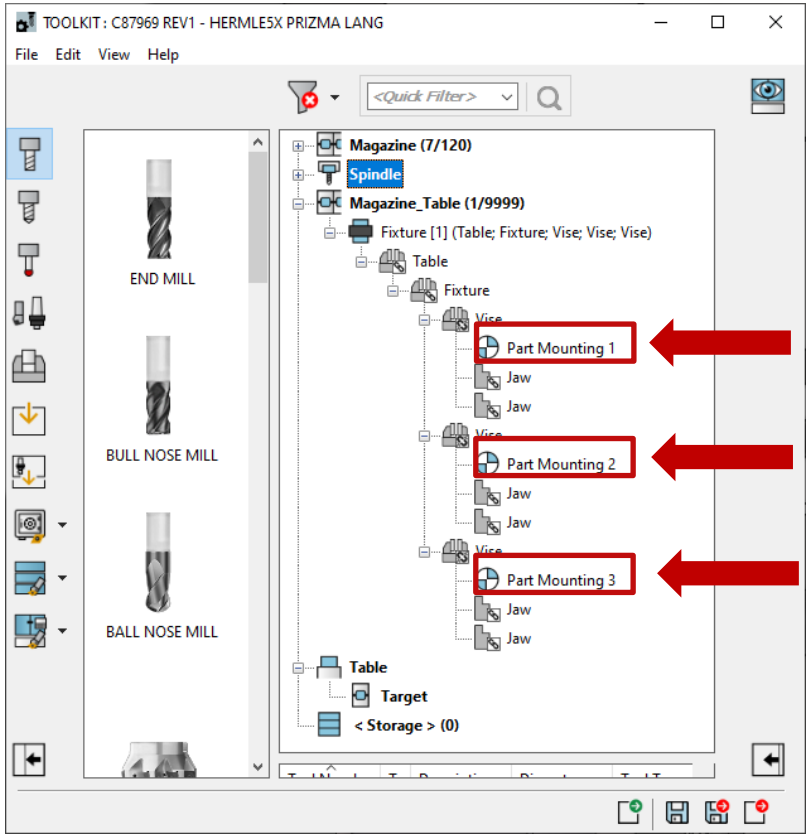
Pre-defined fixture templates

Added option to define fixture on Table

SolidCAM 2023 – Added Fixtures in ToolKit



SolidCAM 2023 – Added Fixtures in ToolKit



Supporting multi-part mounting positions

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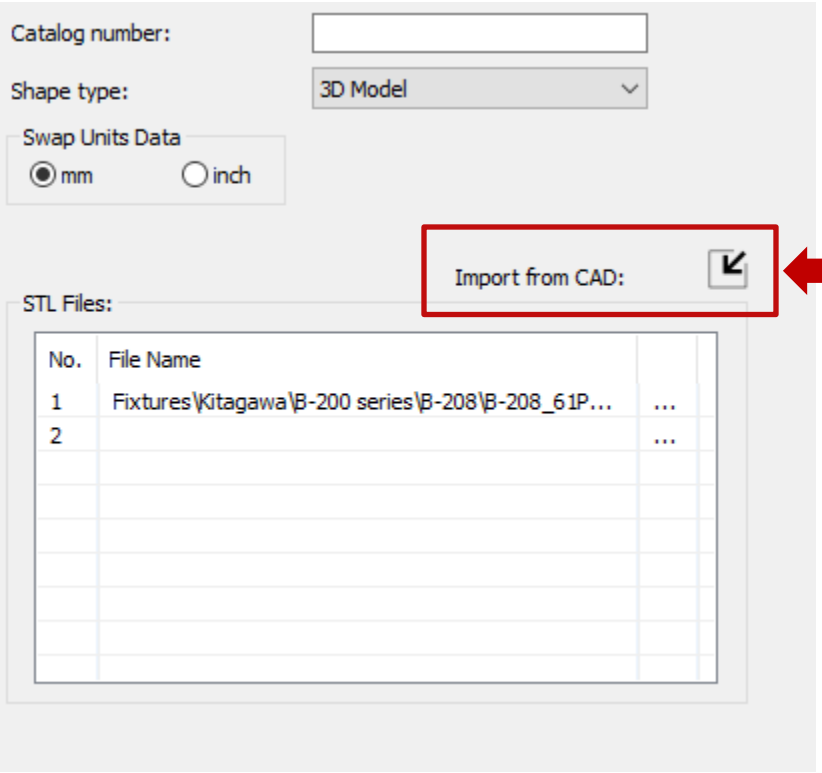
SolidCAM 2023 – Added Fixtures in ToolKit



Import from CAD is supported!

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SolidCAM 2023 – Fixtures Associativity

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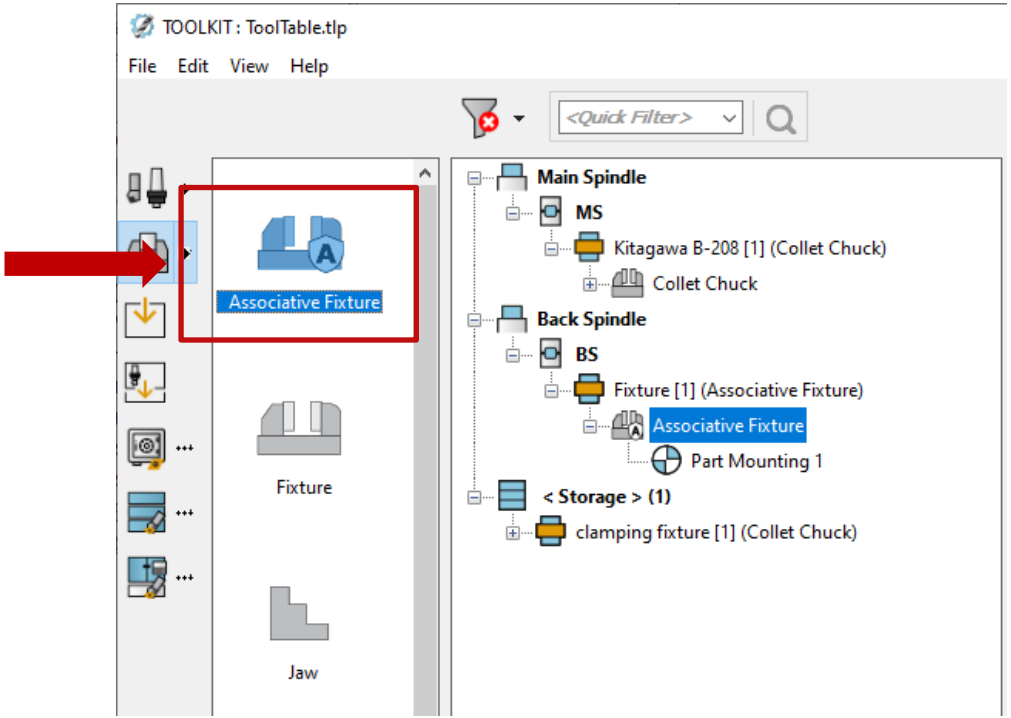
Fixtures Associativity to CAD is **supported!**



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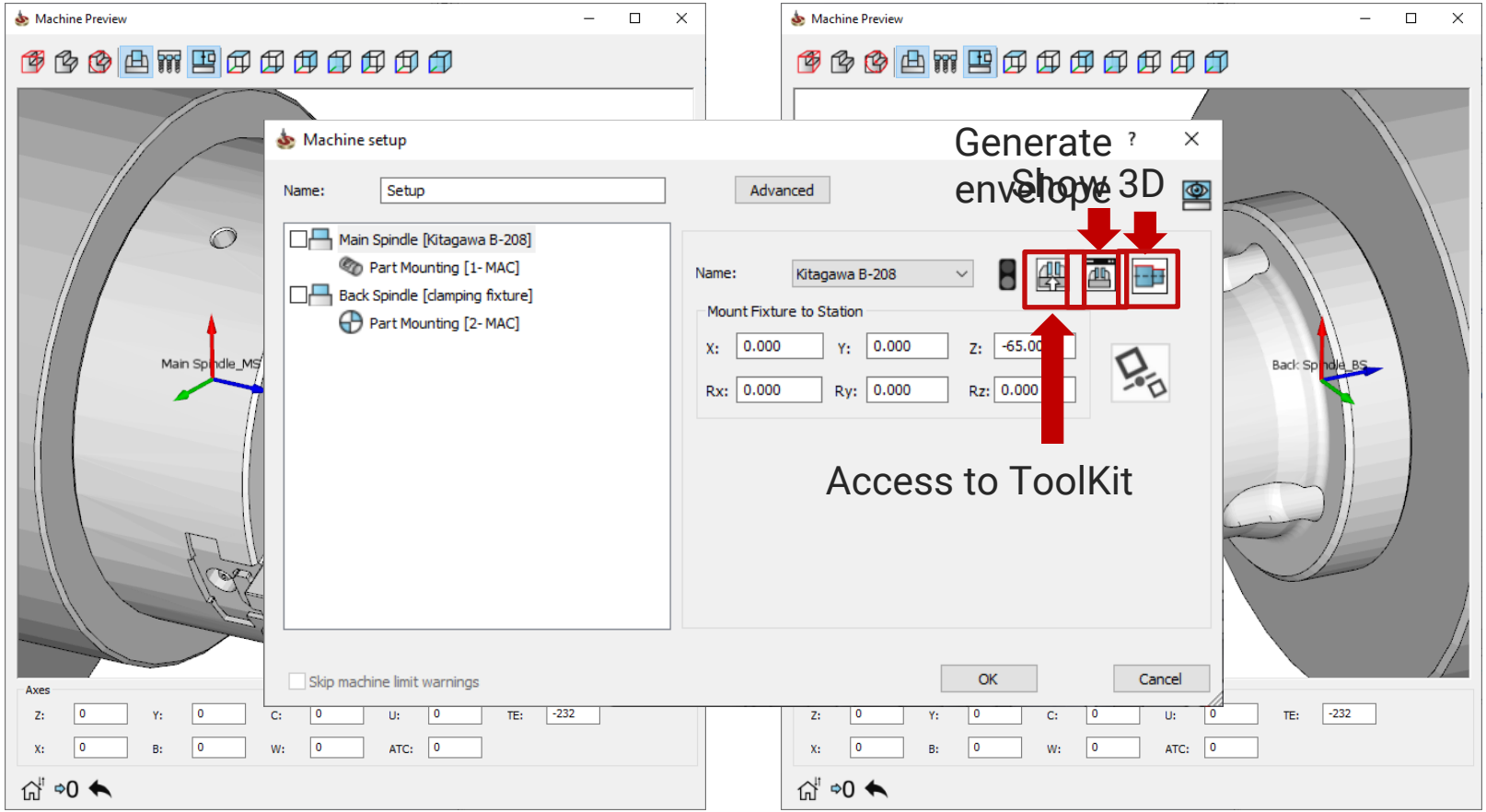
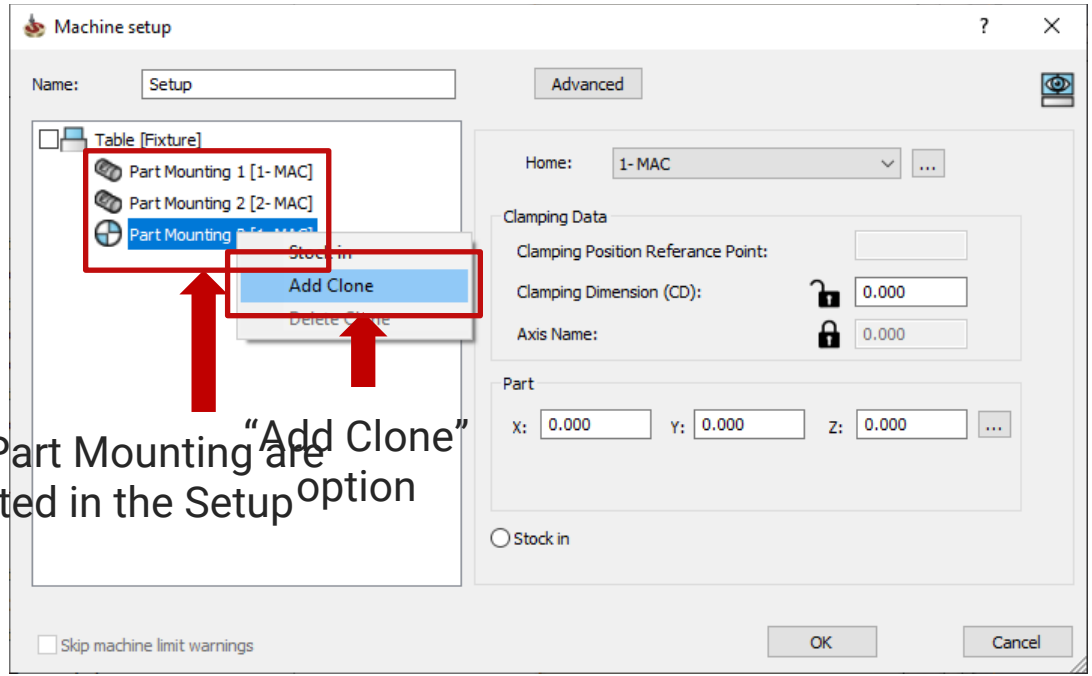
SolidCAM 2023 – New machine setup

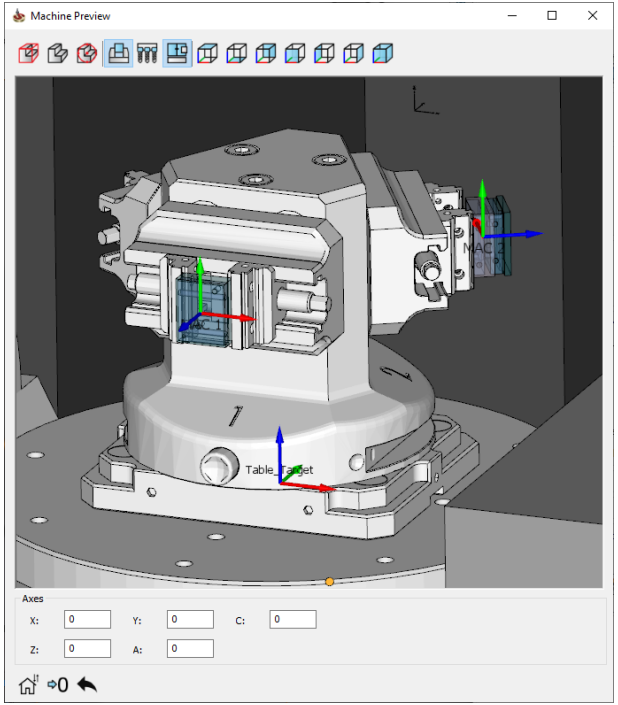


SolidCAM 2023 – New machine setup



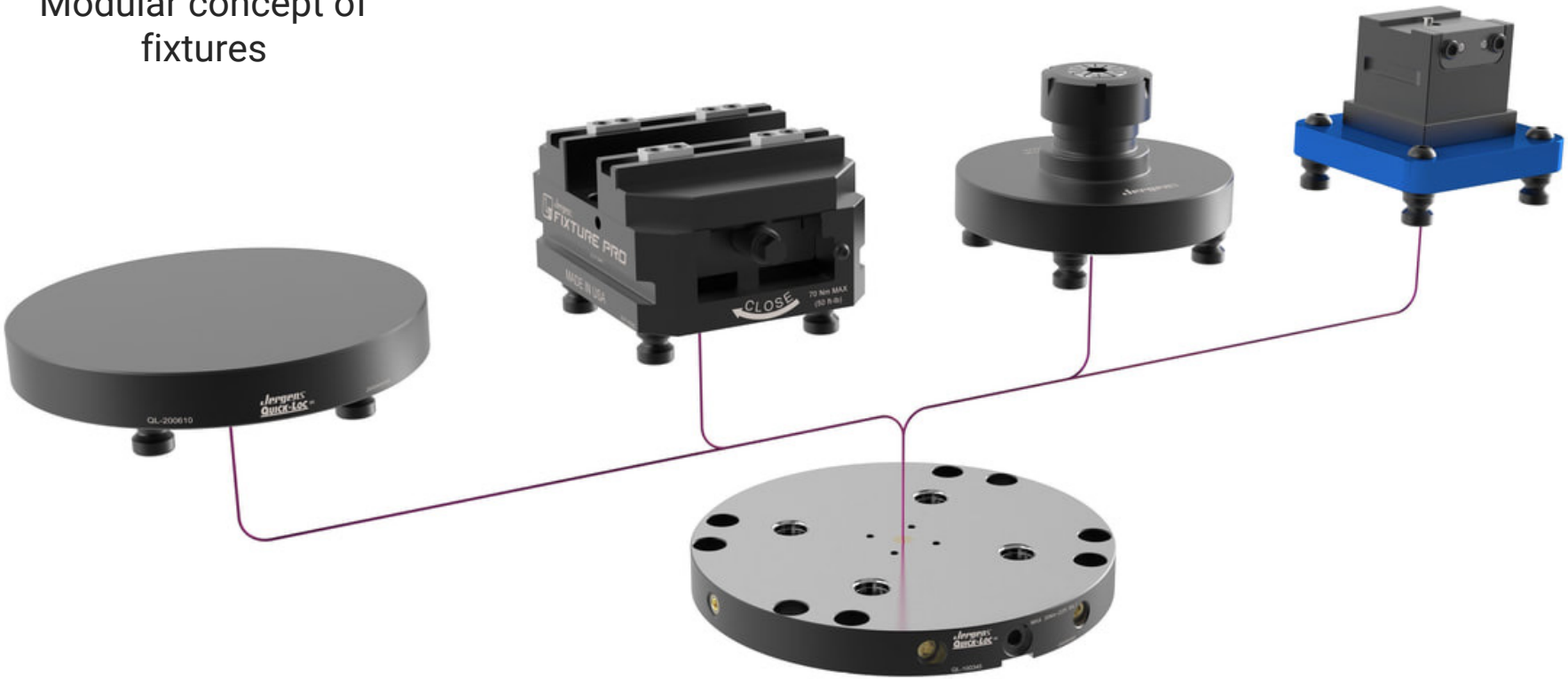
All Part Mounting are listed in the Setup

"Add Clone" option



NEW Fixture and Setup will support….

Modular concept of fixtures



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NEW Fixture and Setup will support….

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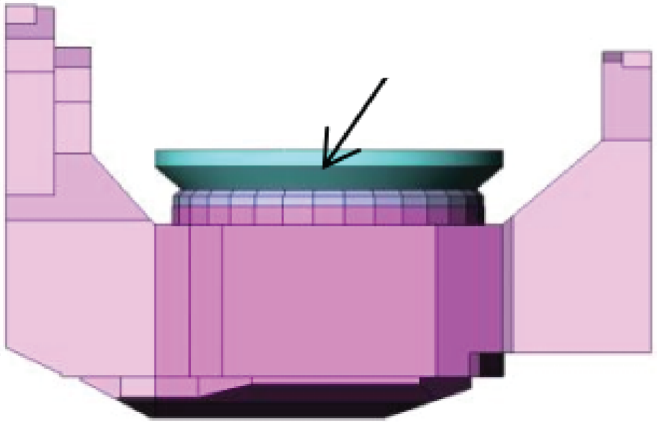
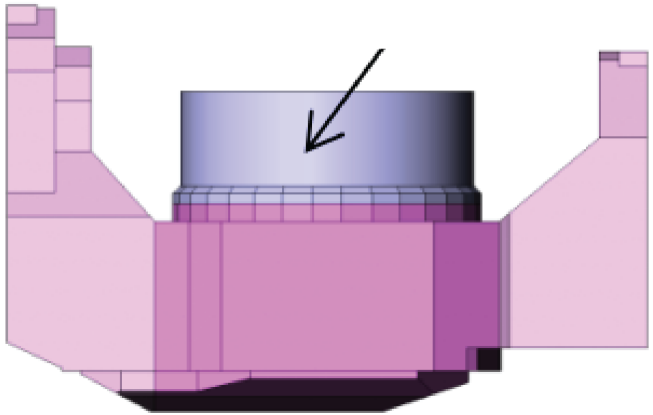
Replacable tables





NEW Fixture and Setup will support….

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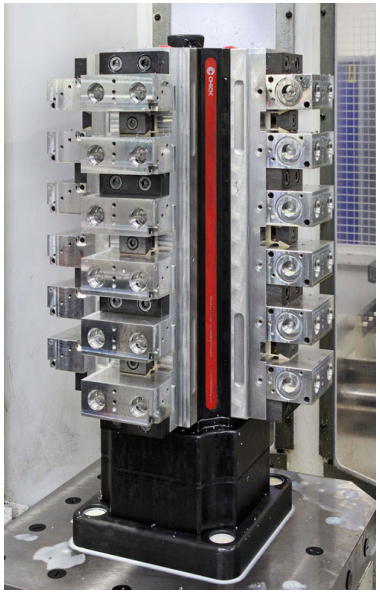
Replacable tables - Tombstones



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NEW Fixture and Setup will support….

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Pyramidal fixtures

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NEW Fixture and Setup will support….

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Standard lathe and collet chucks and vises

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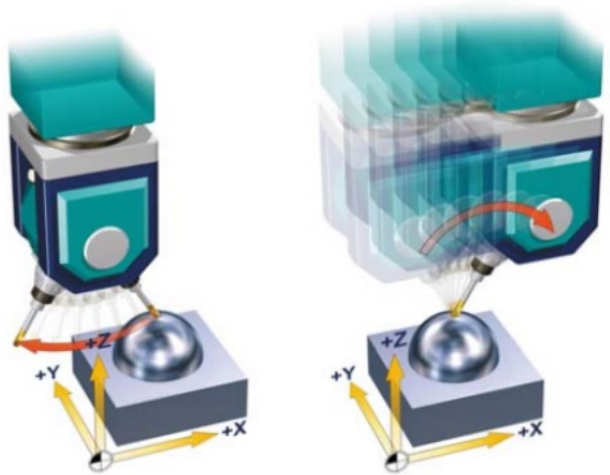
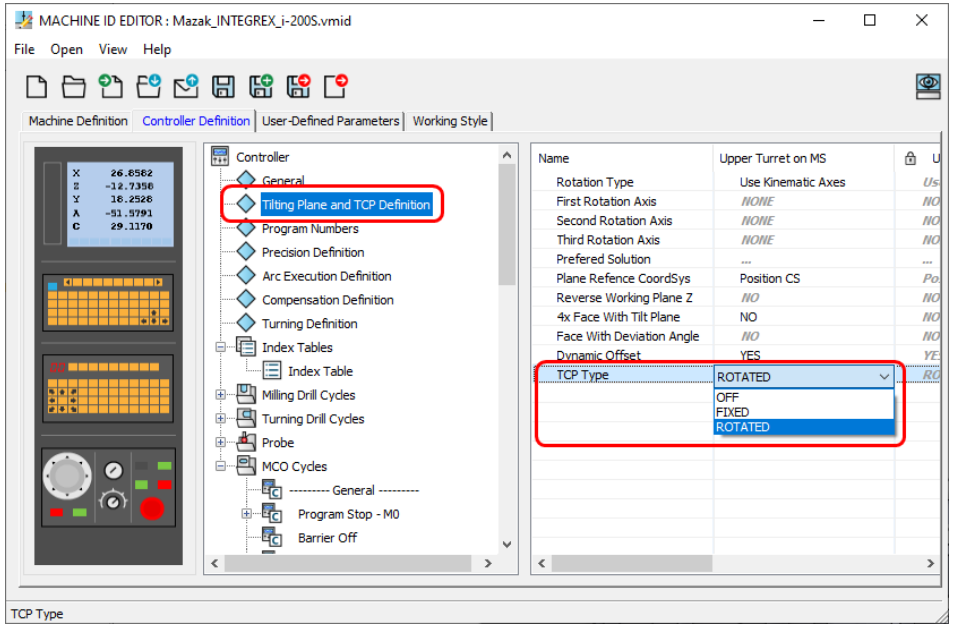
MCO: Control the movements with or without the TCP option



The example when TCP is OFF (left) and when TCP is ON (right)



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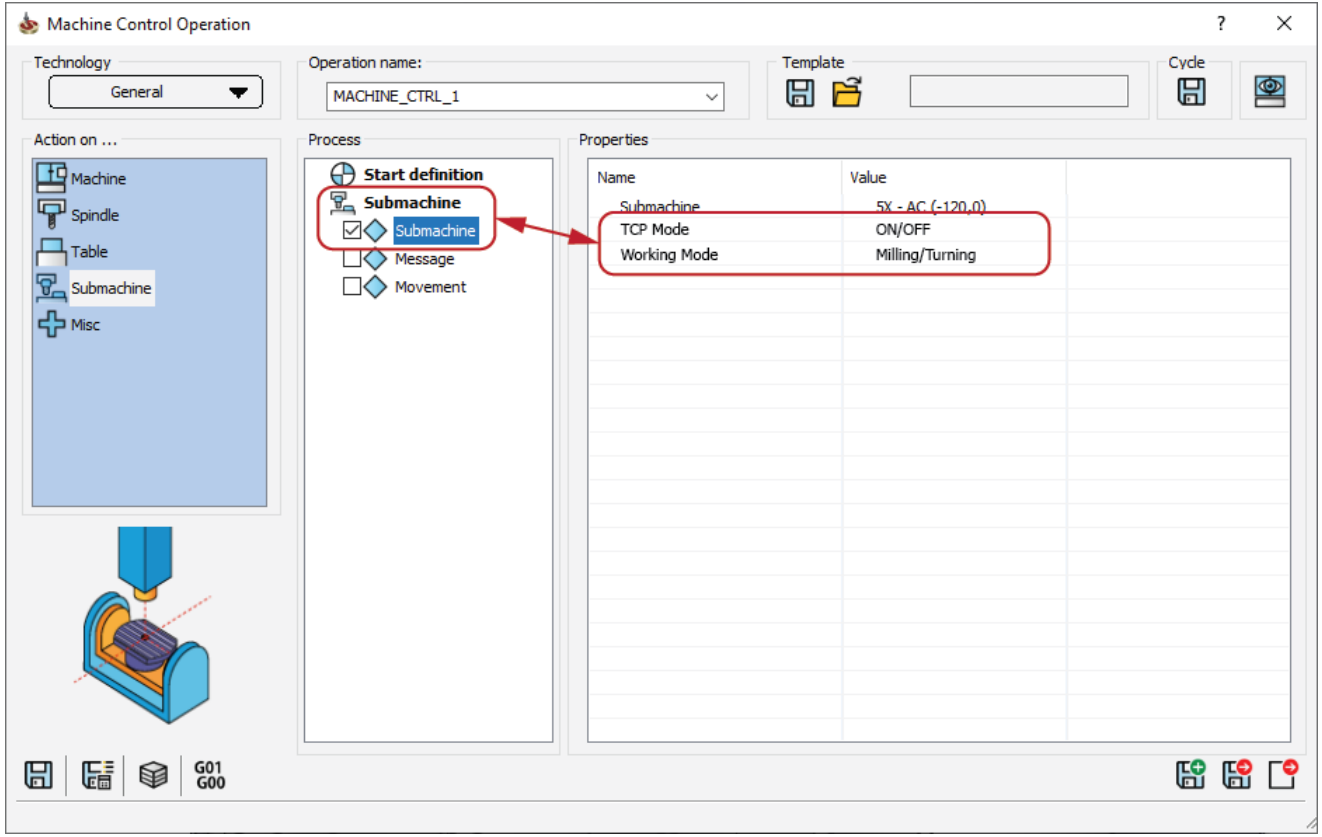
MCO: Control the movements with or without the TCP option



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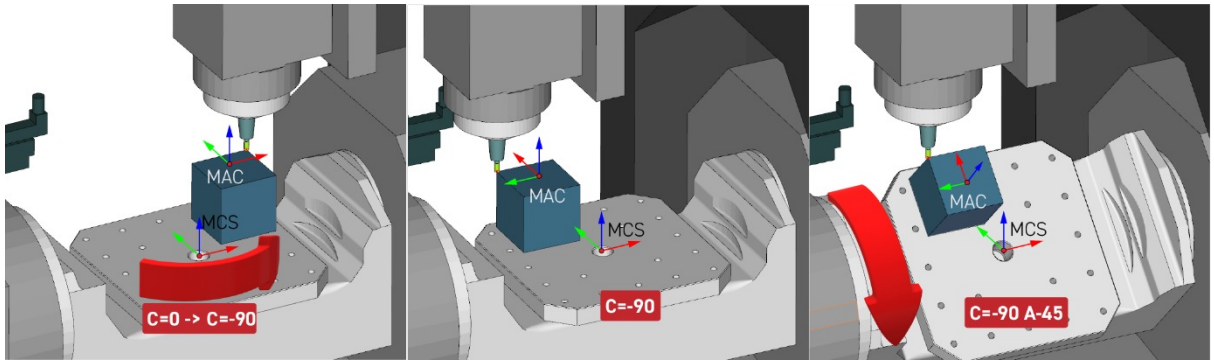
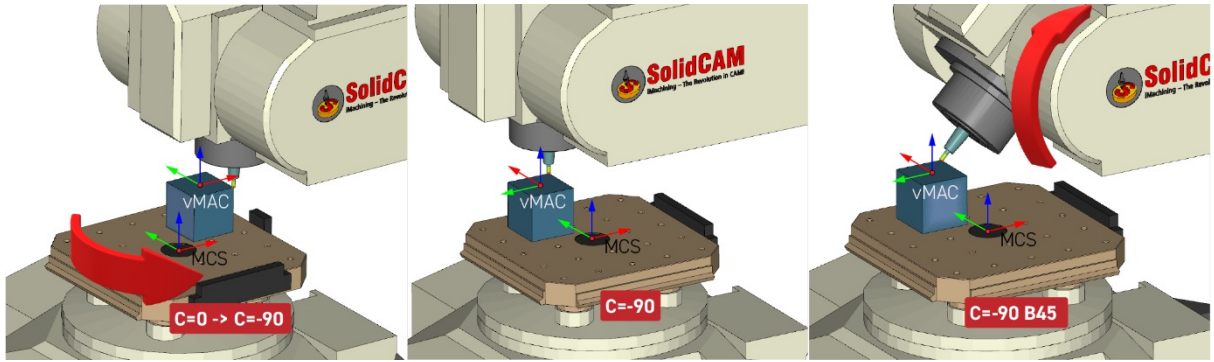
MCO: Control the movements with or without the TCP option



“Rotated” type TCP on Table-Table



“Rotated” type TCP on Head-Table

MCO: Control the movements with or without the TCP option

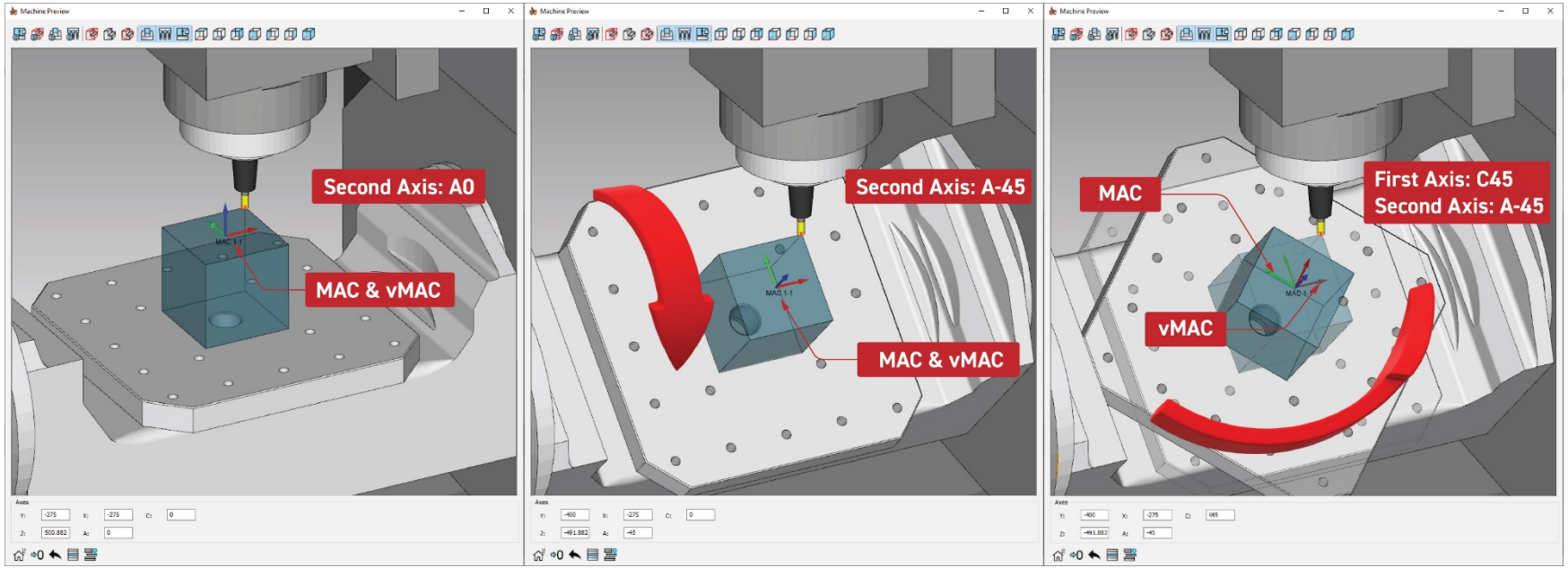
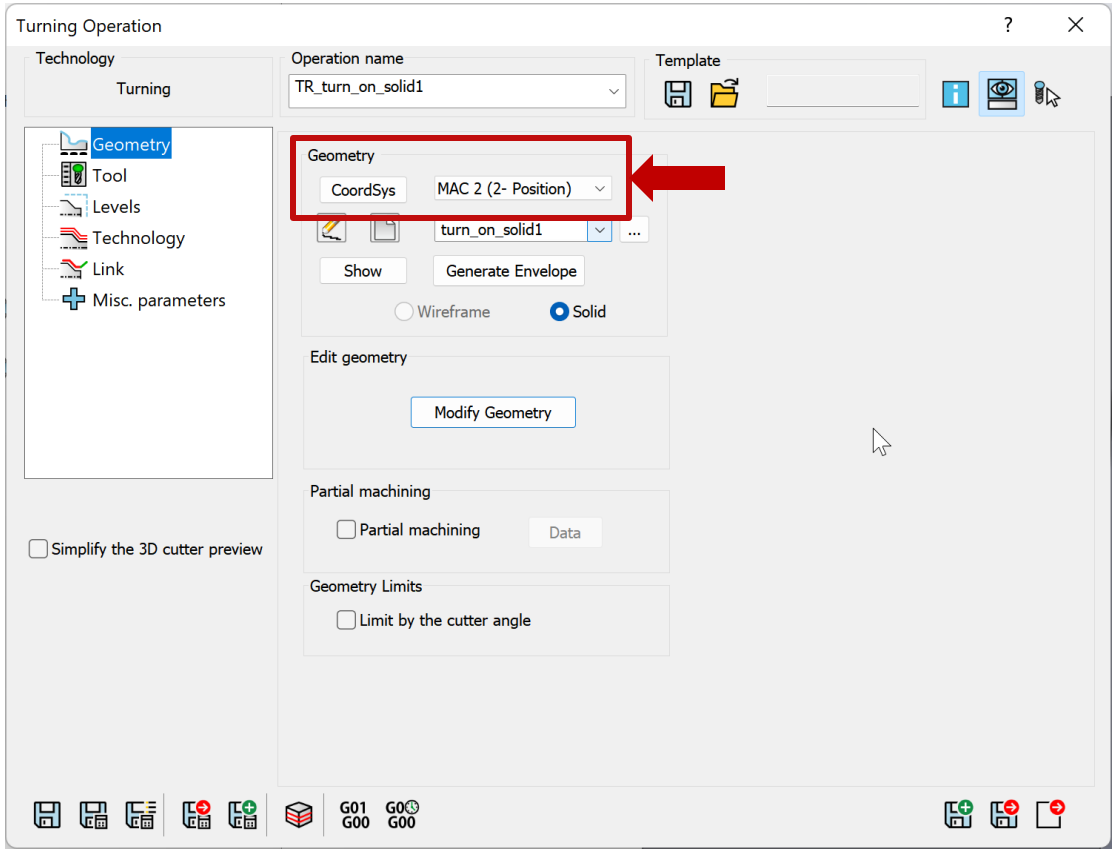
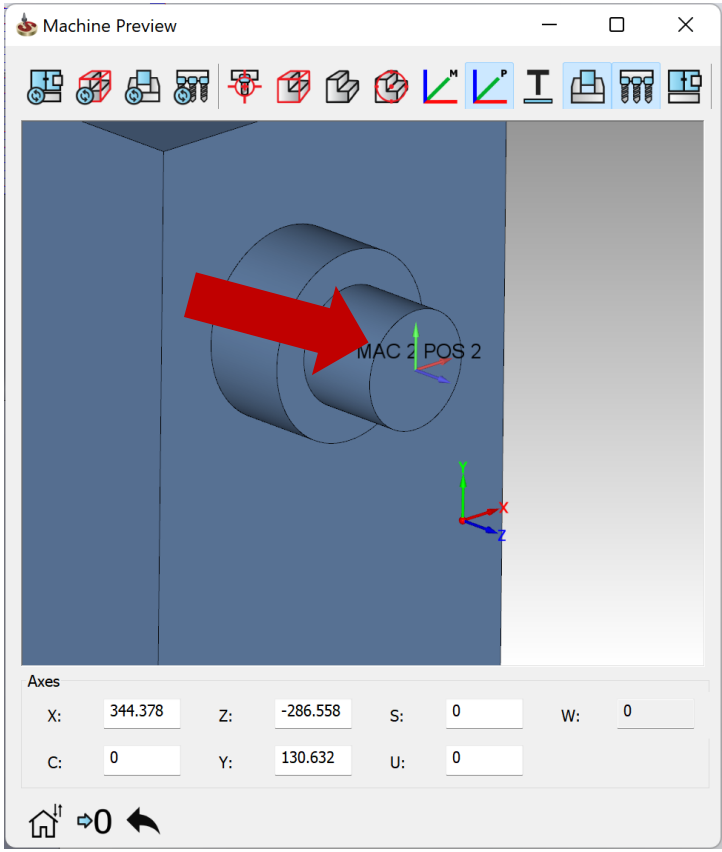


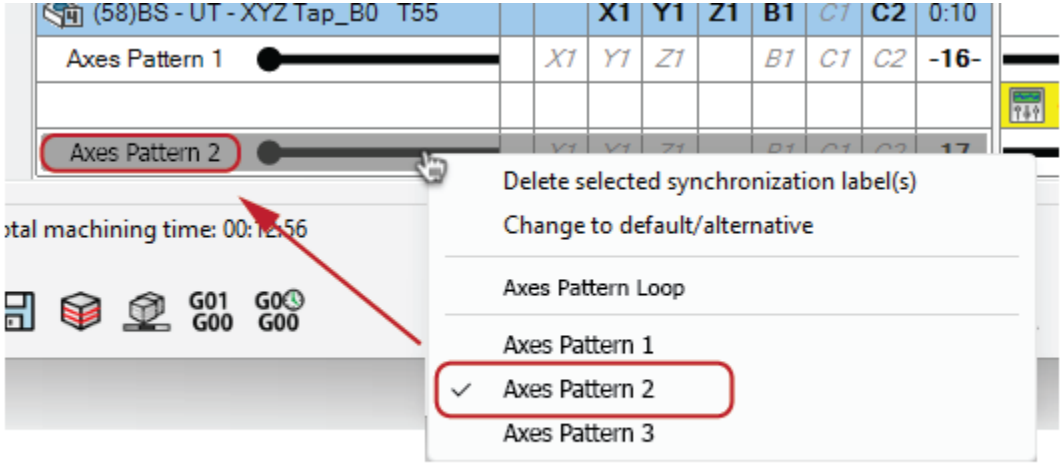
Table-centered part with the Fixed TCP on Table-Table

Support Turning in Position



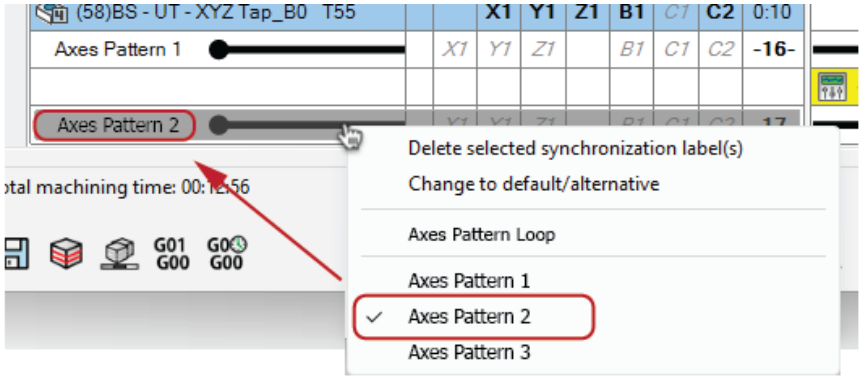


Channel Synchronization: Complete Control over the first and last Axes Pattern



- When **Axes Pattern Loop** is active (default), the **first** and **last** Axes Pattern are the same, however, the user can change to them.

Operation Sequence Manager: Complete Control over the first and last Axes Pattern



- When **Axes Pattern Loop** is active (default), the **first** and **last** Axes Pattern are the same, however, the user can change to any

! ~~Channel Synchronization~~ -> Operation Sequence Manager

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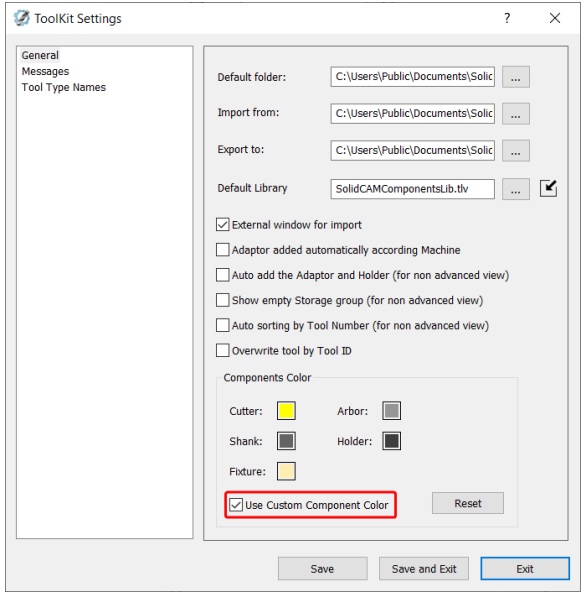
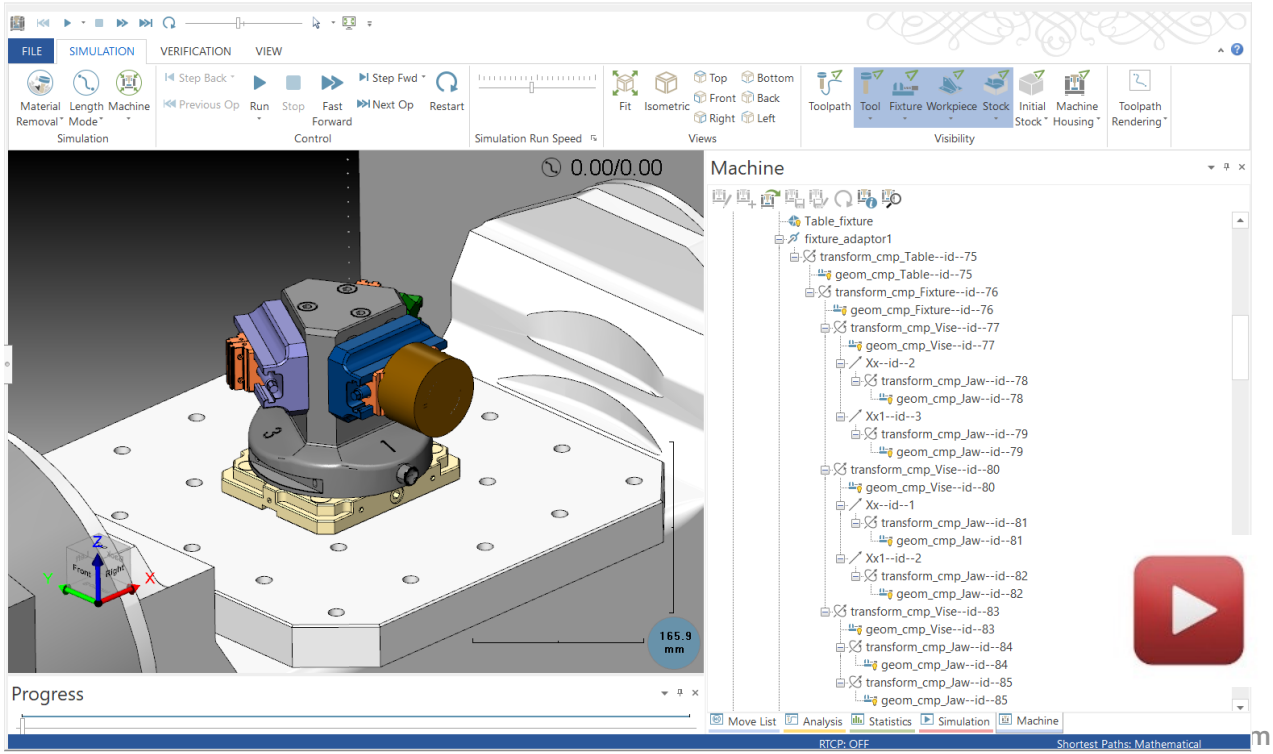
SolidCAM 2023 – Machine Simulation

- All tools and fixtures defined in the ToolKit are fully supported in Machine Simulation
- Tools and fixtures will be colored with the same colors as defined in the ToolKit





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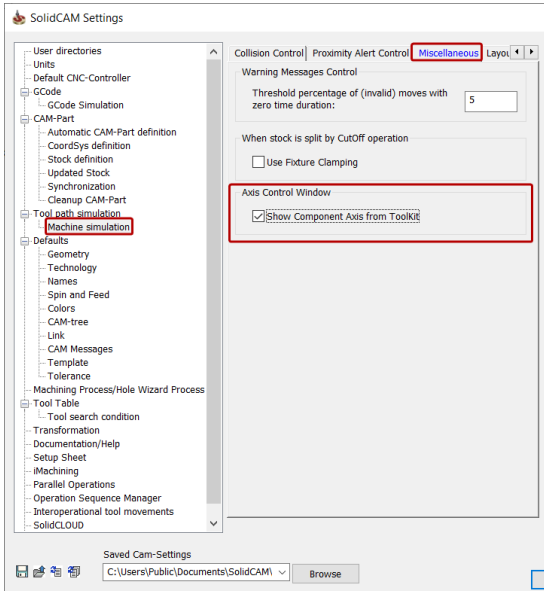
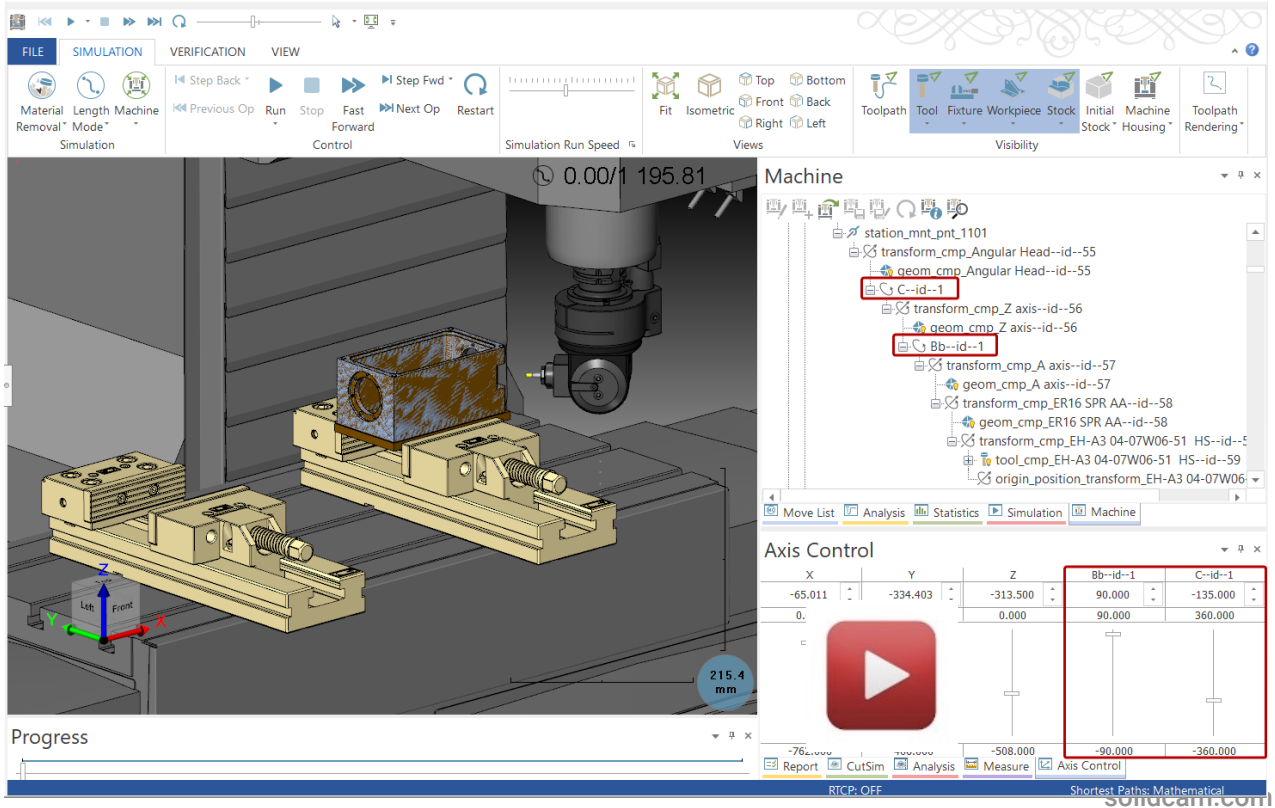
SolidCAM 2023 – Machine Simulation

- Component axes defined in the ToolKit are now supported in Machine Simulation and the client has the option to display the axes in the Axis Control window





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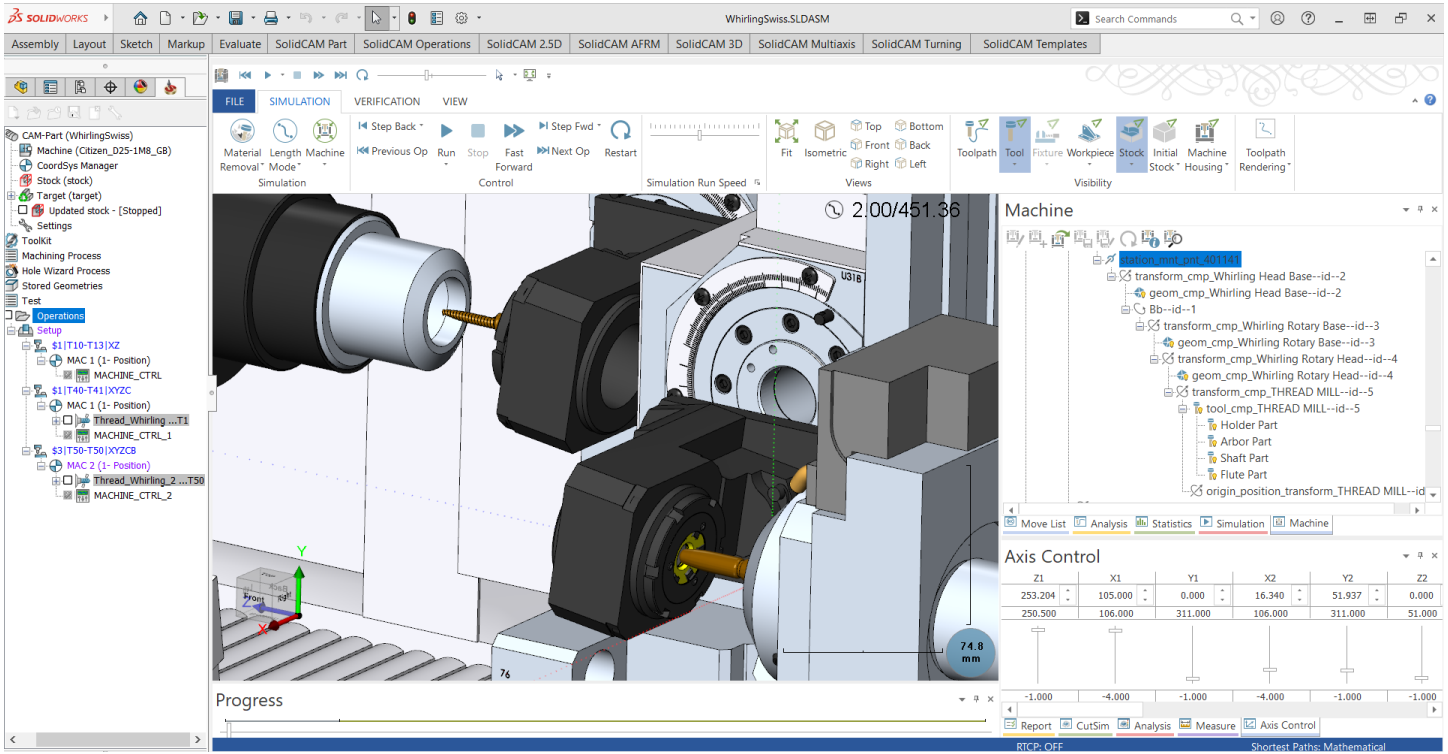
SolidCAM 2023 – Machine Simulation

- Using Machine Simulation, new Thread Whirling operation can be simulated



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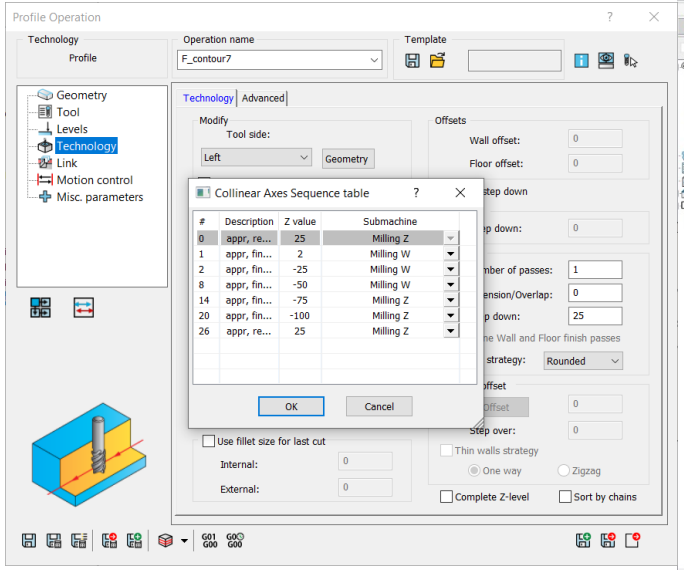
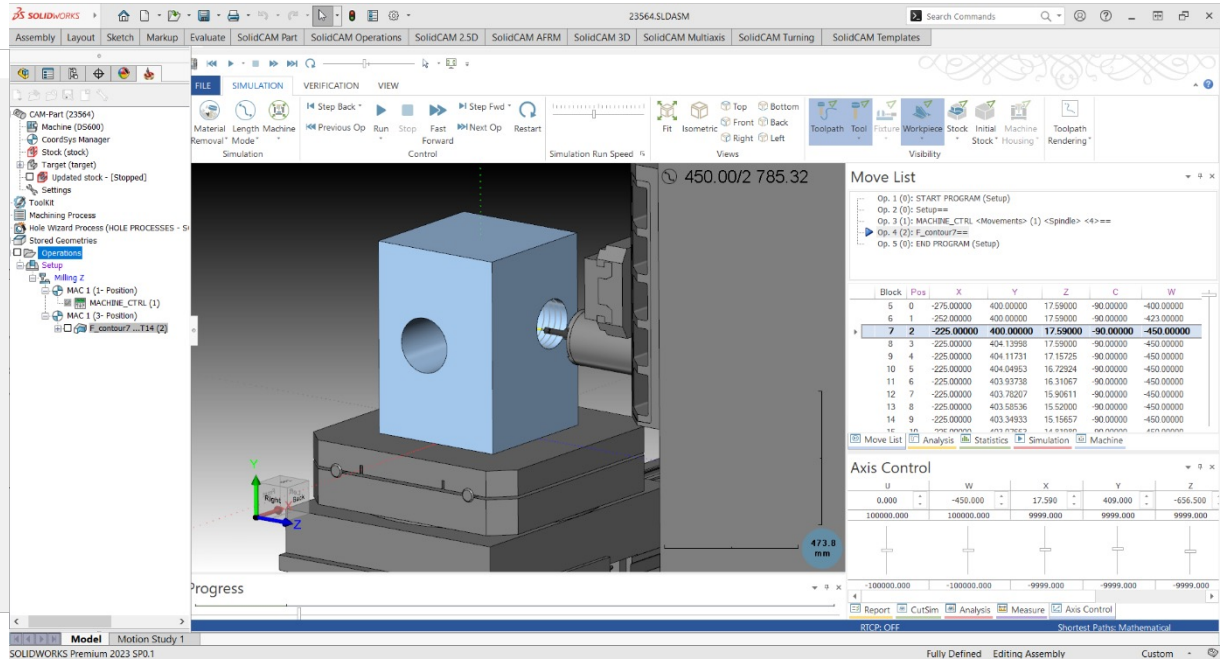
SolidCAM 2023 – Machine Simulation

- Movements defined with the Collinear Axes Sequence table are supported in Machine Simulation





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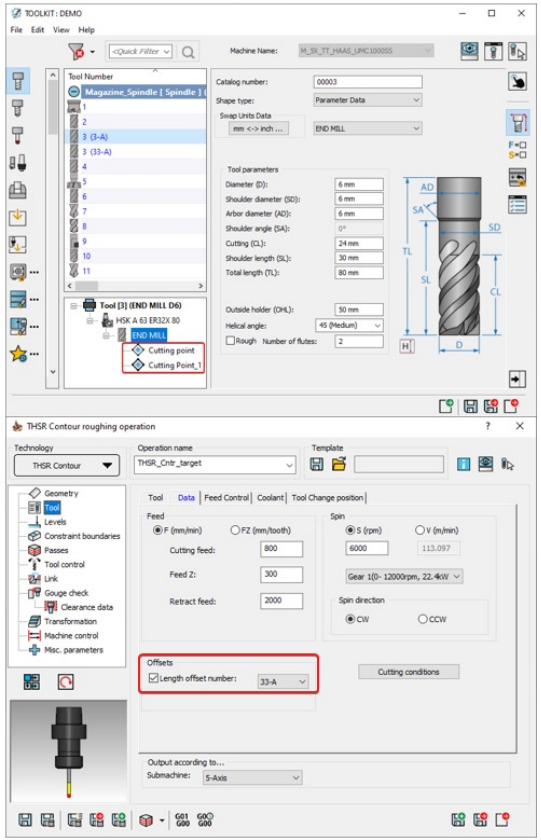
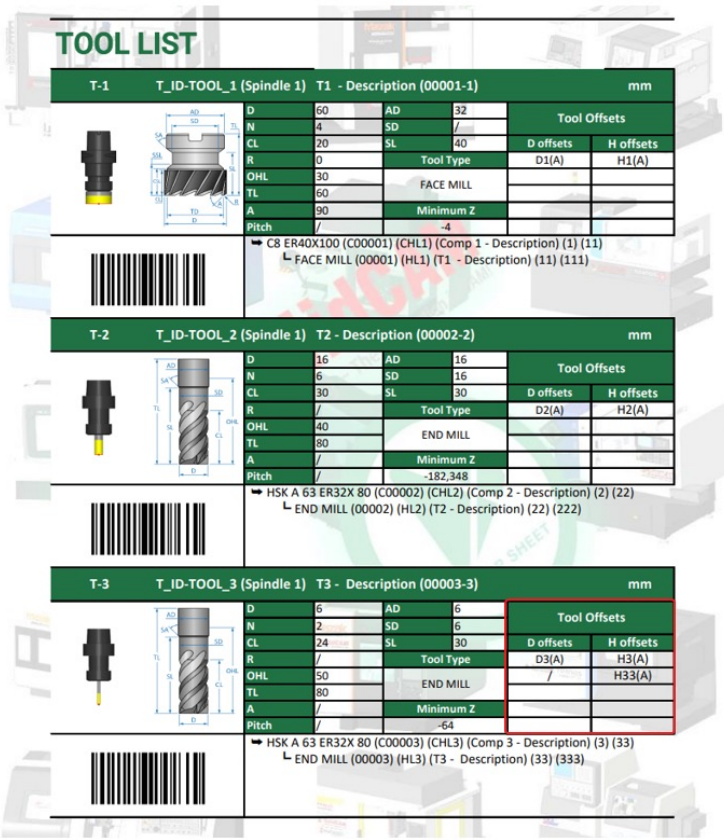
SolidCAM 2023 – Setup Sheet Tool Offset Section

- Tool Offsets are now fully supported within Tools Section Data
- It can be also supported as a separate Section
- Tool Offsets are updated and fully supported also within Operations Section





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SolidCAM 2023 – Setup Sheet Tools Section divided by Channels

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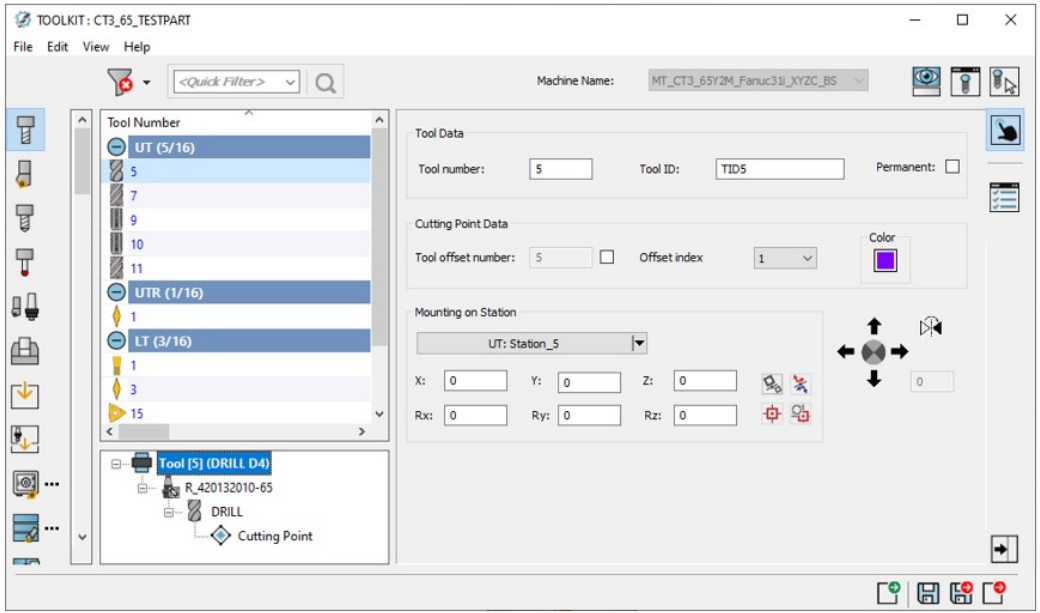
- Tools Section can now be divided and the output can be per Channel



TOOL LIST

Channel 1 - Upper Left Rotary Turret

T5 T_ID-TID5 (UT 1)		T5 - Description (05-5)		mm
D4	DRILL	TL(80 mm)	Catalog No: 05	Item Cat. No: 05-5
T7 T_ID-TID7 (UT 1)		T7 - Description (07-7)		mm
D5.5	END MILL	TL(80 mm)	Catalog No: 07	Item Cat. No: 07-7
T9 T_ID-TID9 (UT 1)		T9 - Description (09-9)		mm
D5	TAP	TL(60 mm)	Catalog No: 09	Item Cat. No: 09-9
T10 T_ID-TID10 (UT 1)		T10 - Description (010-10)		mm
D5	TAP	TL(60 mm)	Catalog No: 10	Item Cat. No: 010-10
T11 T_ID-TID11 (UT 1)		T11 - Description (011-11)		mm
D5.5	END MILL	TL(80 mm)	Catalog No: 11	Item Cat. No: 011-11

Channel 2 - Upper Right Rotary Turret

T1 T_ID-TID1 (UTR 2)		T1 - Description (11-1)		mm
VBMT 160404	Ext. Turning	TLM (150.00 mm)	Catalog No: 11	Item Cat. No: 11-1

Channel 3 - Lower Rotary Turret

T1 T_ID-TID1 (LT 10)		T1 - Description (21-1)		mm
Ra0.2	Ext. Grooving	TL (150.00 mm)	Catalog No: 21	Item Cat. No: 21-1
T3 T_ID-TID3 (LT 10)		T3 - Description (23-3)		mm
VBMT 160404	Ext. Turning	TLM (150.00 mm)	Catalog No: 23	Item Cat. No: 23-3
T15 T_ID-TID15 (LT 10)		T15 - Description (215-15)		mm
Ra0.16	Ext. Threading	TL (150.00 mm)	Catalog No: 215	Item Cat. No: 215-15

SolidCAM
The Solid Platform for Manufacturing

Support Partial Envelope – Region Of Interest

SolidCAM
THE FUTURE OF CAM

CoordSys Data

Coordsys

MAC Number: 1

Position: 2

Create planar surface at Part Lower level

Edit CoordSys

Levels: Planar

Levels: Radial

Translation Data

Shift: 109.997, 0, -110

Rotation: -90, 0, 0

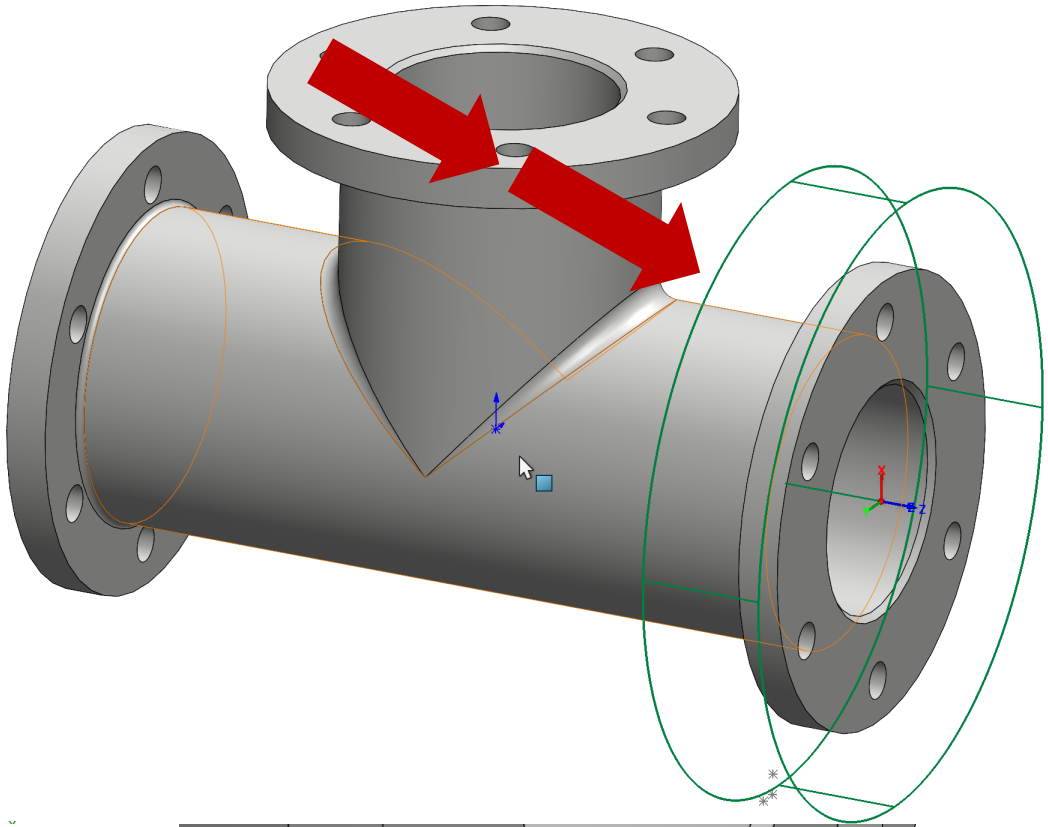
Region of interest

Z-: -50

Z+: 10

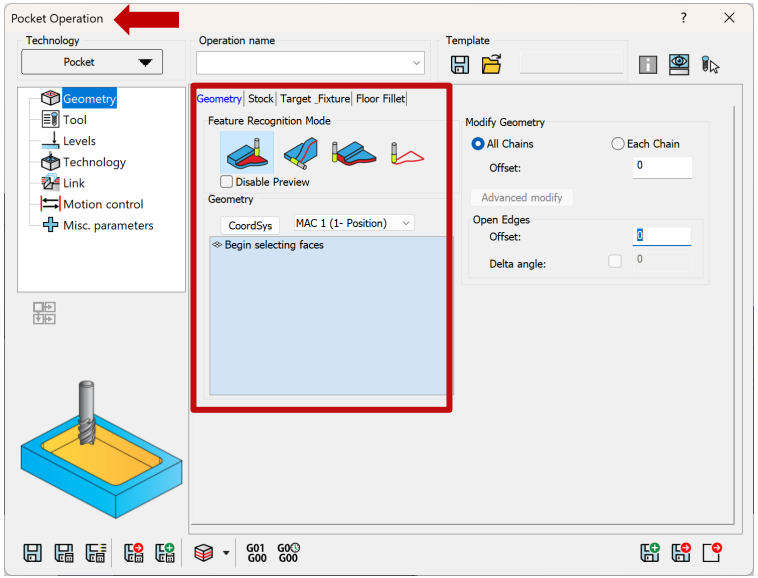
Radius : 150

Preview



SolidCAM
The Solid Platform for Manufacturing

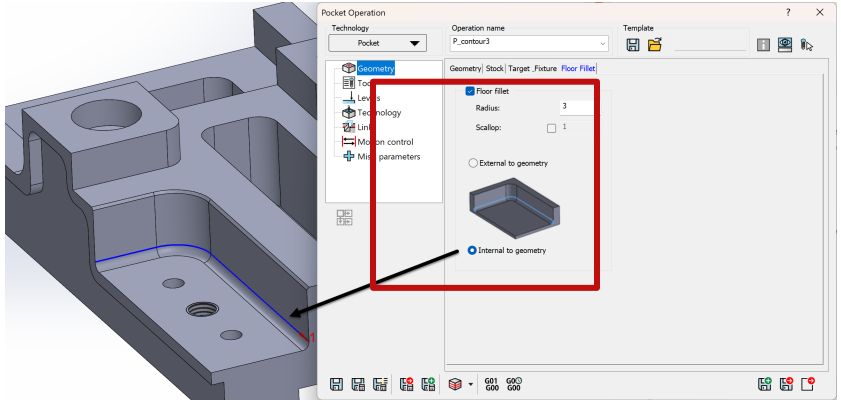
Pocket Geometry Feature recognition as in iMachining

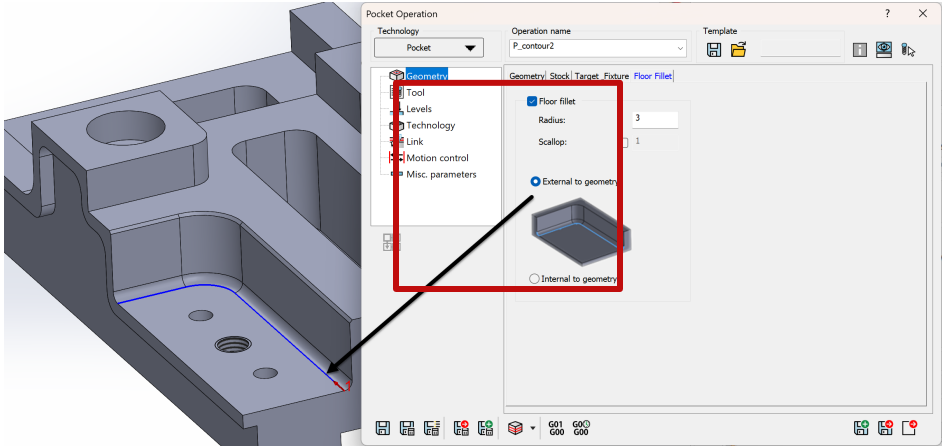


- Automatically recognizes stock boundaries compared to the target
- Levels are automatically recognized
- Fixtures, Target and Holders are completely recognized and protected
- Profile like geometries can be defined with all the protection benefits offered in Pocket

SolidCAM
The Solid Platform for Manufacturing

Pocket Operation – Floor Fillet Machining

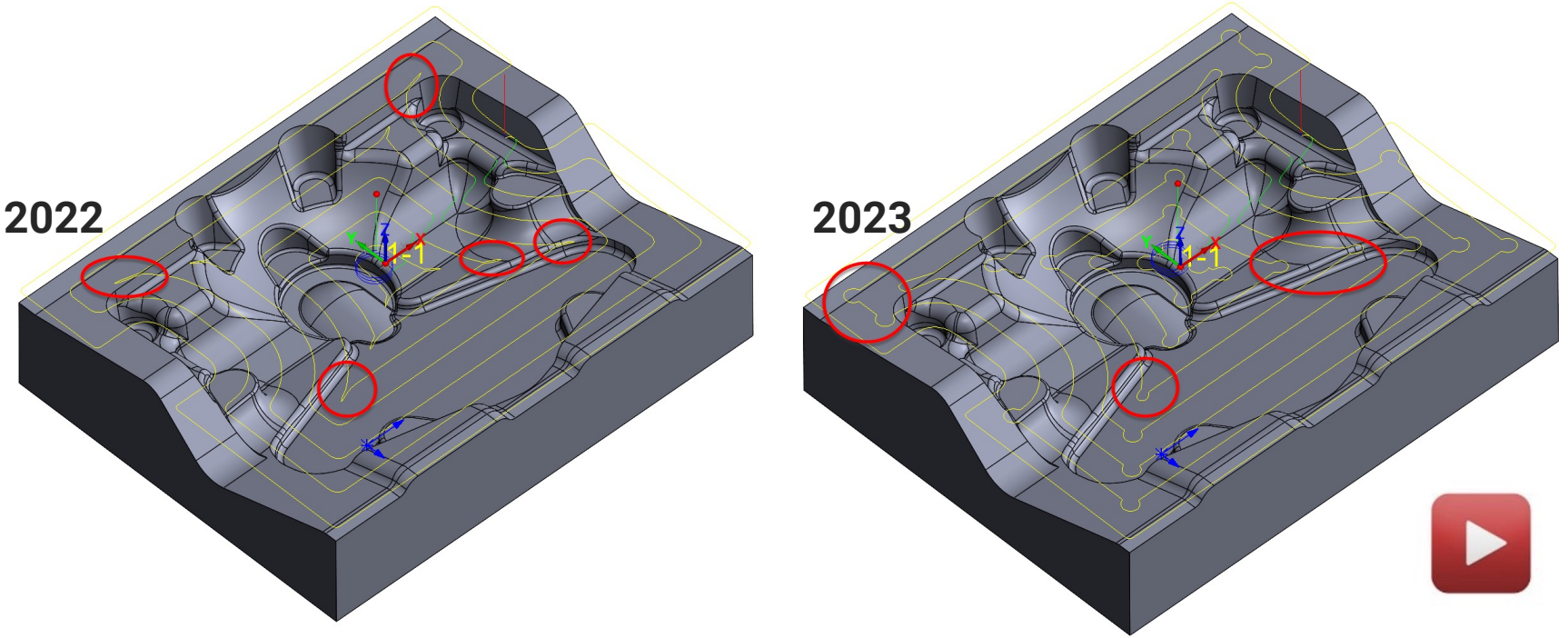




- Floor Fillets can now be roughed out in the Pocket operation.
- Geometry can be either internal or external to the fillet.

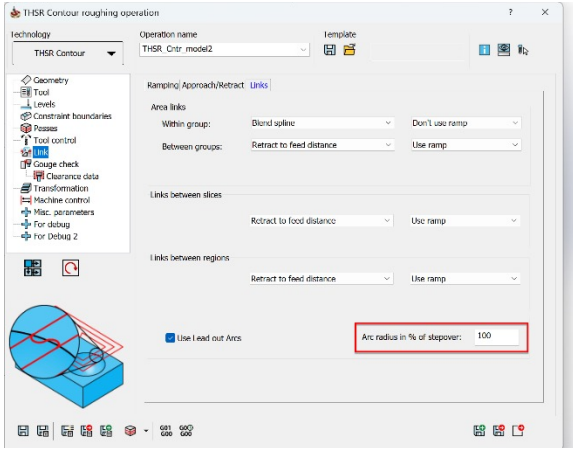
SolidCAM
The Solid Platform for Manufacturing

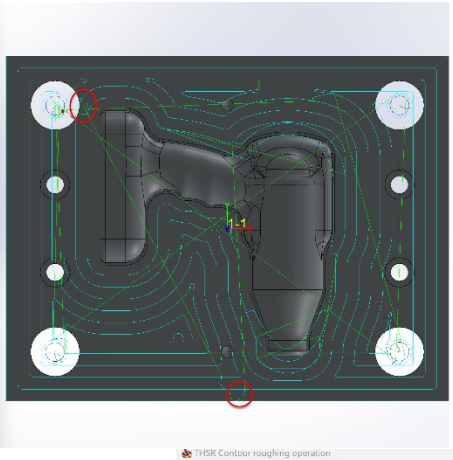
Turbo 3D HSR – Improved Corner Pegs



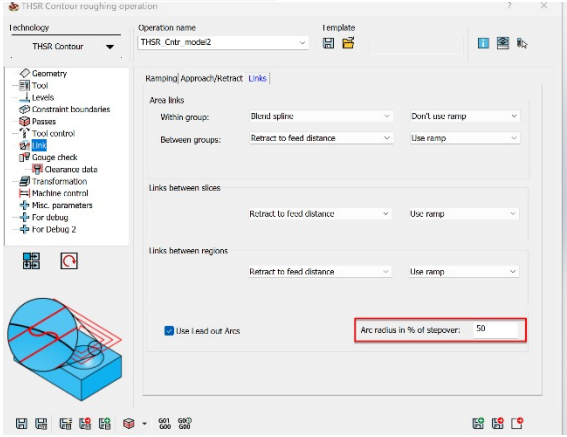
- The toolpath at the corners is now smoother, which eliminates the peak load on the tool during cutting.

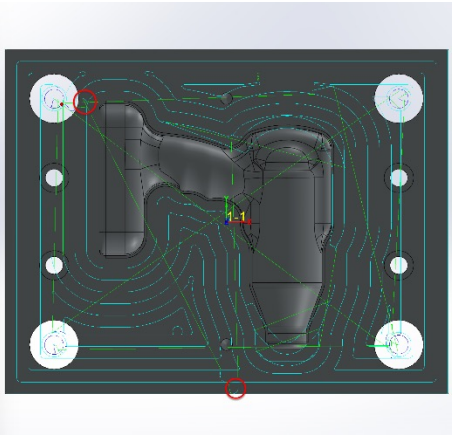
Turbo 3D HSR – Lead Out Control



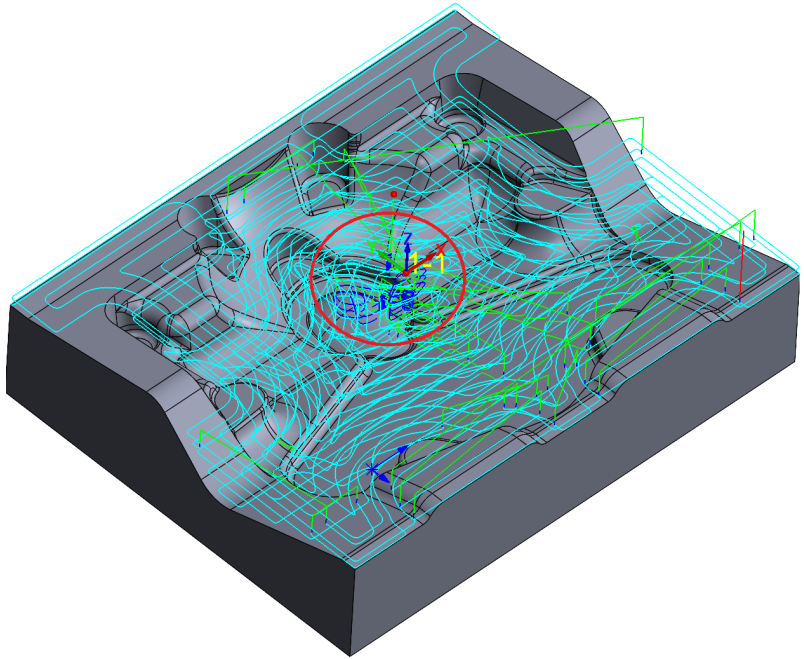


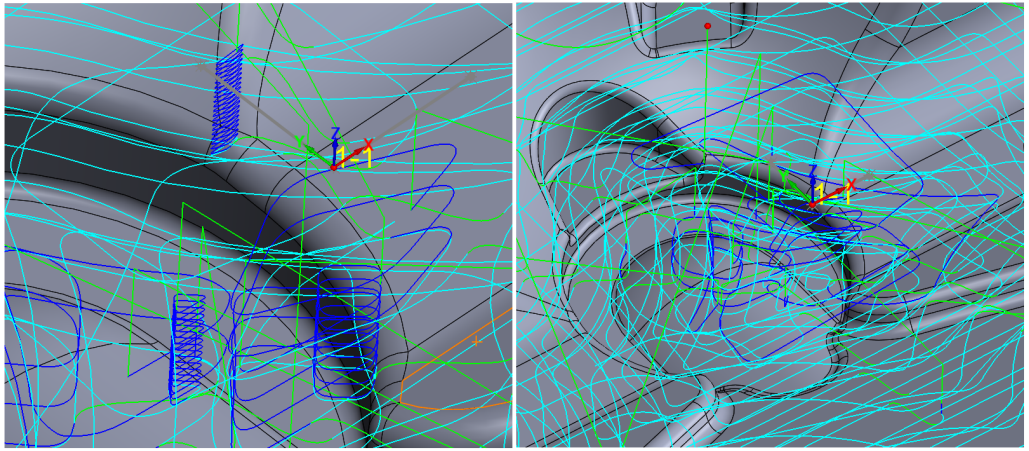
- Lead Out Parameter is now User Controlled.





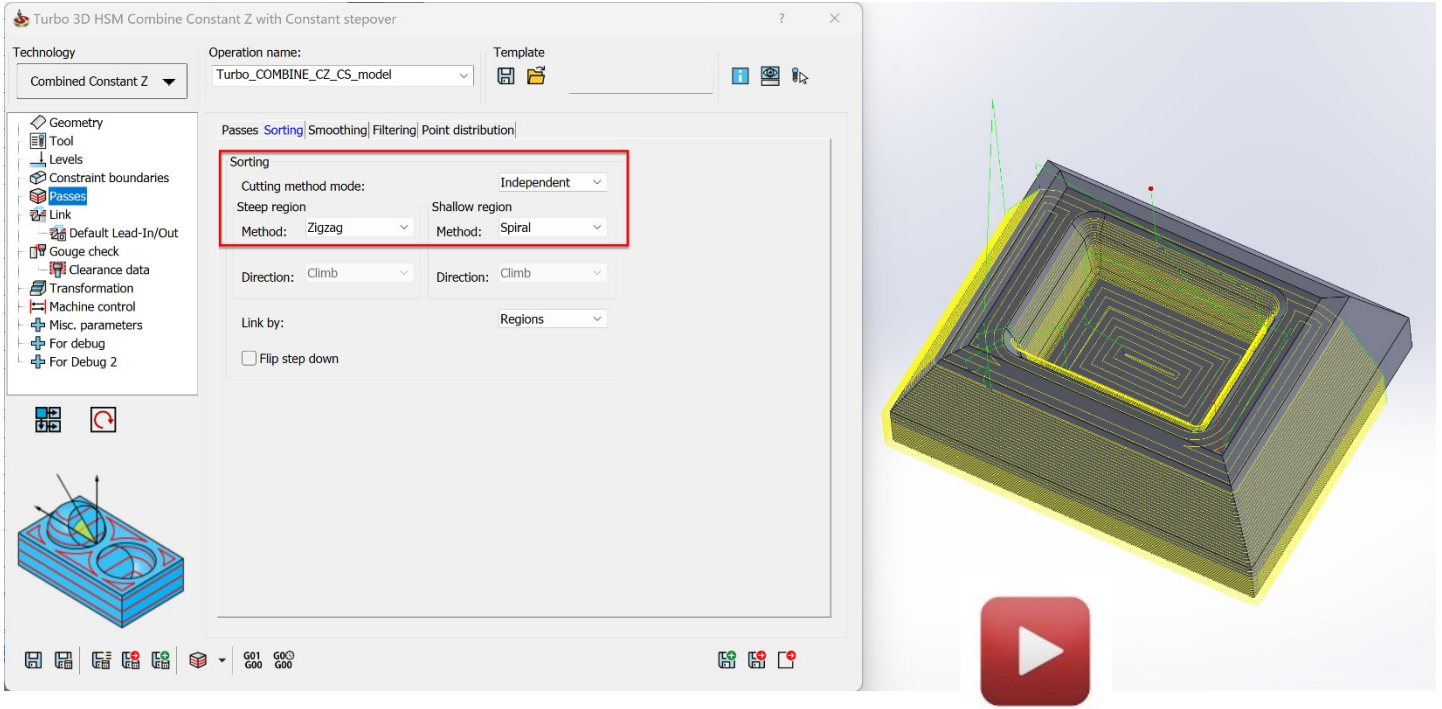
Turbo 3D HSR - Profile ramp/Min. Ramp diameter





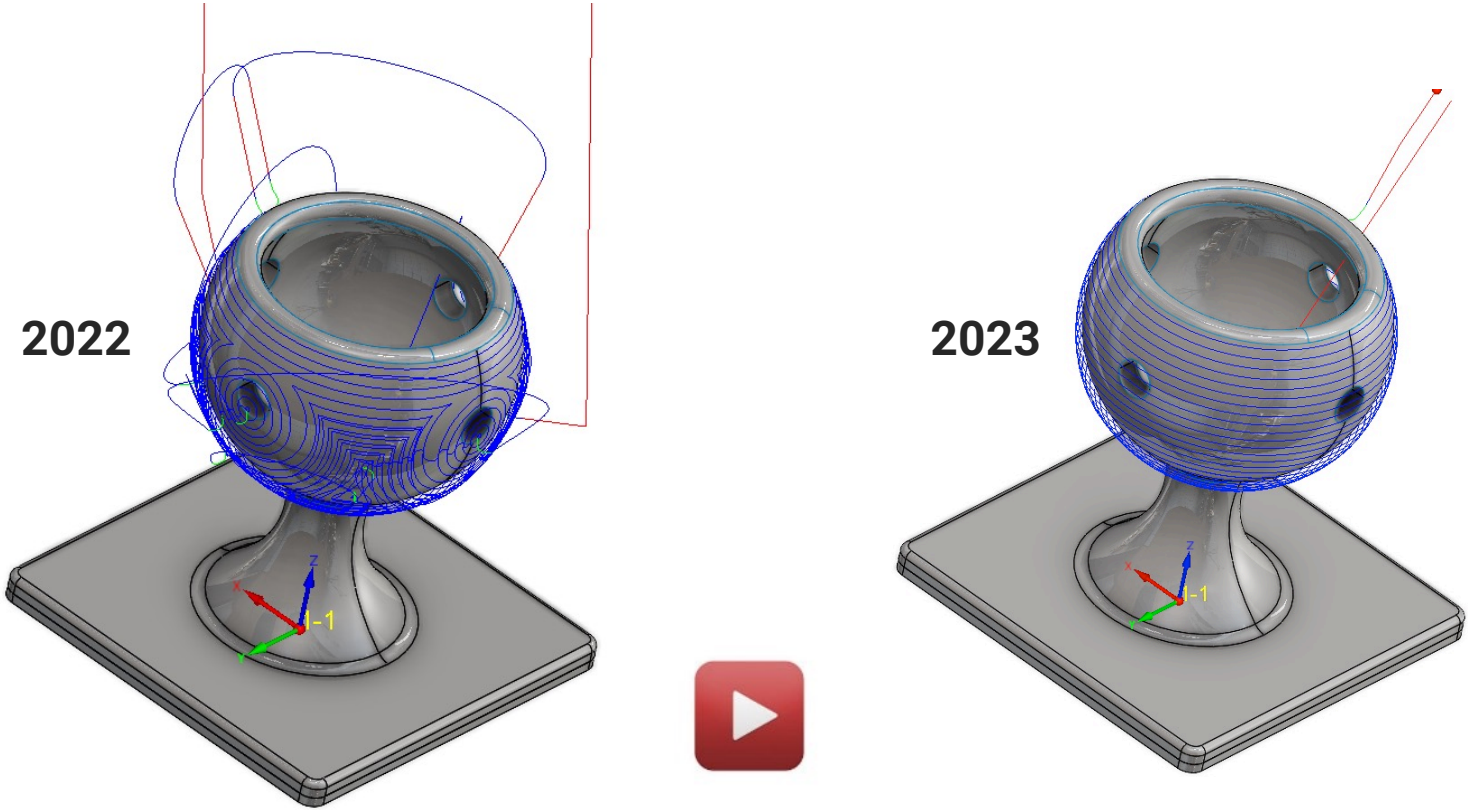
- The logic for Profile ramps creation has been improved - when creating small profile ramps, the template is shifted to the next pass of the tool, which avoids the creation of tiny ramps that are close to the plunge moves.

Turbo HSM – Independent Cutting Method



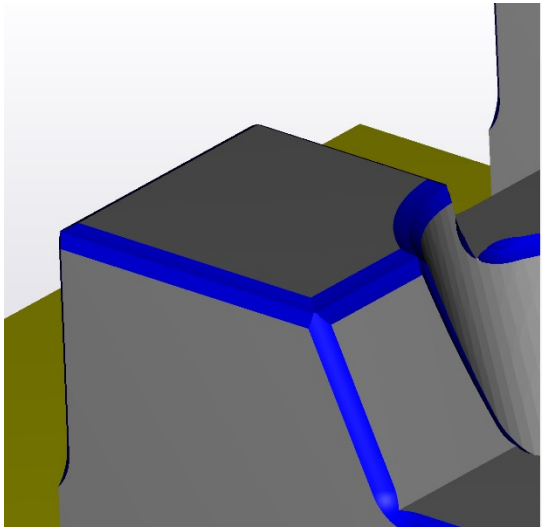
- The new option enables the user to apply independent cutting methods for the steep and shallow areas.

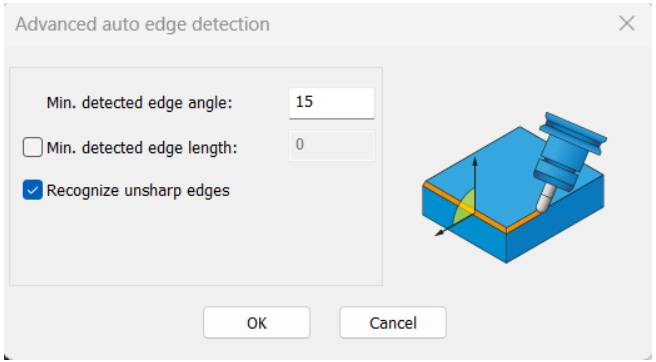
SIM 5X: Geodesic Machining – Fill Holes Behaviour

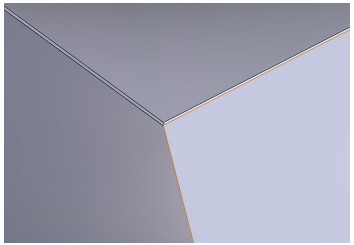


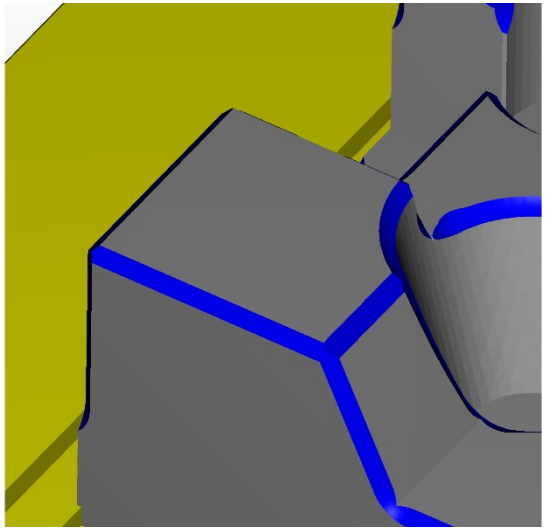
- Fill Holes has been enhanced in SolidCAM 2023 –the toolpath has less pattern distribution & more intuitive drive curve selection

SIM 5X: Edge Breaking – Recognise not sharp Edges



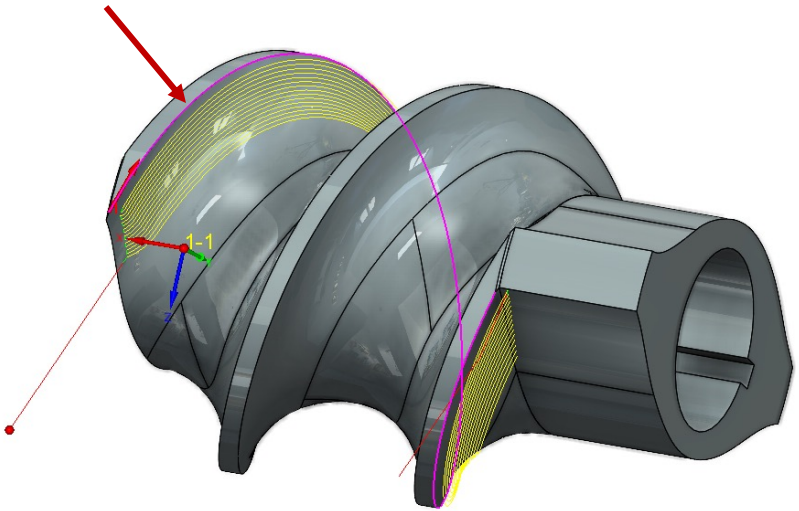




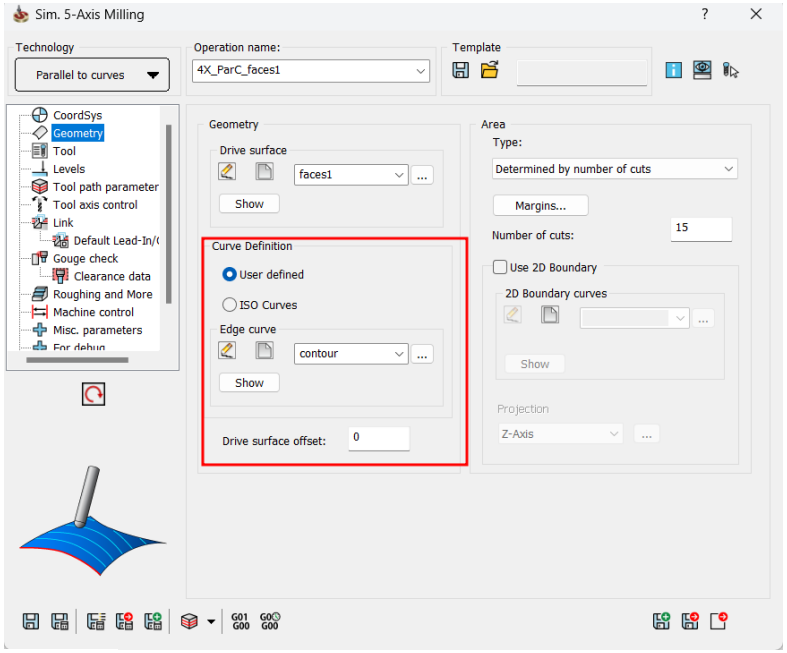


- This feature deburrs the edges that cannot be identified from the input mesh, using the "Min. detected edge angle" threshold.

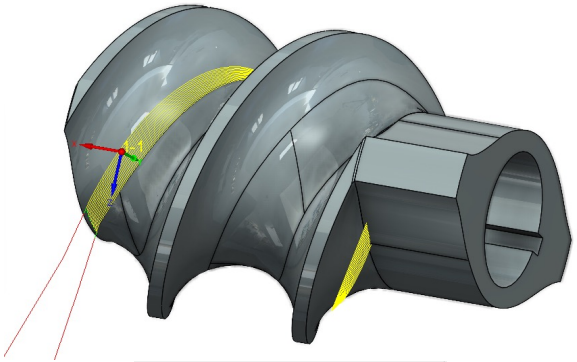
SIM 5X – Curve Definition

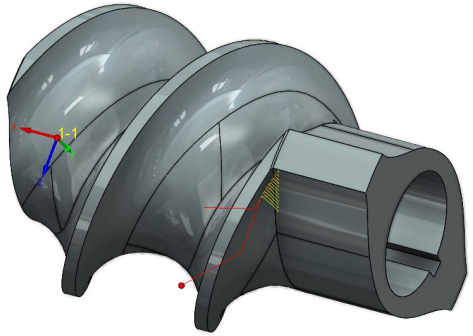


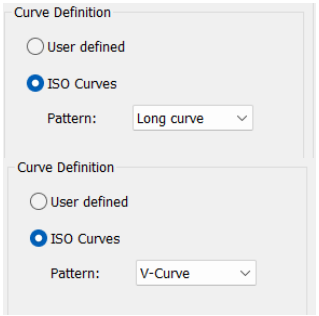
User Defined Curve Method

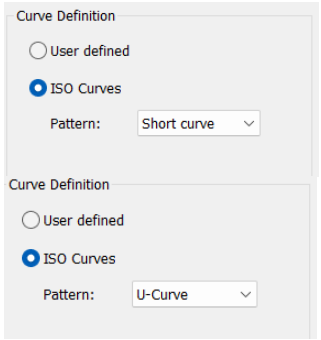


SIM 5X – Curve Definition



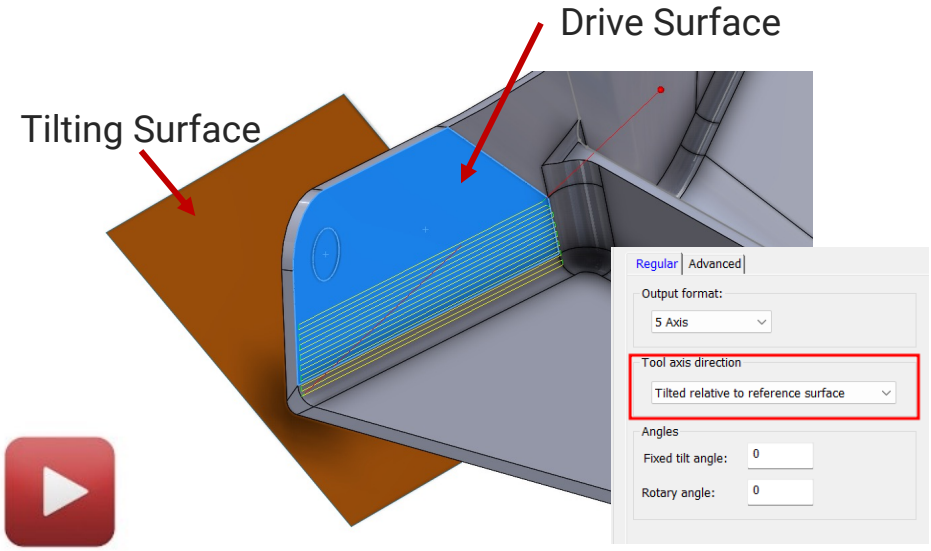


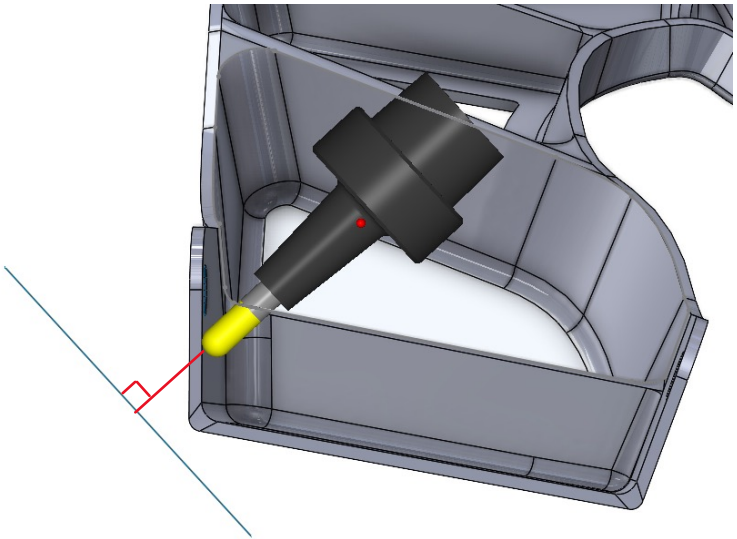




- Pattern can follow Long Curve / Short Curve / U Direction & V Direction of Surface.
- No need to define any curves - curve selection is done Automatically.

SIM 5X – New Tilting

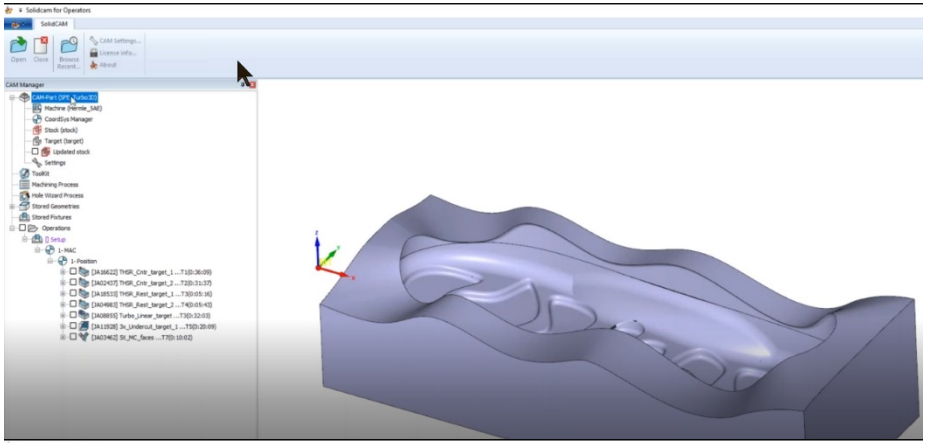


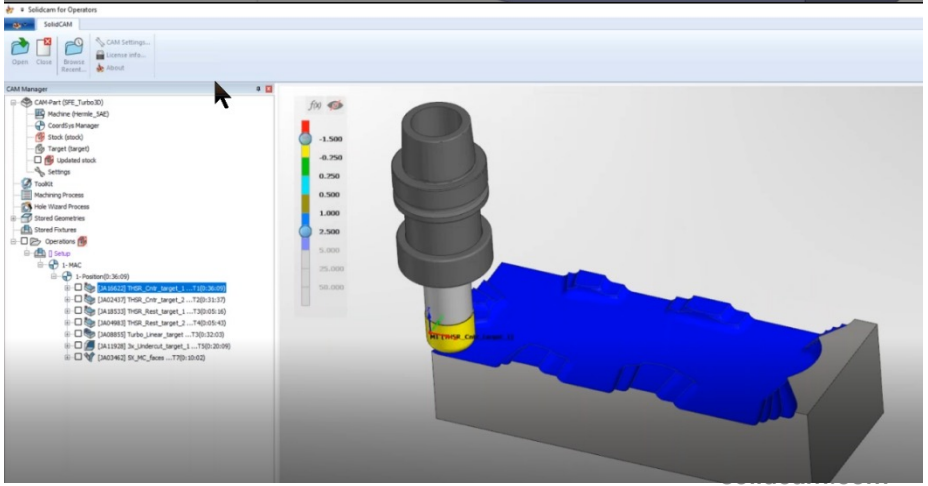


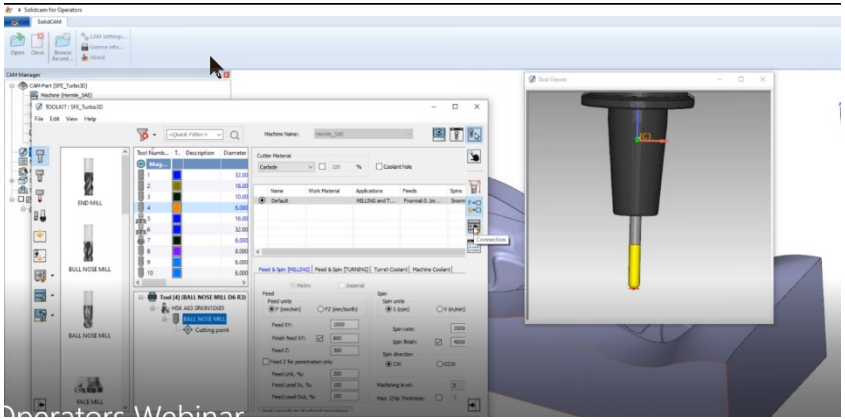
- Tool Axis Tilting can now be performed with a reference surface.
- User Selects a reference surface & the Tool uses the tilt angle in reference to the tilt surface & not Drive Surface.

SolidCAM for Operators

- Upgrade of the **Shop Floor Editor/Simulator**
- **Essential tool** for the CNC machine Operator
- Bridges the work of **CAM Programmers** and **CNC machine Operators**, and thus assists greatly to streamline the Machine Shop process.





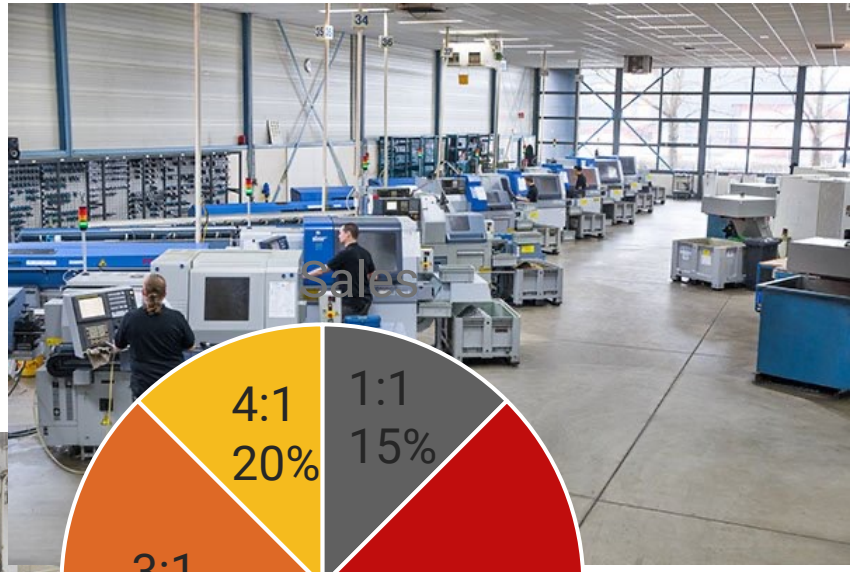


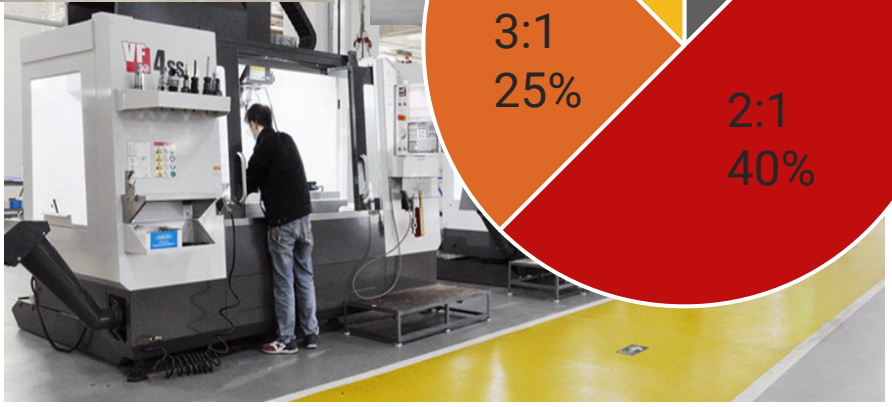
CNC Machine Shop/ Department Hierarchy

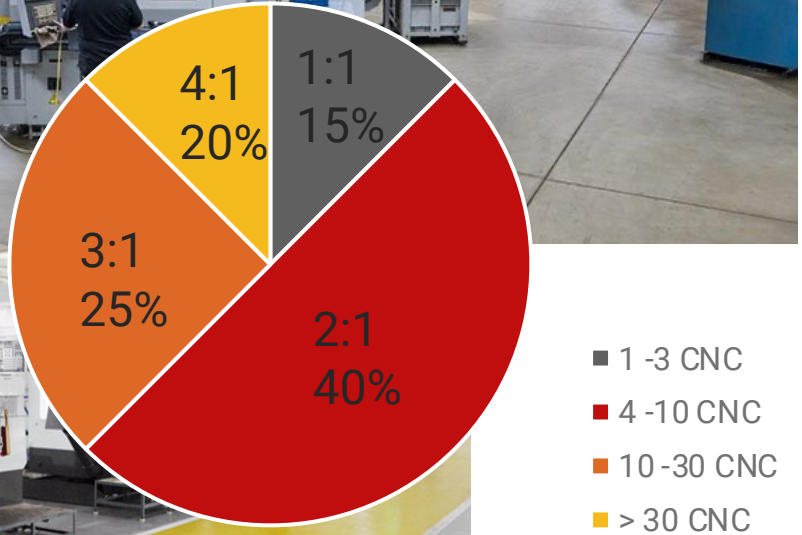
Programmers

Operators

CNC Operators:CAM Programmers – Typical Ratio



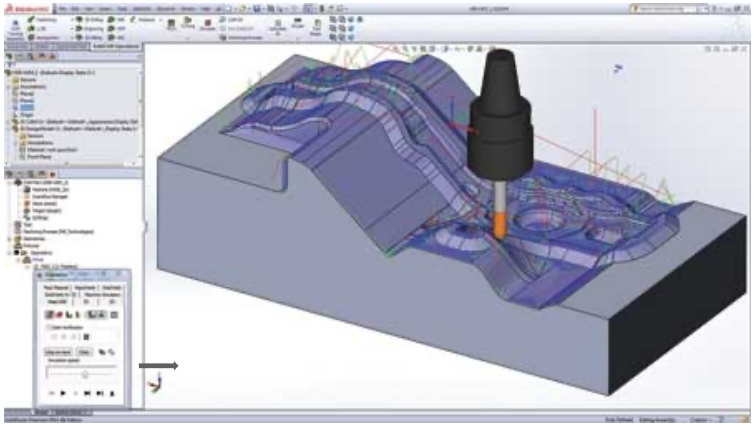




SolidCAM
The Solid Platform for Manufacturing

SolidCAM for Operators: The Goal

- To bridge the work of CAM Programmers & CNC machine Operators
- Assists greatly to streamline the Machine Shop process.



Why CNC Operator needs SolidCAM For Operators?

01 Clearer Picture for setup and prove outs

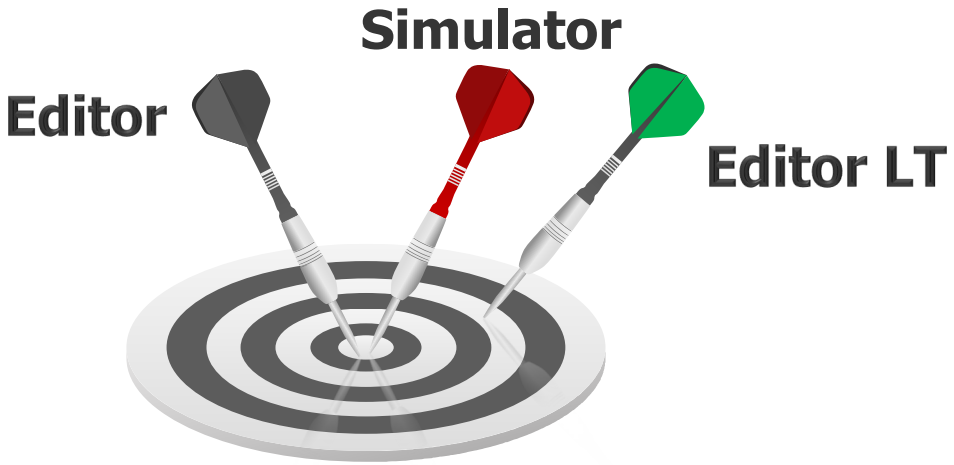
02 Change Minor Gcode Parameters

03 Preventing Crashes, broken tools, scrap parts

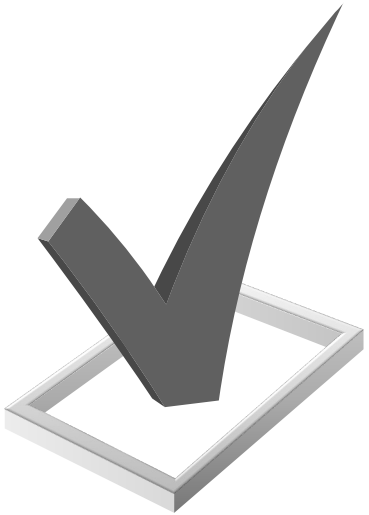
04 Stronger relationship between Shop and programming

05 Improve skills, help transition to Programming

SolidCAM for Operators: 3 Different Licensing Modes

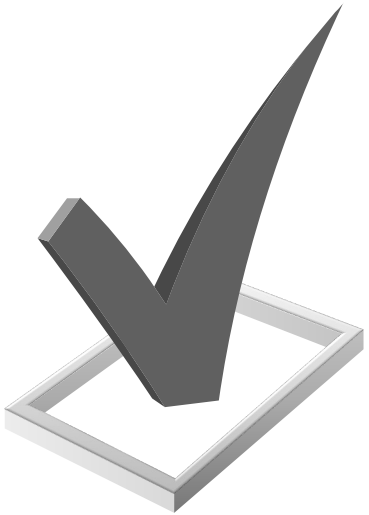


SolidCAM for Operators Mode 1: Editor



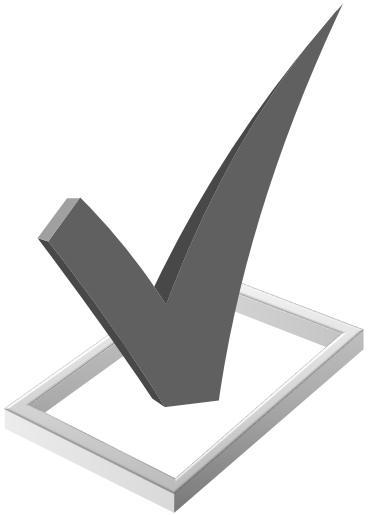
- **Modify and edit** operations
- **Change** tool kit
- **Change** Part Setup
- Full Simulation
- Generate G-Code

SolidCAM for Operators Mode 2: Editor LT



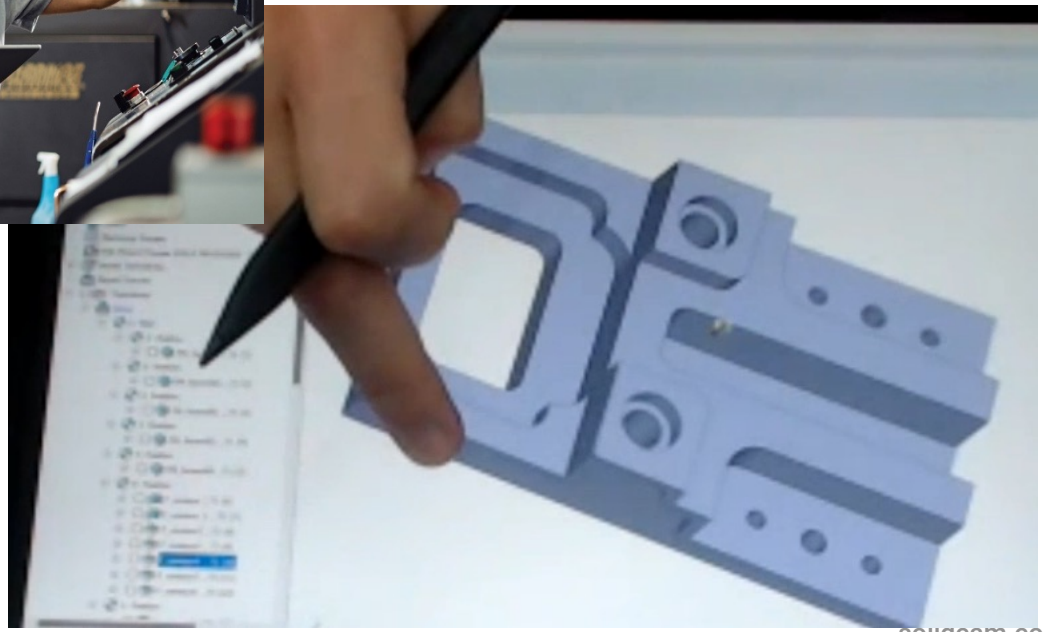
- View all operations
- Change tool kit
- View Part Setup
- Full Simulation
- Generate G-Code

SolidCAM for Operators Mode 3: Simulator



- View all operations
- View tool kit
- View Part Setup
- Full Simulation
- Generate G-Code

SolidCAM for Operators: right by the CNC machine!



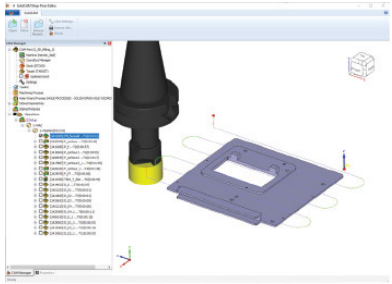
SolidCAM for Operators: Benefits summary

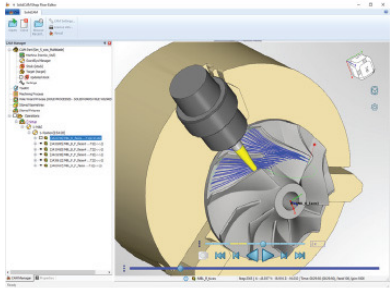
Preventing Machine and Cutting Tool Damage: Operators see full solid and machine simulations

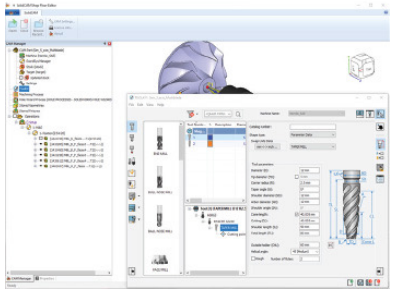
Working Efficiently: Operators can make minor adjustments, without need to rely on the CAM Programmer

Full Setup Picture: Operator can see all details of each operation including Tools, Setup Definition, Stock Clamping, Home Positions, and full simulation of the process.

Eliminate 'Dry-Runs': SolidCAM for Operators enables the user to step-through each move in program, reducing setup time & eliminating the need to dry-run programs on the CNC.



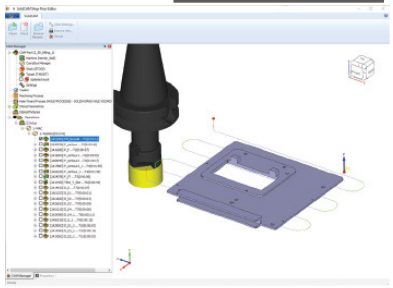


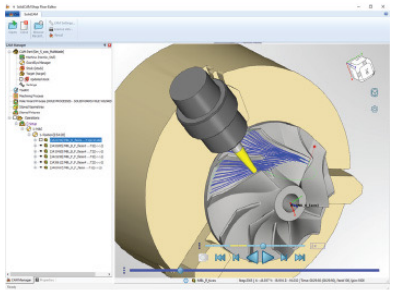


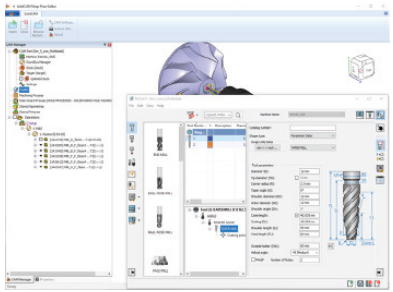
In summary..

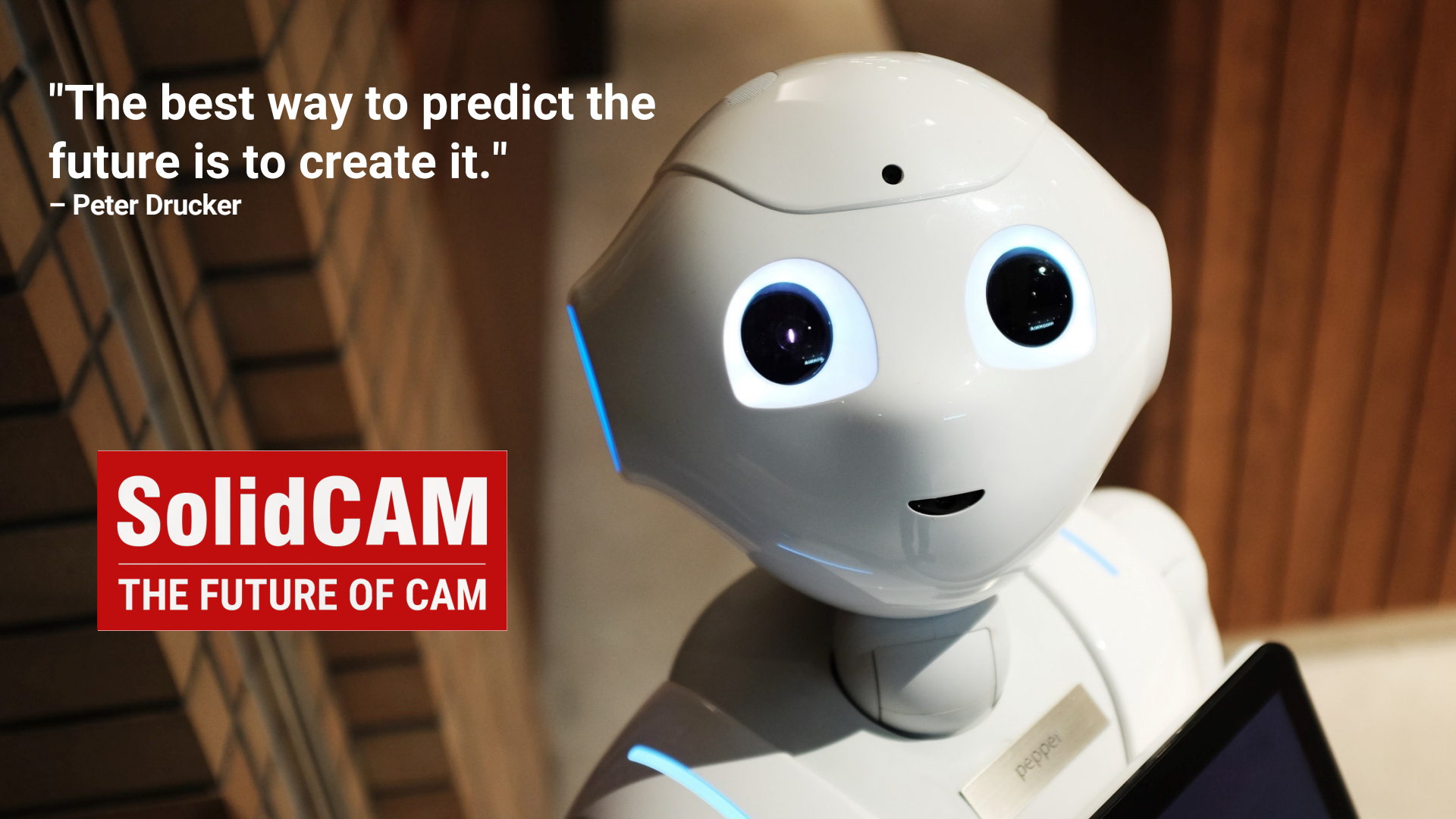
SolidCAM for Operators is **a great tool for all Operators** at CNC Machine Shops using SolidCAM.

SolidCAM for Operators **bridges the work of CAM Programmers and CNC machine Operators**, assisting greatly to streamline the Machine Shop process.








"The best way to predict the future is to create it."
– Peter Drucker
SolidCAM
THE FUTURE OF CAM
pepper

THANKS FOR WATCHING