



# hyperMILL<sup>®</sup>

2021.1

What's New?



**OPEN MIND**  
THE CAM FORCE

© The helmet was programmed and produced by J. B. S. H. L.

# What's New in 2021.1?

The new *hyperMILL*® version features numerous innovations and optimizations. There are several highlights, particularly in the area of mold making. The efficiency and machining quality of 3D Profile Finishing and 3D Z-level Shape Finishing have been further improved. One of the top highlights is the new 5-axis Radial Machining strategy that enables high-quality production of bottle shapes, for example. The new *hyperMILL*® SIMULATION Center provides improved machine simulation for turning and milling operations. Another highlight is 3-axis Simultaneous High Performance Turning, and *hyperCAD*®-S also offers a powerful new functionality with its Align Best Fit feature.



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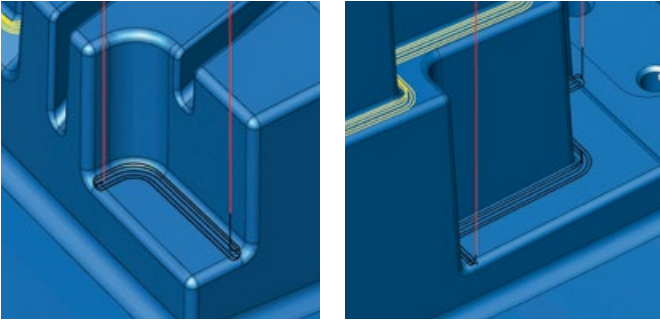
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QR codes are clickable

**Review system compatibility:** To ensure optimal performance and stability, we recommend regularly running our diagnostic program, Systemchecktool.exe.

**Note:** Windows® 10 may reset the graphics driver or its settings when carrying out updates. **System requirements:** Windows® 10 (64 Bit) | **CAD Integrations:** *hyperCAD*®-S, Autodesk® Inventor®, SOLIDWORKS, ThinkDesign 64 Bit | **Software languages:** de, en, es, fr, it, nl, cs, pl, ru, sl, tr, pt-br, ja, ko, zh-cn, zh-tw



Removed toolpath areas on the component

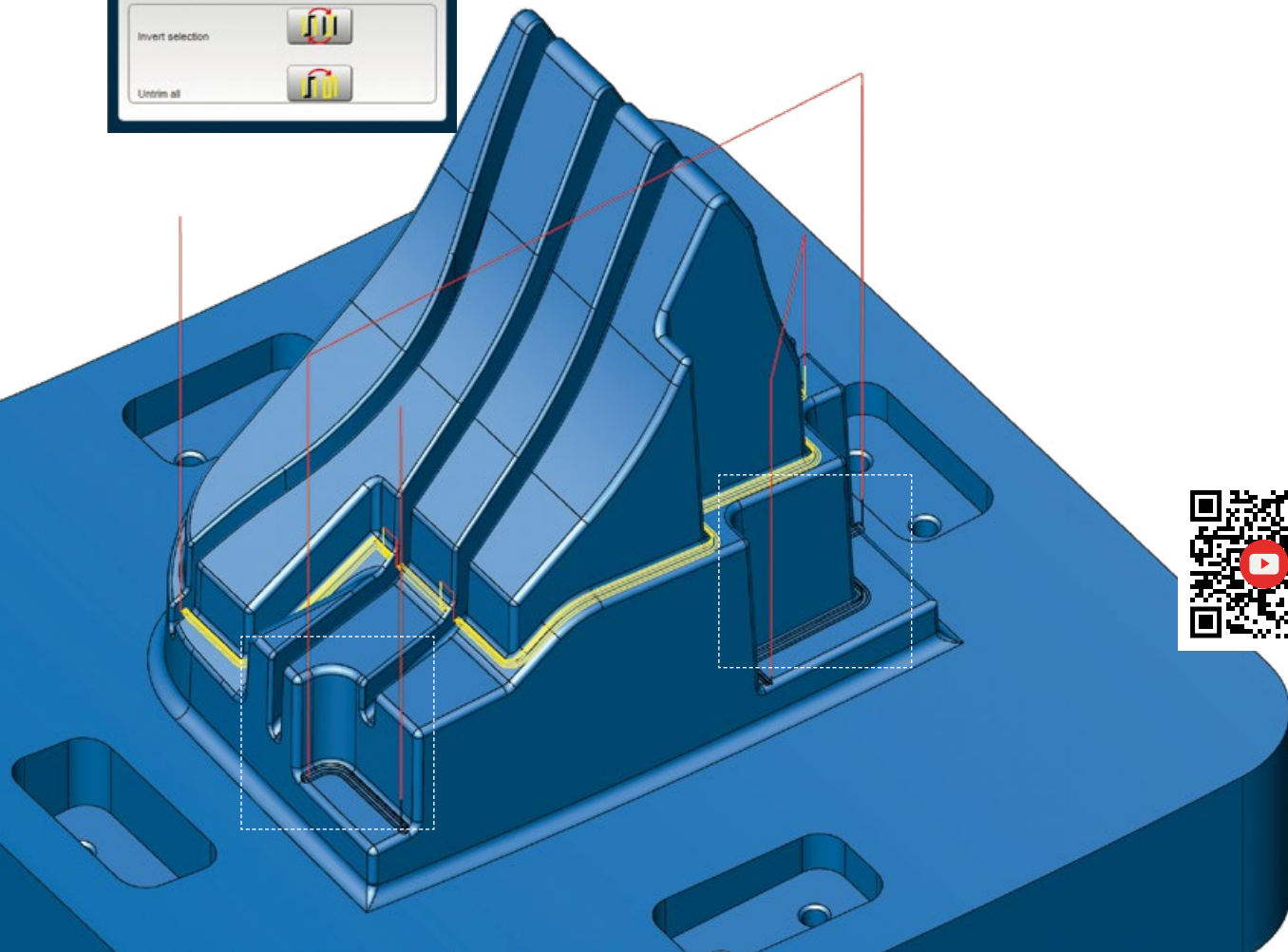
### Highlight

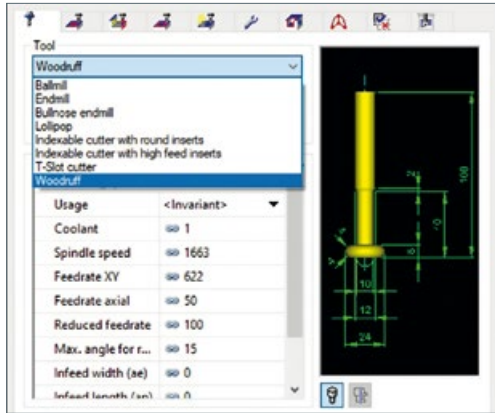
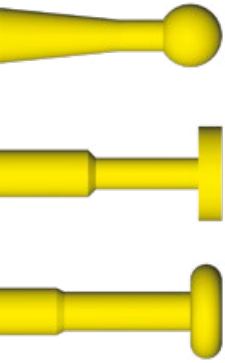
## Edit toolpath

The option to subsequently edit toolpaths after initial tool path generation is particularly important in tool and mold making. The new “Interactive mode” in the Edit Toolpath job allows the user to edit existing toolpaths very flexibly, and so adapt them optimally to the component conditions. The intuitive operation makes it easy to trim the toolpath, for example, at selected points and curves, in a specific area, or on a plane. Complete toolpath sequences between two G0 movements can also be selected and removed.

### Features

- Trim toolpaths
- Delete toolpath sequences
- Intuitive operation

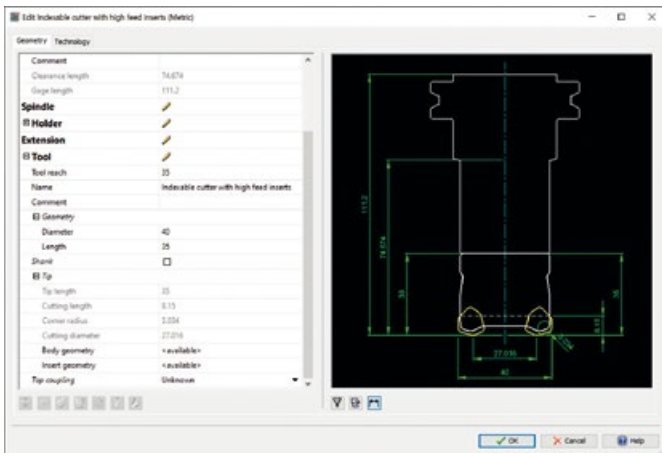




## New tool types

The tool types T-slot cutter, Woodruff cutter, and Lollipop cutter can now be selected for programming in all standard 3D strategies. The tool geometry is completely mapped in *hyperMILL*® and is used for the simulation and to calculate the toolpaths.

**Benefit:** More flexible programming and new tool types.

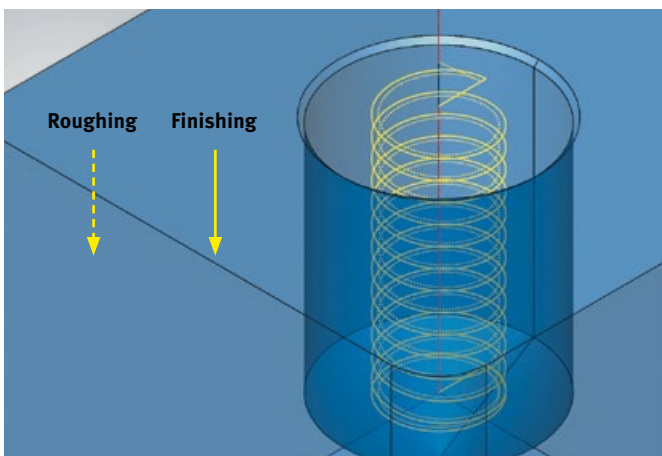


## Indexable cutter with high feed inserts

*hyperMILL*® provides a new tool type for programming in the form of the indexable cutter with high feed inserts. The high-feed geometry of the inserts is fully mapped in *hyperMILL*®. This new tool type is available in all strategies in which a bullnose end mill can also be used.

**Benefit:** Simple programming with high-feed tools.

## CAM - 2,5D Strategies



## Helical Drilling

The “Top to bottom” machining direction can now be selected for finishing during Helical Drilling. This makes it possible to flexibly control the machining direction depending on the tool type.

**Benefit:** More efficient machining.



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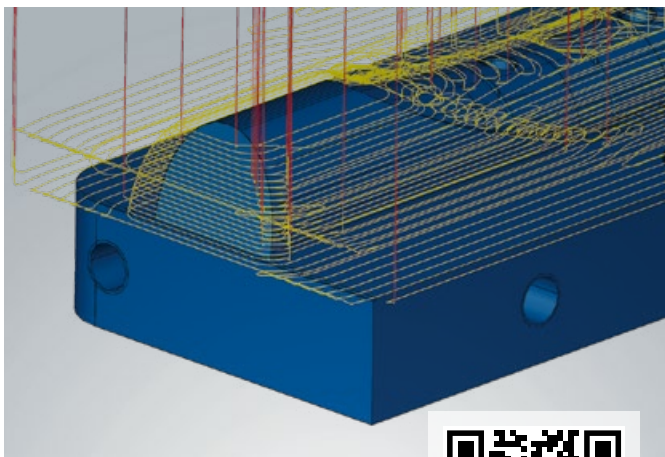
VIRTUAL Machining

## **hyperMILL**<sup>®</sup> VIRTUAL Machining – Safety first!

Start the future now, and take your production to the next level! With *hyperMILL*<sup>®</sup> VIRTUAL Machining, OPEN MIND has realized its vision of a perfect fusion of the virtual and real world: a new dimension of postprocessors and a simulation technology for the production of tomorrow.







### Highlight

## 3D Optimized Roughing

This strategy features various enhancements.

#### ■ Maximum step height for high-performance milling

The “Maximum step height” option allows a continuous allowance to be achieved, even with a large axial infeed. The remaining material on inclined walls is removed from bottom to top after roughing according to the defined step height.

#### ■ Plunge points

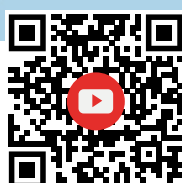
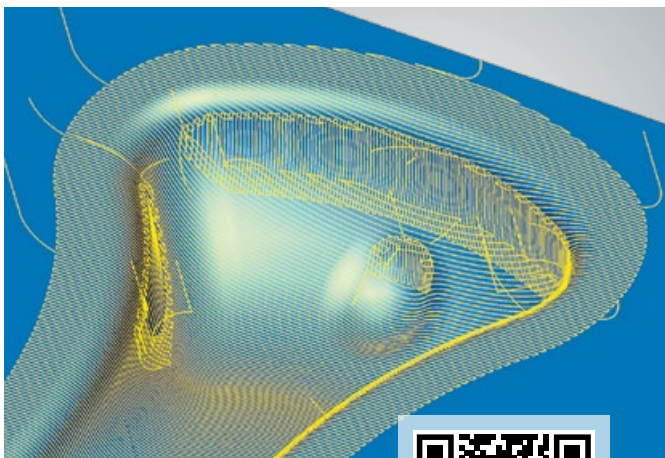
Plunge points can now be defined for machining. This allows the machining operation to be started directly in an existing hole without an additional approach macro.

#### ■ NC output with G2/G3

The NC output for circular movements can now be controlled in the strategy.\* This means that it is now also possible to output these movements as G2 or G3 commands in the NC code. For controllers with limited memory, a smaller NC program can therefore be generated and processed without any problems.

**\*Note:** This option is not available in high-performance mode.

**Benefit:** Constant stock allowance, more efficient machining, better support of machine controllers with limited memory.

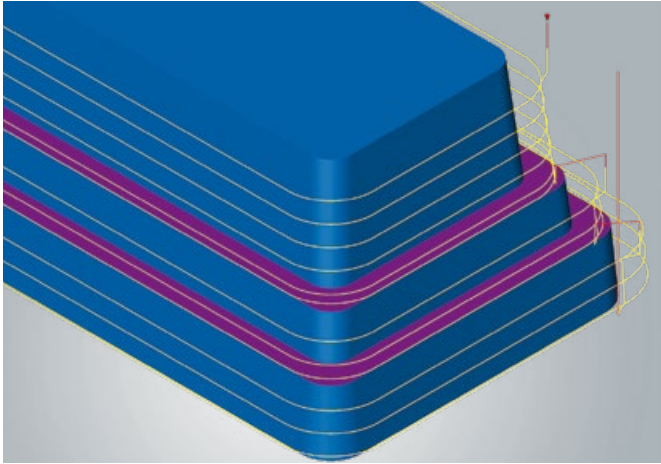


### Highlight

## 3D Profile Finishing

The “XY Optimization” command has been added to machining with the X or Y axis infeed strategies. If, for example, an area cannot be optimally machined in the X-orientation, it is automatically machined in the Y-orientation in order to maintain a constant infeed. The “Smooth overlap” command ensures that these areas are machined seamlessly.

**Benefit:** More user-friendly, improved surfaces.



## 3D Z-level Shape Finishing

Important improvements to this strategy increase user-friendliness and efficiency.

### ■ Plane level detection

An intermediate step is automatically added to the regular in-feeds to ensure the optimal machining of detected plane surfaces.

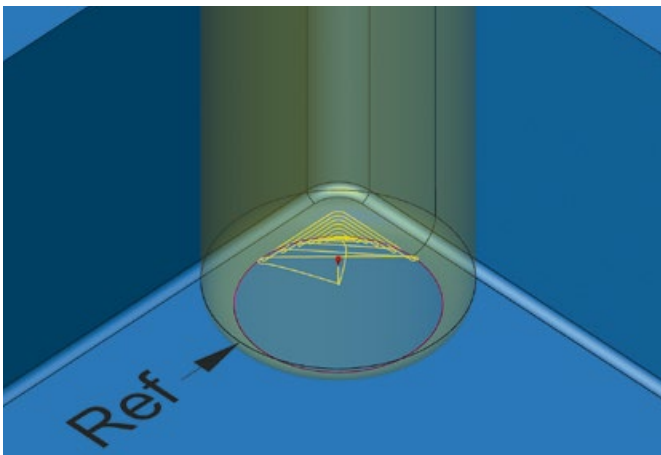
### ■ Start points

This strategy allows start points to be defined that are taken into account for machining. To ensure efficient machining, the operation begins as close as possible to the defined start points with collision checking.

### ■ Extension of the approach and retract macros

The macros can now be defined perpendicular to the surface, and it is also possible to specify the feedrate for approaching and retracting.

**Benefit:** More efficient machining.



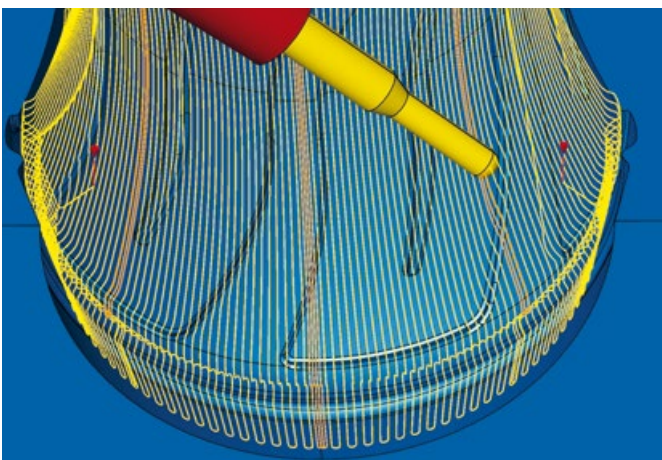
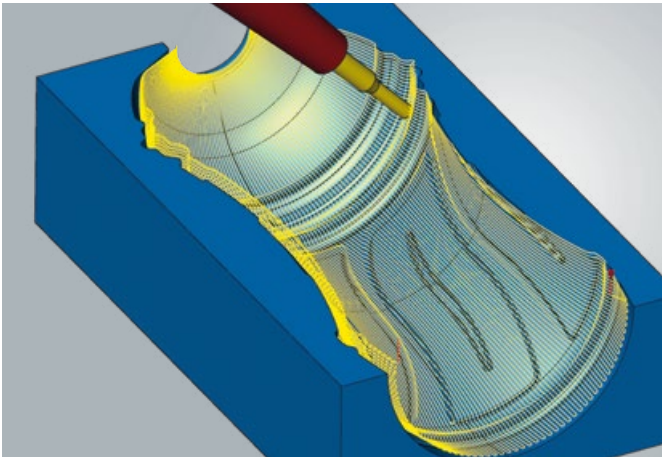
## Corner Rest Machining

Improvements to the machining of rest material in corners in 3D as well as in 5-axis mode ensure a perfect machining result.

■ This strategy merges optimized toolpaths for high-performance rest material removal in corners. Parallel and Z-level toolpaths ensure efficient rest machining. In addition, floor areas can be machined perfectly. This means that the best method is applied in every situation. 5-axis Corner Rest Machining makes indexed machining of hard-to-reach corners possible. Automatic inclination selection, simultaneous linking movements, and collision avoidance are available in this process.

■ The toolpath is now trimmed when using a bullnose end mill as a reference tool (see image). This ensures that machining only takes place where rest material actually exists.

**Benefit:** More efficient machining.



Smooth overlap: perfect transitions in indexed machining

### Highlight

## 5-axis Radial Machining

This new strategy allows bottle shapes to be programmed very easily and high-quality surfaces to be generated. Thanks to a new, radial projection method, the toolpaths are calculated very quickly, and the user can use various machining strategies to respond flexibly to the existing component conditions.

This strategy offers “High Precision Surface Mode” and “Smooth overlap” to ensure the best surface quality and clean transitions. These commands are integrated as standard and guarantee high-precision machining.

The 5-axis inclination of the tool is controlled by simple tilt options in the strategy, regardless of whether 3+2 or 5-axis simultaneous machining is involved.

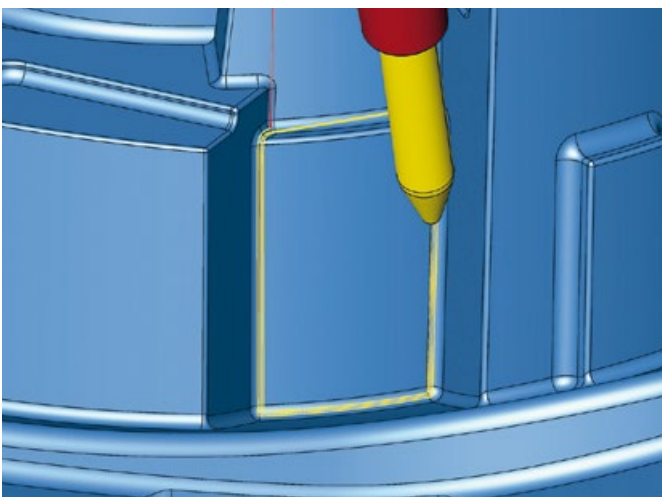
**Benefit:** Simple programming and high-precision milling of bottle shapes.



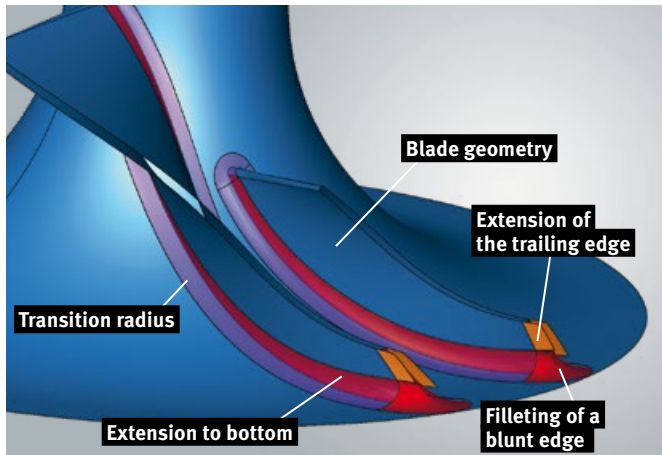
## 5-axis Tangent Machining

The “Only bounding” option allows the boundary contours of the selected surface to now be machined separately during 5-axis Tangent Machining. Via a surface selection, the required boundaries are automatically selected and the toolpaths are generated. This allows clean machining of the surface up to the surface boundary.

**Benefit:** Simplified programming.



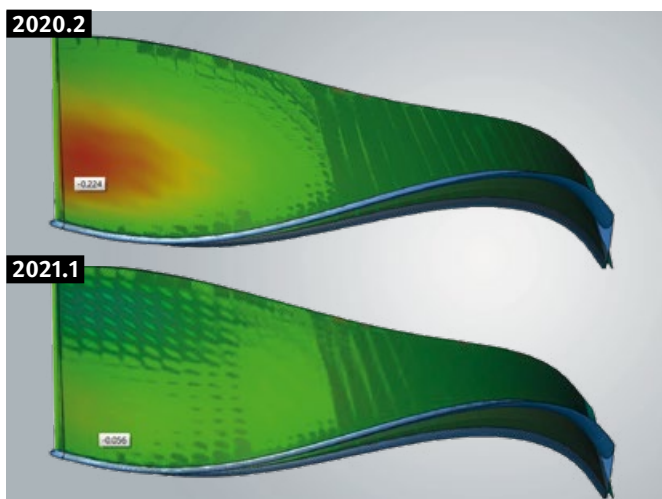




## Extended feature support

Surface groups or curves can now be created as an additional feature in the impeller/blisk strategies. The geometries, which are valid for all machining steps, are defined as the main feature. Additional geometries, which are specifically required for a single machining operation, can be added as a general feature. This way, the user can easily and quickly manage different geometry selections and apply them to the different strategies. Furthermore, when a geometry is changed, only those machining steps that use the modified feature are recalculated. The main feature and corresponding jobs remain unchanged.

**Benefit:** Simplified geometry selection and management using features.



Improved machining quality

## Multiblade: Flank Milling

The strategy has been fundamentally revised to simplify programming and further increase the surface quality during blade machining. The following enhancements are now available in the *hyperMILL*® 2021.1 version.

### CAD/CAM

- Blade surfaces no longer need to be ruled surfaces, or it is not necessary to be able to convert them into ruled surfaces with sufficient accuracy
- Any number of surfaces are now permitted for the suction and pressure sides, which makes it considerably easier to extend the blade surfaces, for example
- Fillets with a variable radius are supported

### Accuracy

- Smaller deviations on suction and pressure side
- Improved tool guidance along the upper boundary in the edge area

**Benefit:** Simplified programming effort and improved machining quality.

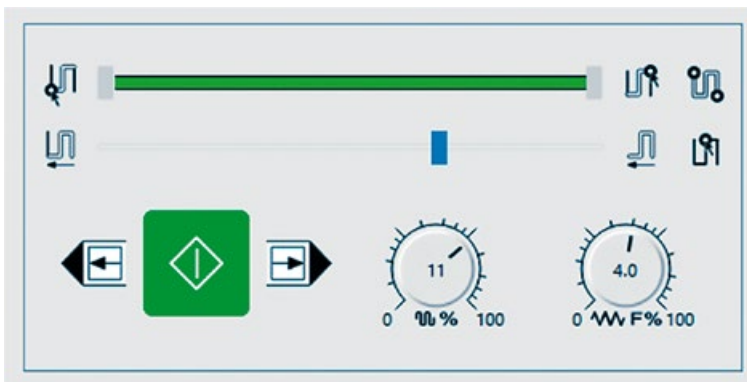
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# hyperMILL® SIMULATION Center

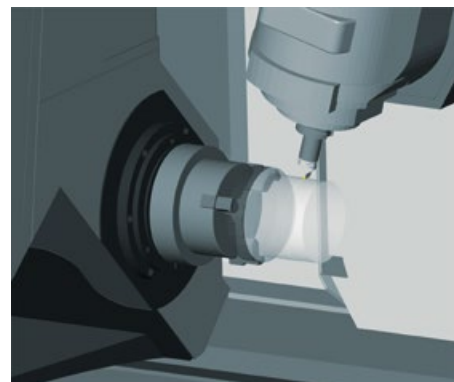
Version 2021.1 provides a new, more powerful machine simulation for turning and milling operations. This means faster simulation, independent collision checking, and extensive analysis functions in an intuitive operating environment. The new *hyperMILL*® SIMULATION Center is modeled on the look and feel of the *hyperMILL*® VIRTUAL Machining Center because our aim is to enable the CAM programmer to simulate as close to reality as possible.

## Features

- Intuitive operating environment
- Independent collision checking
- More powerful and faster simulation
- Integrated in *hyperMILL*® as standard
- Improved visibility control



Intuitive control



Transparent switching of elements by double-clicking

**Info:**

- No postprocessor adaptation required, and existing machine models can continue to be used.
- E-Learning content is available for the new *hyperMILL*® SIMULATION Center. It can be accessed via the *hyperMILL*®/Info tab.





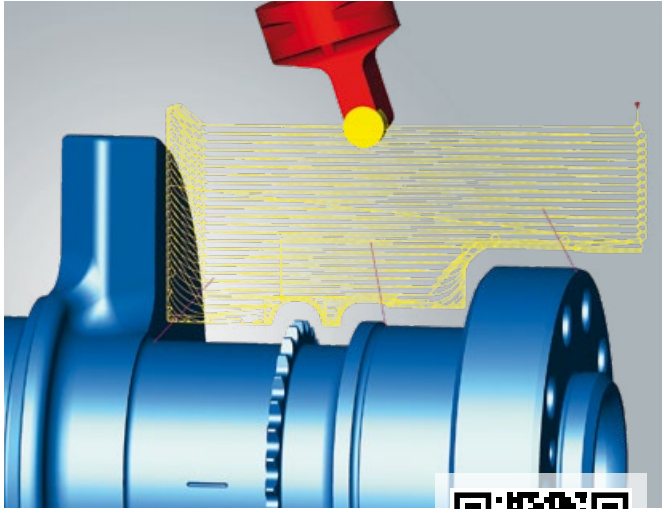


# For efficient all-in-one machining: *hyperMILL*® MILL-TURN Machining

## **Milling and turning in one interface**

*hyperMILL*® MILL-TURN Machining is the mill-turn module of the powerful *hyperMILL*® CAM software. It is completely integrated in the base application, with only one user interface for all milling and turning strategies. This provides highly convenient access to the advantages of a modern mill-turn machine for all-in-one machining in one setup. All milling and turning strategies can be combined as desired, resulting in a fully flexible production process. Modern simulations and reliable collision checking ensure safe machining.

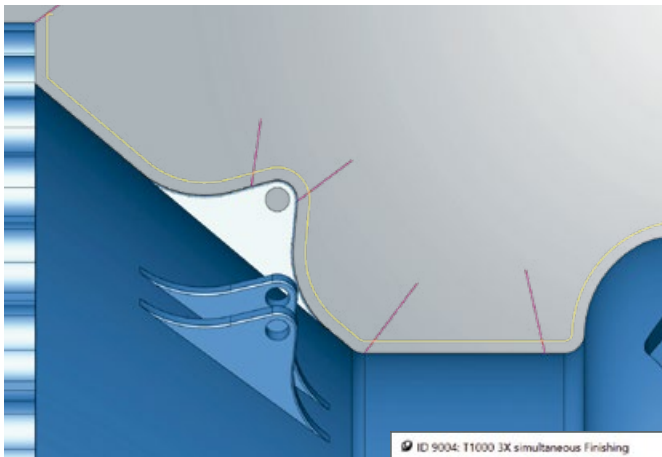


**Highlight****3-axis Simultaneous High Performance Turning**

To combine all the advantages of HPC turning and simultaneous turning, the high-performance mode has been integrated into 3-axis Simultaneous Roughing. This makes it very easy to use high-performance toolpaths with optimized approach and retract movements during simultaneous turning. Simultaneous roughing is enhanced with the advantages of HPC turning at the push of a button, so combining both technologies with maximum user-friendliness.

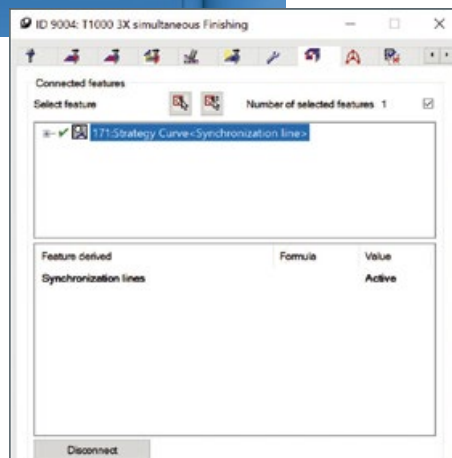
**Advantages**

- Reduced machining time
- Increased process reliability
- Extended tool life
- Shorter clamped tools can be used
- Fewer tool changes

**3-axis Simultaneous Turning**

Synchronization lines, which control the inclination during simultaneous turning, can now be created as a feature. This means that the user can access them quickly again and again and does not have to reselect them each time.

**Benefit:** User-friendliness, faster programming.



**Highlight****Align Best Fit**

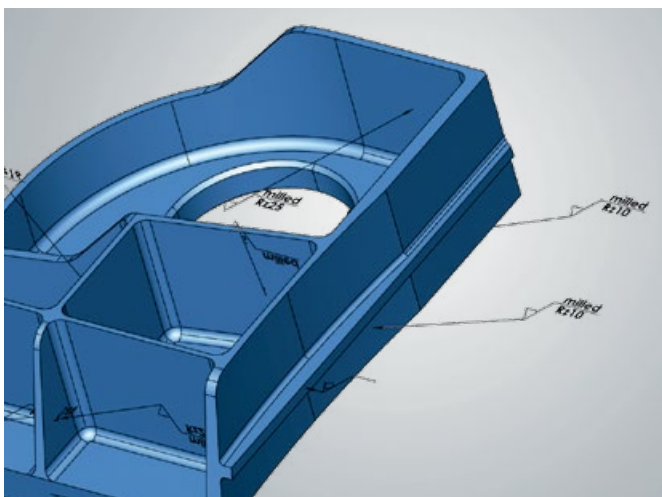
The new “Align Best Fit” machining command allows geometry-like components to be aligned with one another using defined pairs of points. An algorithm automatically calculates the best possible alignment. The user can use various parameters to control exactly how the alignment should look. For example, they can lock translation and rotation axes as well as define a weighting between the individual pairs of points. This allows, for example, meshes of stocks or welding areas to be optimally and quickly aligned in relation to the actual CAD model.

**Benefit:** Simplified alignment of components.

**Shape contour**

It is now possible to use the “Precise” option to generate accurate, analytical curves (lines and arcs) for plane contours. They are calculated on the basis of the faces and, thanks to their accuracy, are suitable as boundary contours in finishing operations or for wire EDM, for example. If the option is deactivated, polylines will continue to be generated as usual.

**Benefit:** Create precise contours.

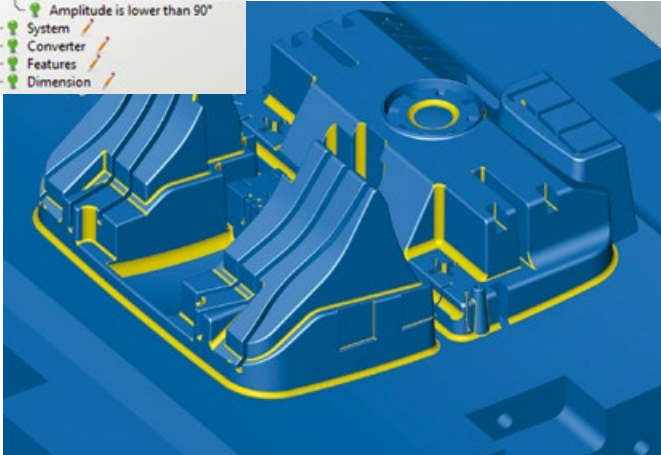
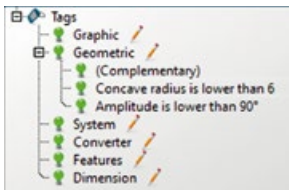
**Highlight****Import PMI and metadata**

When importing CAD data from neutral or native formats, face quality information is now also included and attached to the imported faces in *hyperCAD®-S*. This information is then available in *hyperMILL®* and can be used in machining jobs, for example.

Metadata from other CAD systems is also read in and appended as tags to the model or the components in *hyperCAD®-S*. This information, such as version statuses, materials, and general part or manufacturing information, can be used in *hyperMILL®* or through the *hyperMILL®* AUTOMATION Center.

**Benefit:** Use of PMI information, evaluation of user-defined properties of CAD files.

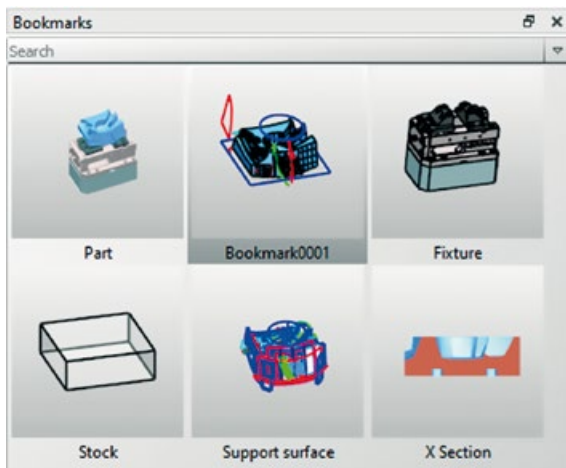




## Concave radius

When importing CAD data, the “Concave radius” option can be used to identify all concave radii on the component. These values can be displayed using QuickTip or by filtering.

**Benefit:** Simplified display.



## Bookmarks

In *hyperCAD®-S*, bookmarks from certain CAD systems can now be read in and also created by the user. These include saved views, taking into account the visibility, display, and workplanes. This allows the user to jump back and forth between different saved display situations with just a few clicks.

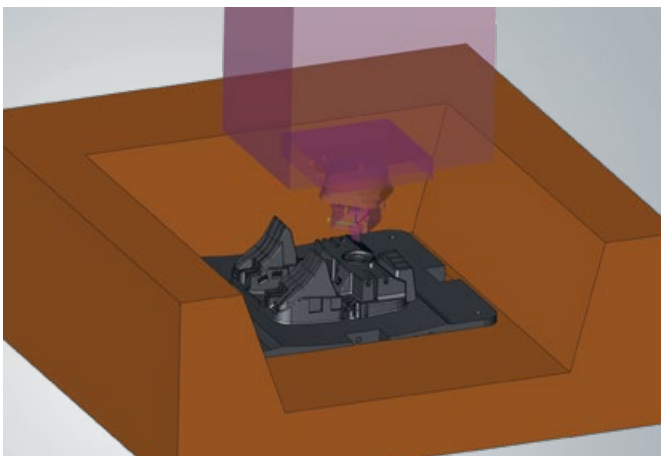
**Benefit:** Create single views and PMI representations or temporary isolation of elements.

### Highlight

## Collision-checked machine head

When creating electrodes, the head of the die-sinking EDM machine can now also be included in collision avoidance. If a collision is detected, the faces of the electrode are automatically extended. This ensures safe machining of components with deep cavities.

**Benefit:** Improved safety.



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