



# hyperMILL<sup>®</sup>

2022.1

What's New?

 **OPEN MIND**  
THE CAM FORCE

# What's New in 2022.1?

*hyperMILL*® 2022.1 offers important improvements in many areas. 2D functions have been improved, for example, through path compensation during pocket milling or the new option for automatic edge breaking, all with no additional programming effort. Proven 5-axis strategies such as radial machining and the tube machining cycles now deliver even better results in terms of surface quality. Efficiency improvements in the area of electrode manufacturing are another highlight, with even more convenient, faster programming for the user.

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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

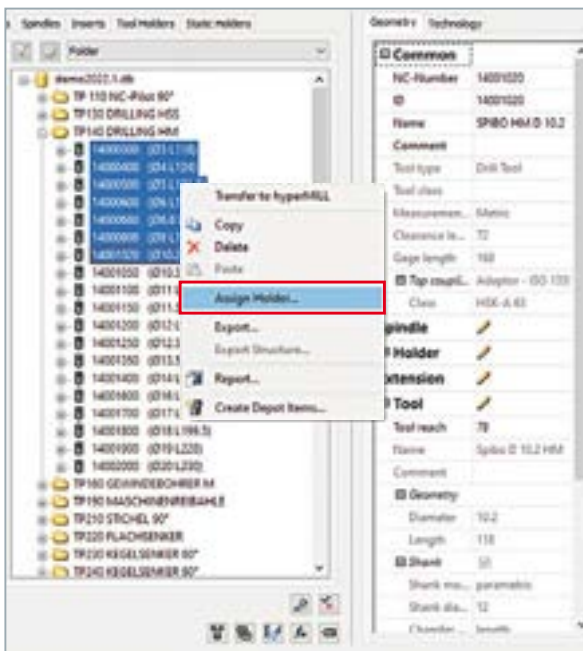


## CONFIGURATION Center

The new CONFIGURATION Center is the central configuration program for all basic settings. It provides a single interface for the configuration and execution of the following settings and tasks:

- Configuration of the basic settings
- Transfer of user settings from previous versions
- Adaptation of application links
- Import/export of settings
- Execute system check

**Benefit:** Clear overview, user friendly.

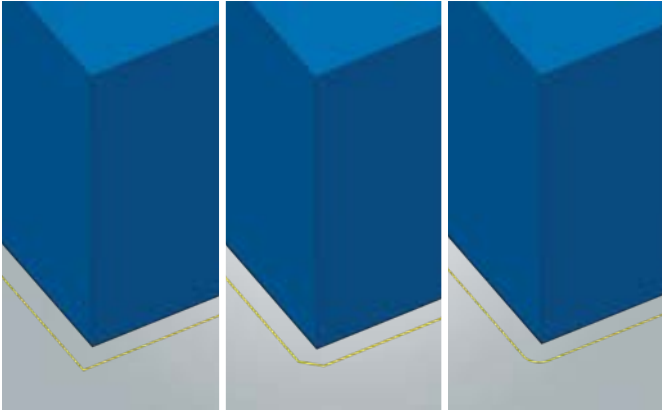


## Tool database

Improvements in the tool database make the setup and administration of tools easier.

- A holder can be assigned to several tools with a multi-selection
- Tools can be sorted by name or diameter
- A type can be defined for the tool tip of the threading tools in order to define the exact application for automation processes

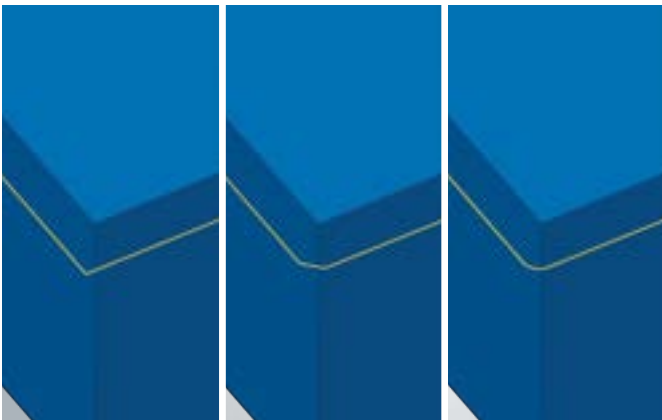
**Benefit:** Improved tool management and setup.



## 2D Contour Milling on 3D Models

The new “Break Edges” function can be used to detect sharp edges on a 3D model automatically and bevel or round them. The user defines a specification that is applied to all sharp edges. They can then be broken quickly and easily during machining with no design effort.

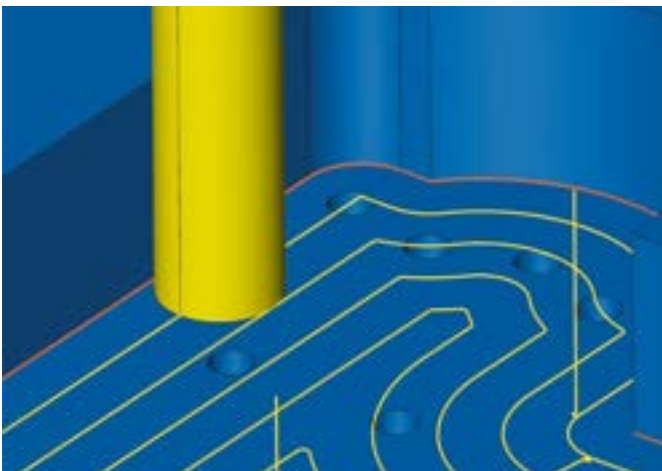
**Benefit:** Simplified edge breaking, no more need for manual programming.



## 2D Chamfer Milling on 3D Models

In chamfer milling, the new “Break Edges” option allows sharp edges on a 3D model to be automatically chamfered or rounded. This means the chamfer can also be easily adapted to preceding contour machining and all sharp edges are broken according to the user’s specifications with no design effort.

**Benefit:** Simplified edge breaking, no more need for manual programming.

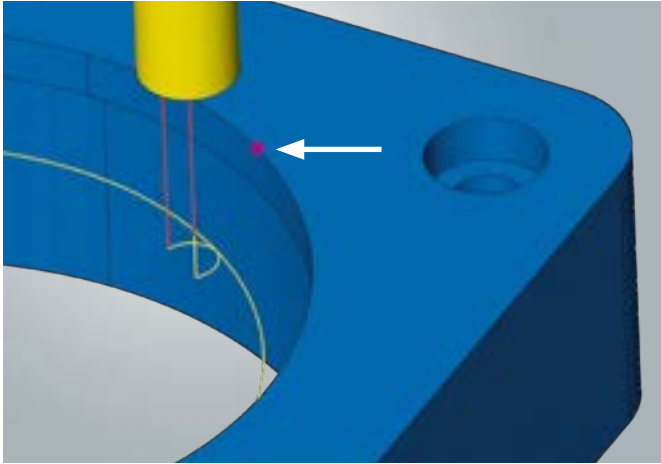


## 2D Pocket Milling

This strategy has been extended with the “Finishing Path Correction” function. A compensated path/compensating center path is output for the pocket wall. This allows processing to be controlled directly on the machine, with dimensionally accurate pocket machining. The use of resharpened milling tools in particular is greatly simplified as a result.

**Benefit:** Fast programming.

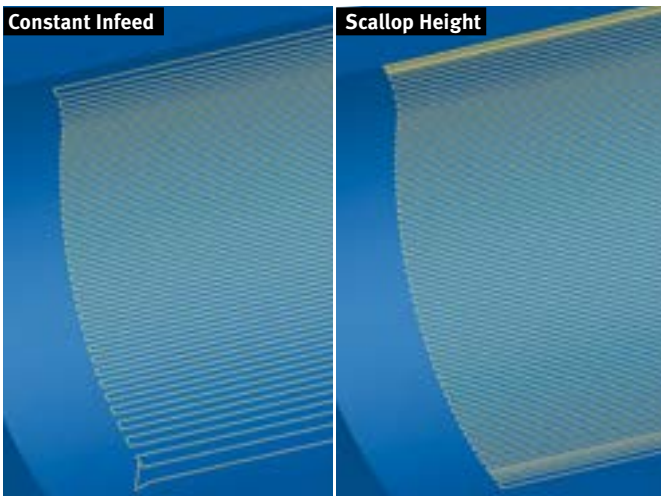




### 3D Cutting Edge Machining

With this strategy, setting a starting point has now been simplified with a selection: The starting point no longer has to be part of a feature, but can be drawn in the 3D model and selected.

**Benefit:** Simplified definition of starting points.



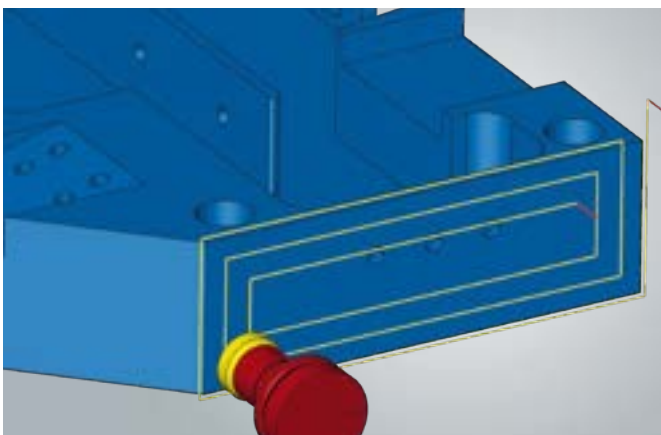
### 3D Z-Level Shape Finishing

This strategy has been extended with the “Scallop Height” infeed strategy. The infeed can be controlled exactly based on a scallop height specification. This ensures an even infeed over the entire machining area with steep and flat regions. Thanks to the new “Bottom to Top Milling” option, the machining direction can be changed and machining can be started from the bottom to the top.

**Benefit:** Straightforward infeed control, easy to change the machining direction.

#### Highlight

### 3D Plane Machining



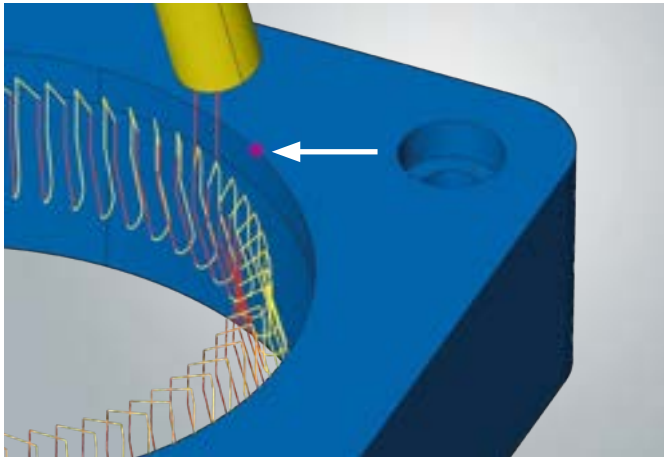
- This fully automated strategy searches for suitable, high-performance path layouts according to the situation. It now takes the adaptive pockets into account as well.

- Thanks to selected avoid surfaces, manually excluding specific milling areas is now straightforward.

- Using the “Minimum Pocket Size” parameter allows milling areas (pockets and bore holes) that fall below the defined value to be automatically excluded from the calculation.

- Plunge points now allow the user to influence the position at which the job begins with processing.

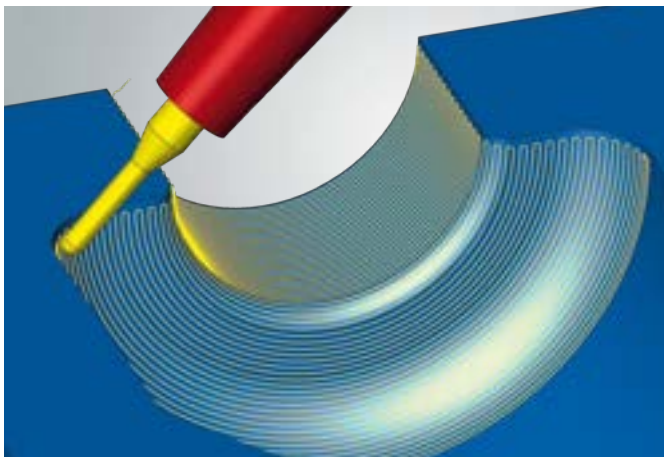
**Benefit:** Improved machining quality and various optimization and intervention options.



## 5-axis Cutting Edge Machining

The simplified setting of a starting point by means of a selection is now possible with this strategy as well. This means that the starting point no longer has to be part of a feature, but can be drawn in the 3D model and selected.

**Benefit:** Simplified definition of starting points.



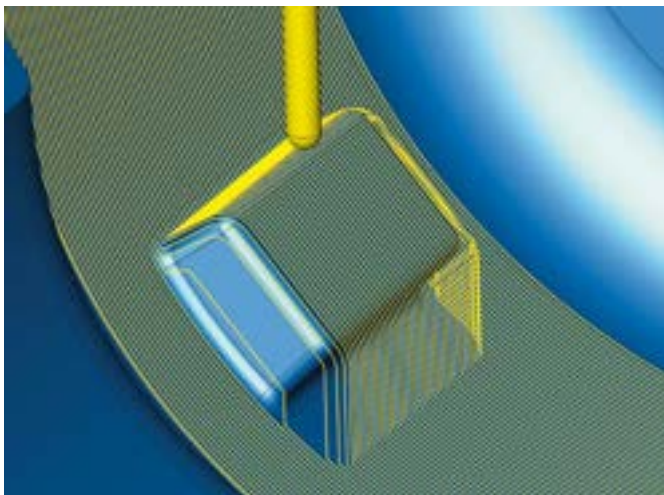
### Highlight

## 5-axis Radial Machining

Further improvements make this strategy the benchmark for blow mold machining.

- With the new “Flow Equidistant” infeed strategy, creating tool paths with a constant infeed is now also possible for vertical and challenging surfaces. This means these surfaces can be integrated into the overall machining sequence and processed in a single step. Seamless machining with a very high surface quality is guaranteed.
- New undercut detection automatically identifies undercuts and makes the corresponding machining adjustments, if desired. This means that undercut areas can now be skipped with no manual effort and generating additional surfaces is no longer necessary.
- For application on 3-axis machines, the 5-axis radial machining cycle has an orientation option to select output for 3-axis postprocessors.
- The “Smooth Overlap” function can now also be used for the general milling area and therefore without selecting a boundary curve.

**Benefit:** Precise machining of vertical surfaces with a constant infeed.



**Highlight****5-axis Tube Finishing**

The finishing strategy has been fundamentally enhanced and now offers new and improved functions.

- **“Fixed 3D” Tilt Strategy**

A new calculation method ensures that the start and end of machining can also be optimized for this tilt strategy with woodruff cutters. Programming is simplified compared to simultaneous machining (without collision avoidance and slope angle).

- **“Virtual Surfaces”**

“Virtual Surfaces” allows open areas of a channel to be closed or surfaces at the beginning to be correspondingly extended for the calculation of the tool paths. Unlike “additional surfaces”, virtual surfaces are not included in the collision check and avoidance. Since collision avoidance takes place exclusively on the model surfaces, activating the “Virtual Surfaces” option has no influence on the available machining depth.

In addition, the “Parallel” option makes it possible to trim the tool paths in the areas of the virtual surfaces or to optimize the infeed.

- **“Parallel” Infeed Strategy**

Three different options for parallel machining are available for selection to influence the machining process and the cutting parameters:

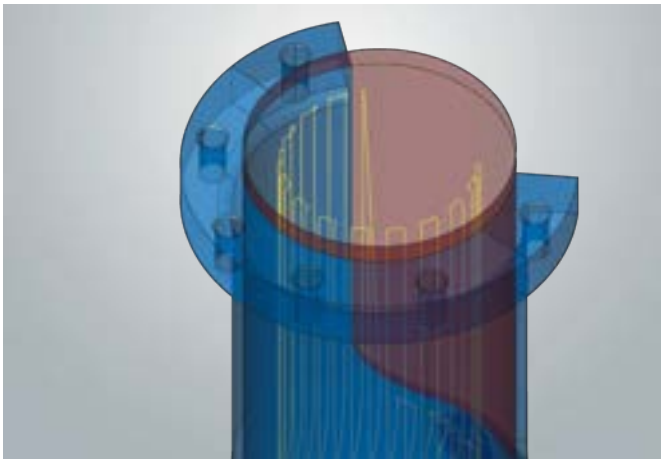
- “Direction constant – from outside to inside”
- “Direction constant – from inside to outside”
- “Zigzag”

To optimize the process and the cutting conditions, a pre-finishing process with its own lateral infeed and its own feed rate can be generated for the two infeed strategies “Zigzag” and “Direction constant – from outside to inside.”

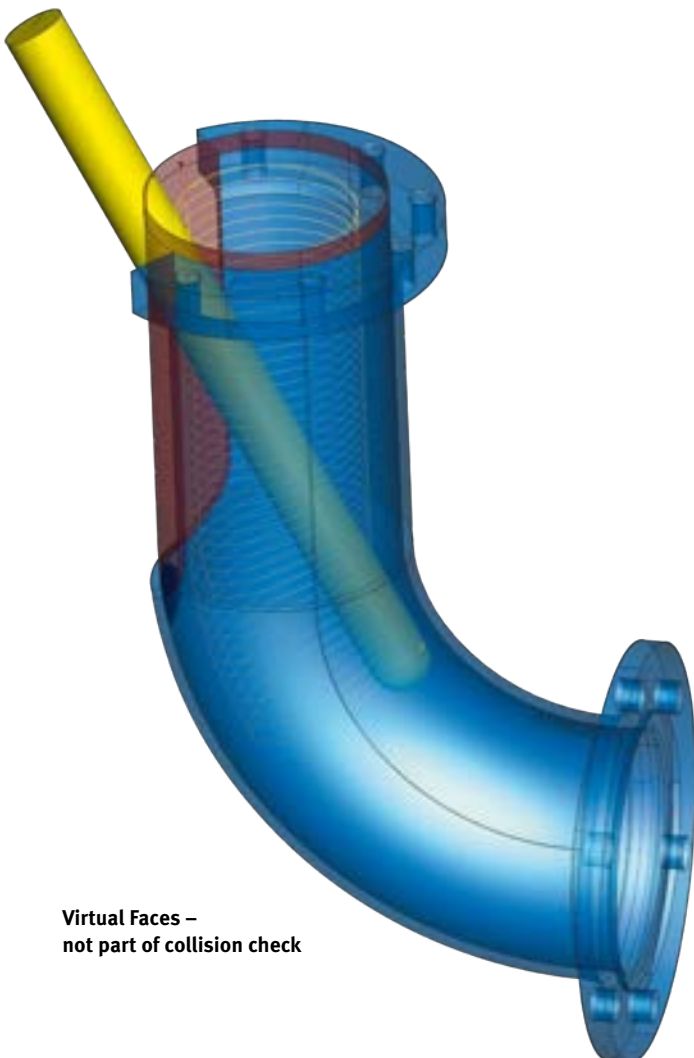
- **Smooth Overlap**

To improve the surface quality for machining from multiple directions or with multiple tools, the “Smooth Overlap” function is now also available in tube machining. An overlap zone can be defined at the beginning and end of machining in order to attain an optimal machining quality.

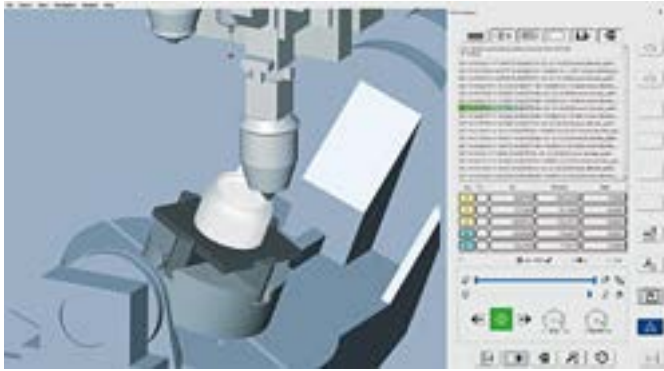
**Benefit:** Improved machining quality, simplified programming and various optimization options for the user.



Virtual Faces – optional trim toolpaths



Virtual Faces –  
not part of collision check

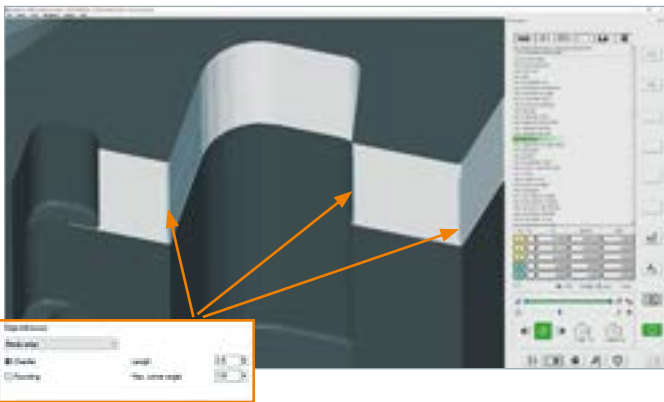


### Highlight

## Additive Manufacturing

The *hyperMILL*® VIRTUAL Machining technology now also supports additive machining programs. This means the Optimizer technology can now be used in NC code generation to obtain NC code that is perfectly adapted to the machine. Additive and subtractive production processes are simulated with the *hyperMILL*® VIRTUAL Machining Center on an NC code basis – for maximum reliability.

**Benefit:** NC code simulation of additive tool paths and integration with the *hyperMILL*® VIRTUAL Machining technology.



## Simulation Details

In the *hyperMILL*® VIRTUAL Machining Center, the NC code is simulated with additional process-related data from *hyperMILL*®. Exact verification of the NC program is achieved as a result. For example, the machining information from the *hyperMILL*® jobs is also processed in the simulation. This means that an intentional component violation in the simulation is evaluated as collision-free through the “Automatic Edge Breaking” option during contour and chamfer milling.

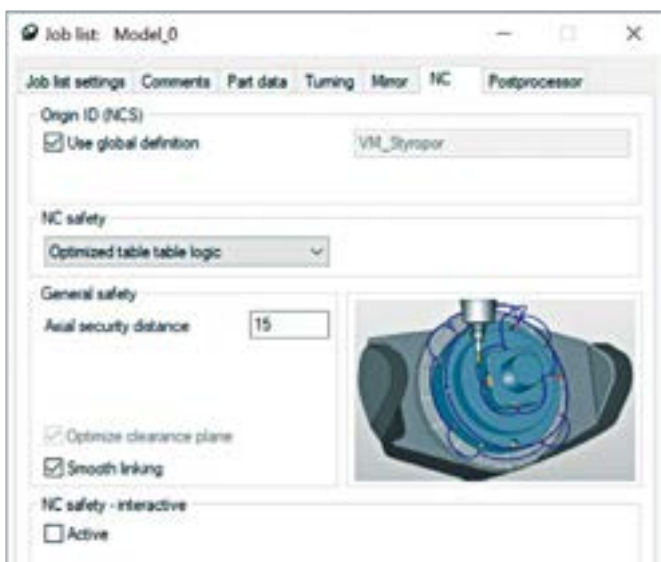
**Benefit:** Consideration of machining information in the simulation, intentional component violations are not classified as collisions.

### Highlight

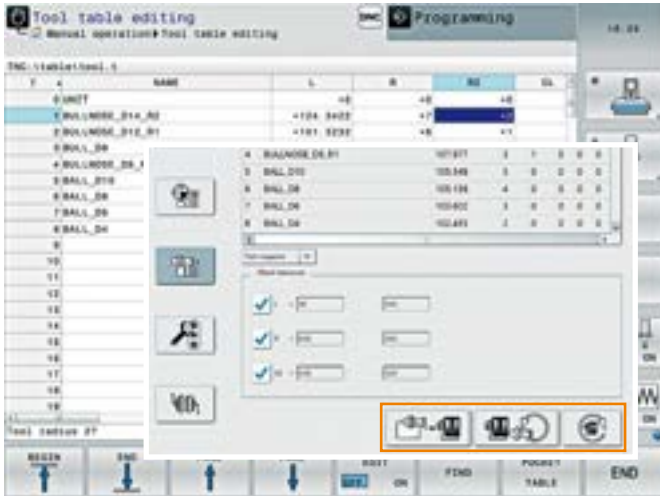
## Optimizer: “Optimized Table-Table Logic”

The new “Optimized Table-Table Logic” option can be selected on the “NC Safety” tab for table-table kinematics. The user selects a distance value and the Optimizer automatically calculates the safety distances using the raw part, component, and clamps selected in the job list. The defined distance is maintained from all components and the movement sequences are automatically optimized. Controlling the ideal link movements is even easier as a result.

**Benefit:** Simplified programming, reduction of auxiliary processing times.





**Highlight****hyperMILL® CONNECTED Machining – Tool Data**

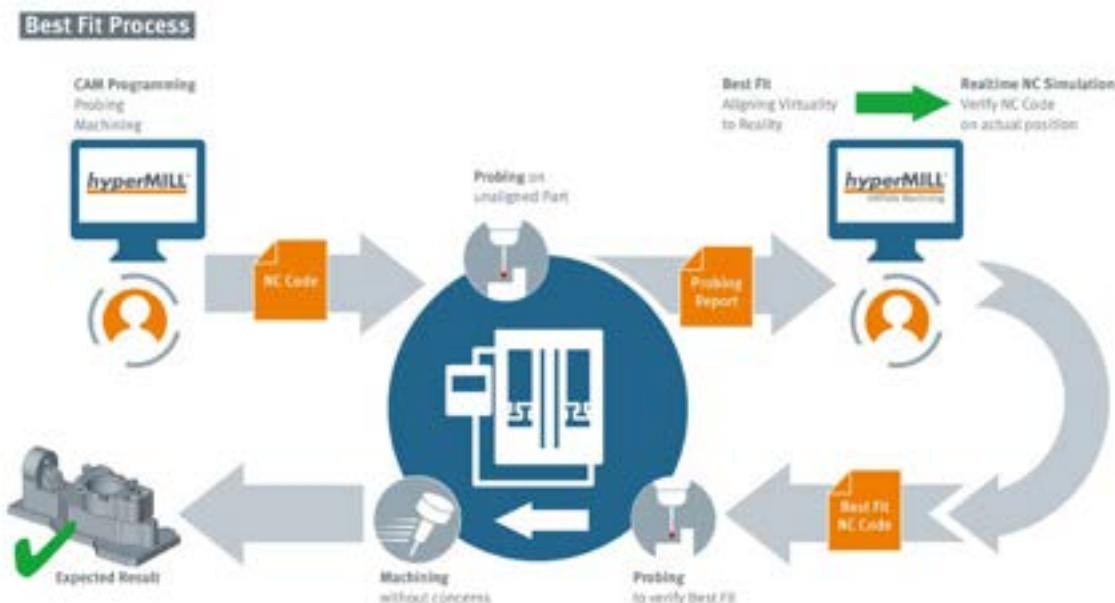
Tool data from *hyperMILL*® can be transferred directly to the machine controller. The tool length, radius, corner radius, tool number, and tool name are transferred to the controller. This makes it possible, for example, to import calibrated tools from a tool management system into *hyperMILL*®, to create programs, and to transfer the tool list or individual tools to the machine. Time-consuming entry of the tool information in the controller is eliminated by the end-to-end process and errors are avoided.

**Benefit:** Transfer of tool information to the controller, improved reliability for the setup of tools in the controller.

**hyperMILL® BEST FIT****BEST FIT**

Thanks to process improvements in the BEST FIT application, all necessary information is consistently presented to the user in detail. If a need for action occurs the user will be informed and the exact status of the programs is displayed in the program view.

**Benefit:** Improved user-friendliness.

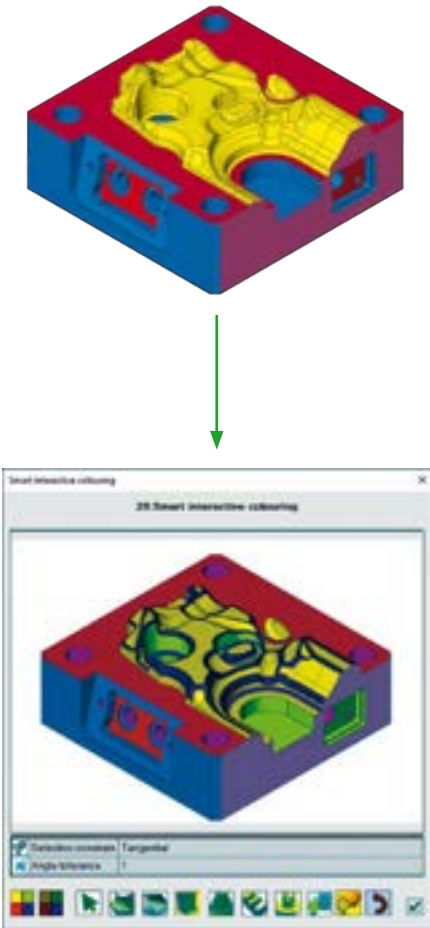


## hyperMILL® AUTOMATION Center

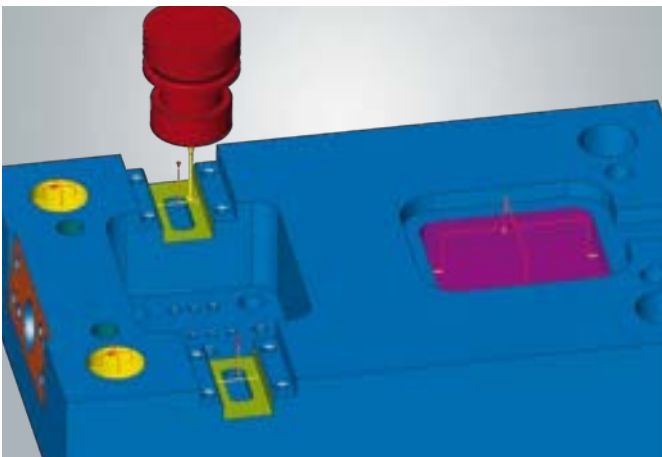
The hyperMILL® AUTOMATION Center features several improvements:

- With the new, intuitive selection menu, components can be manually colored with great ease using a specially defined color table. Intuitive user guidance makes coloring much easier for the programmer.
- Components can now be administered with multiple “color sets” as well, which can be saved and used for automated coloring. For example, the color settings can be reset to those of the original component
- Characteristics such as “Tangential Selection” can now be assigned in topology elements such as surfaces. The “Tangential Selection” is then carried out based on a defined reference color and applied to all selected surfaces, including colors and layers. This significantly reduces the programming effort, especially for large molded parts.
- A new function supports the comparison of model data so that different process states can be compared quickly and reliably. Deviations are displayed in a new layer.

**Benefit:** Simplified and faster coloring, quick comparison of model states.



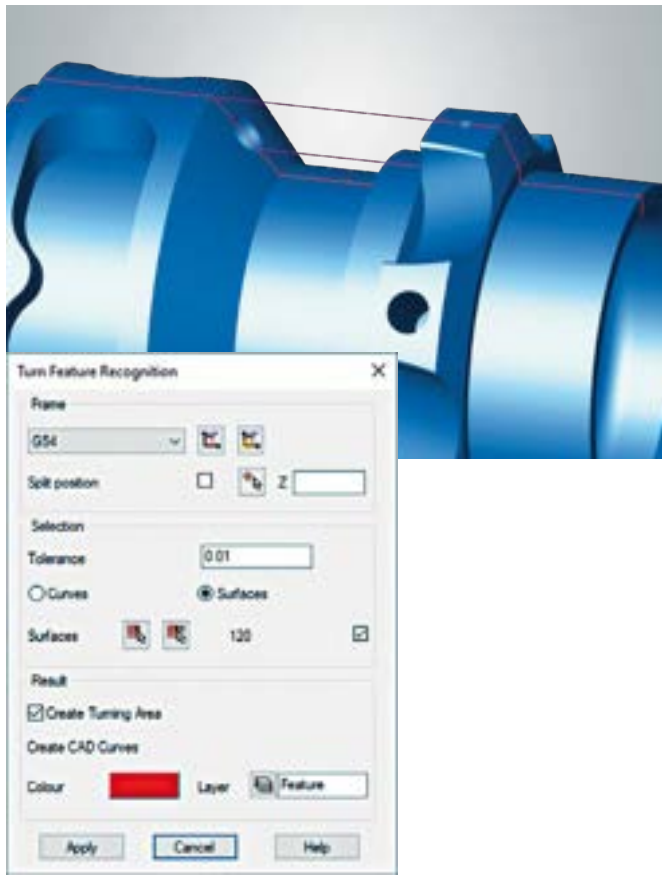
## hyperMILL® PROBING



## PROBING

Improvements in the parameter settings of the measuring strategies and the support of features now permit more extensive process automation. For example, user variables in the parameter fields of the strategies are supported and bore holes, rectangles, grooves, and planes can be used as features. All required tolerance information can be transferred directly from the features.

**Benefit:** Easy creation of measuring tasks based on feature information.

**Highlight****Turn Feature and Feature Recognition**

The two new feature types “Turning Generic Feature” and “Turning Plunging” make programming turning processes much easier and faster. Component areas for turning or plunging are reliably recognized and structured and displayed in the feature table. *hyperMILL*® uses feature levels to automatically divide the recognized features into several areas that can be turned, plunged, or machined with both technologies. This saves the user a lot of time in contour selection and programming, with full access to all recognized contours.

With VIRTUAL Tool and macro technology, components can thus be programmed automatically with just a few mouse clicks.

**Benefit:** Easier and faster programming.

**Highlight****Main and Counter Spindle Machining with Transfer Job**

*hyperMILL*® now offers convenient programming for two-sided machining on machines\* with a main and counter spindle. The machining jobs are simply programmed under the “Main Spindle” and “Counter Spindle” containers, and thereby assigned to the respective machining side. The component or bar material, with or without parting, is simply transferred with the new transfer job. NC output from the main side, opposite side, and component transfer are realized in one end-to-end NC program with a machine model and a post-processor.

**Benefit:** Straightforward programming of main and counter spindle machining.

\*Type DMG MORI CTX machines with Siemens control are supported in release 2022.1 and up. More manufacturers and machine types will follow.

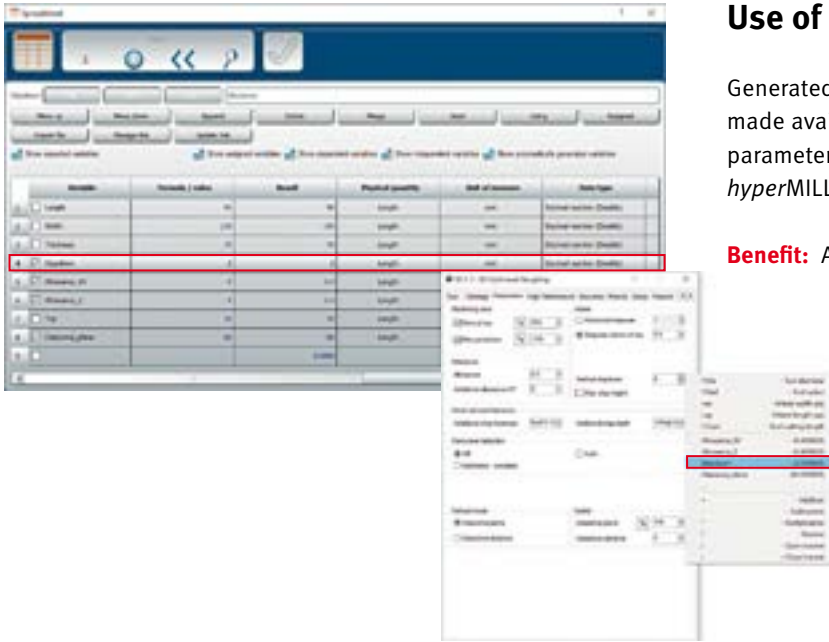


**Highlight**

**Use of CAD Parameters in hyperMILL®**

Generated hyperCAD®-S parameters in the parameter list can be made available to hyperMILL® by means of checkboxes. Thus all parameters from hyperCAD®-S can also be associatively used as hyperMILL® variables for the transfer of calculations or values.

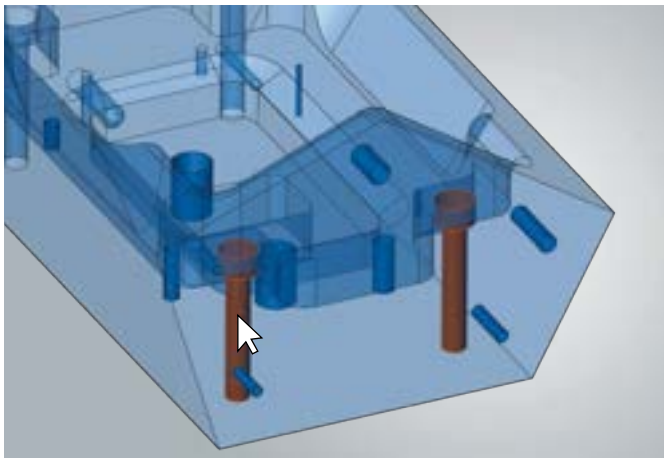
**Benefit:** Associativity of CAD and CAM.



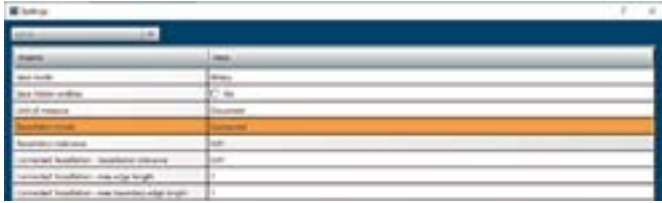
**Pick Through Transparent Color**

An option allows the user to click through transparent colors to select the underlying elements. This allows electrodes or milled parts to be quickly selected through transparent raw materials (colors) even without hiding them.

**Benefit:** Fast selection through transparent colors.



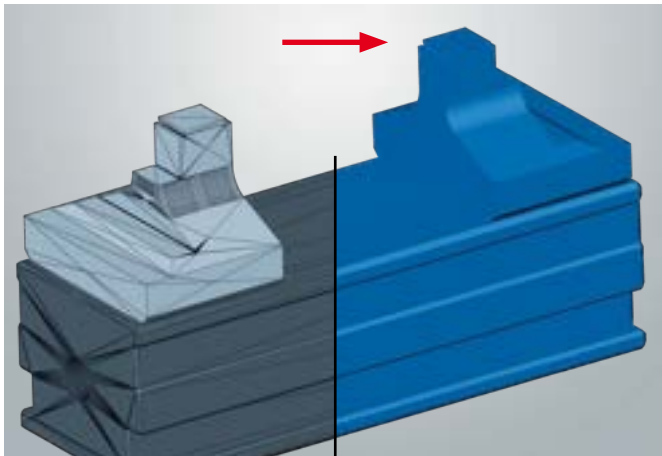




## STL Save – Tessellation Mode “Connected”

The tessellation mode “Connected” can now be selected under settings when saving STL files. A contiguous STL model can therefore be created. This special setting is needed, for example, to generate model data for 3D printing.

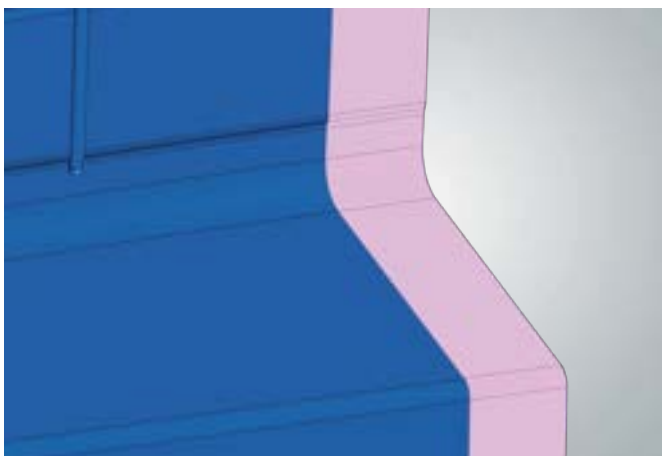
**Benefit:** Straightforward generation of a contiguous STL model for 3D printing.



## Faces from Mesh

With this function, a plane can be automatically created from each triangle of a mesh. The planes can also be simplified with an option. Planes for *hyperMILL*® can therefore be created very quickly and easily from STL mesh data in order to optimize the selection, edge boundaries, and job processing.

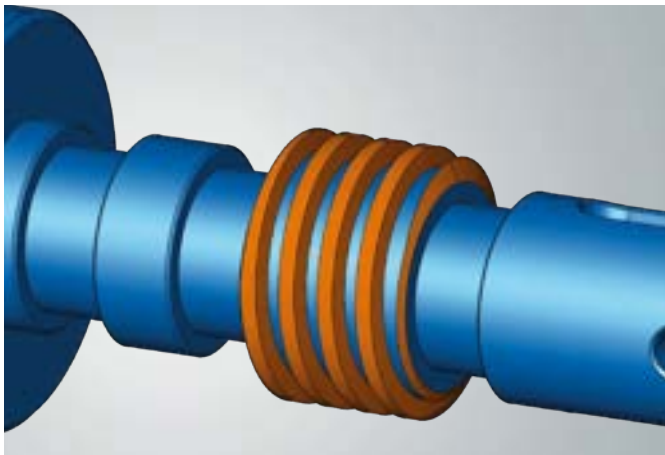
**Benefit:** Straightforward extraction of STL mesh models to flat surfaces.



## Shapes – Extension Faces

Extension faces can be generated quickly and easily with the new “Extension Faces” command. Selection takes place directly on the faces being extended. All known selection filters can be used for the selection of the faces. The extension is created tangentially to the selected faces. With the “Milling Mode” option, an additional stop surface can also be created to precisely delimit the machining area.

**Benefit:** Simplified option for face extension based on a face selection.



## Shapes – Helix

Helical shapes can be created very easily with the new “Helix” command. The helix is created from a curve geometry with specification of the pitch, height, and taper. The user can define whether the new shape is created with or without a base. The final pitch can be separately defined as well.

**Benefit:** Straightforward creation of helical shapes.

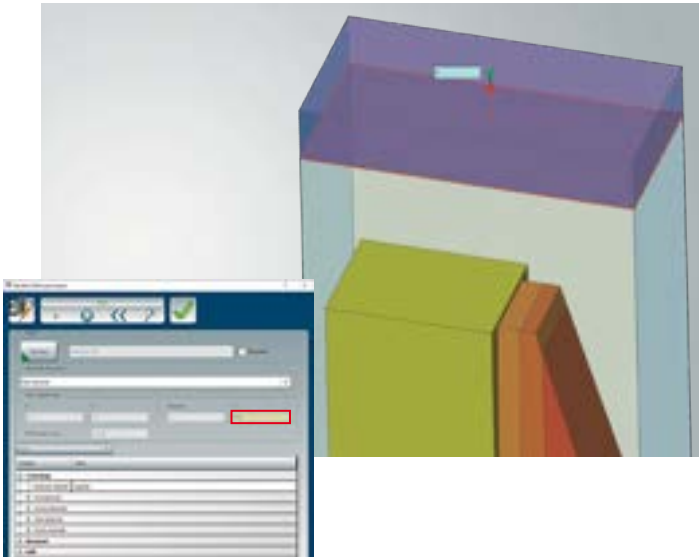


## Analysis of STL Mesh Data

The “Undercut,” “Shape Spherical,” and “Shape Curvature” commands were extended and can now be applied to mesh elements as well.

**Benefit:** Milling analysis also on mesh data.

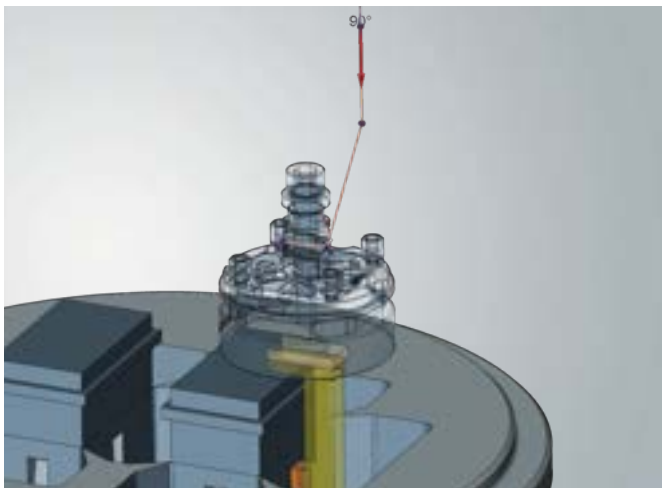




## Electrode – Edit Stock Dimensions

Users can now modify the stock dimensions of electrodes at a later point. They simply change the stock material block in the electrode model through direct modeling. To transfer the new values to the electrode process, the values are transferred to the electrode project with the “Change Eroding Parameters” command and all technology parameters are correspondingly adjusted.

**Benefit:** Straightforward changing of stock dimensions.



### Highlight

## Electrode – Change Eroding Path

The path in the eroding process can now be controlled by the user. Movement sequences can be simulated with the *hyperMILL*® SIMULATION Center and checked for collisions. Three different modes are available to the user for creating the traverse paths:

### ■ “3 Points”

The traverse path can be subsequently changed by specifying three points. The safety position and start position can be changed.

### ■ “Blind”

A blind eroding path can be specified through the definition of a line contour. The rotation of the electrodes can be specified as well. For the return path, the eroding path is automatically inverted according to the selected contour and appended. Poorly accessible undercuts can also be eroded as a result.

### ■ “Continuous”

The continuous eroding path for machining can be controlled using a line contour. It also includes the rotation positions of the electrodes. Exact eroding according to the existing component conditions along a contour is therefore possible.

All three options can be simulated and checked for collisions with the *hyperMILL*® SIMULATION Center.

**Benefit:** Setup and modification of eroding paths with simulation of the EDM process.

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