hyperMILL®

2020.2

What's New?

OPEN MIND
THE CAM FORCE

What's New in 2020.2?

*hyper*MILL® 2020.2 offers numerous new functions that will simplify and speed up your daily tasks. The inclusion of *hyper*CAD®-S Parametric represents yet another one of our milestones. With this, components can be modeled parametrically. Thanks to extensions for turning and for additive manufacturing, users can now deploy these technologies even more efficiently and reliably.

Contents

QR codes are clickable

Highlight

Toolpath Mirroring

With the 'Mirror' function in previous versions, the toolpaths for symmetrical components were always generated and recalculated on the basis of mirrored geometry data. The new 'Mirror Path' function enables simple mirroring on the basis of the previously calculated toolpaths. With this method, the machining direction is mirrored as well, and climb milling becomes conventional milling. You can enable this option in the 'Mirror Path' settings, and it is available for all 2D, 3D and 5-axis strategies.

Benefit: Shorter calculation time; improved process reliability.

Highlight

Tool Database

In the tool database, the filter properties are now integrated directly into the top level of the user interface, meaning they are always visible. Another improvement is that directly within the filter properties, you can now also enable the material from the job list, the spindle holder from the machine properties, and the tool preselection from the job. In addition, you can perform searches for customer-specific information.

Benefit: Faster tool search; more user-friendly.
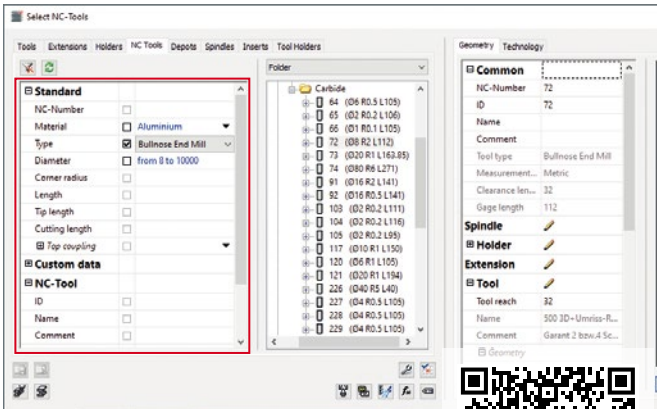
Contour Milling with Overlap

For your approach and retract movements, the 'Smooth Overlap' function enables you to specify an overlap area between closed contours. Both the length and the distance of the overlap area can be specified. The toolpath within the overlap area is smoothed perfectly, and the milling tool's cutting pressure is reduced to a minimum. This ensures the best possible surface quality.

The following functions are available within the 2D contour cycles:
- 2D Contour milling
- 2D Contour milling on 3D model

Benefit: Improved surface quality.
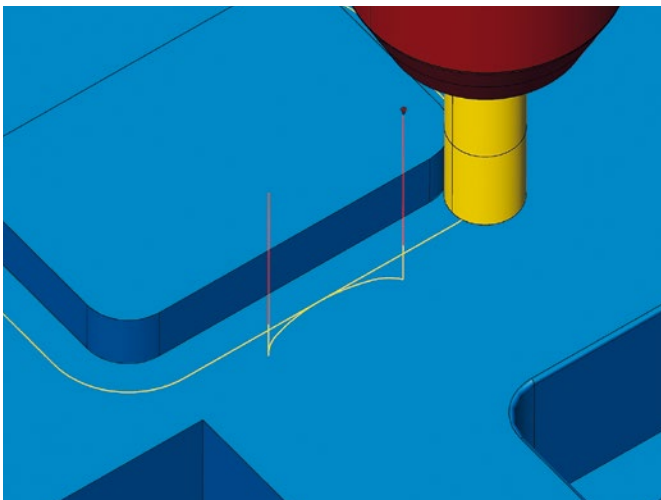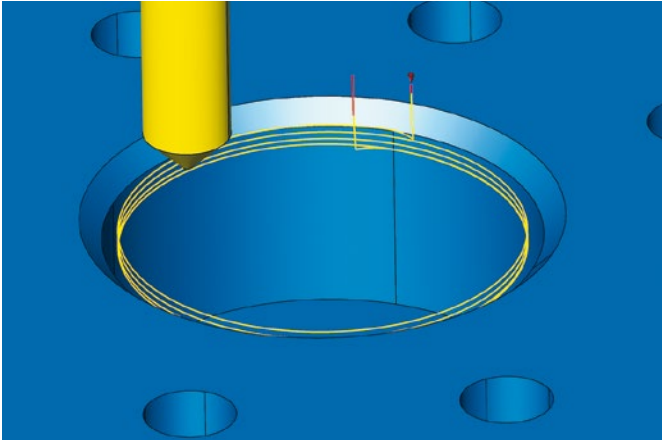
Chamfer Milling on 3D Model

For chamfer machining, the 'Prefer Spiral' option makes it possible to use a spiral-shaped infeed. This tool path style avoids unnecessary approach and retract movements.

Benefit: Extended tool life.
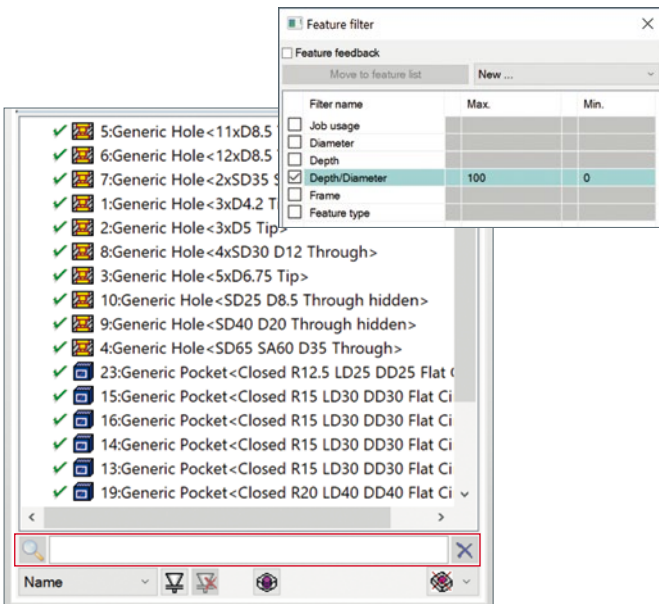
Highlight

Feature Filter

Within the feature management, you can now perform text searches for specific feature properties. For example, this enables you to quickly locate specific feature types such as holes or pockets, as well as hole diameters.

Benefit: More user-friendly; saves time during programming.

Job Optimization

The Optimization function has been expanded. With the new option, the jobs can be sorted by tool and by machining type without needing to be grouped at the same time. This makes it easier for the user to control the machining sequence.

Benefit: Improved control of the machining sequence.
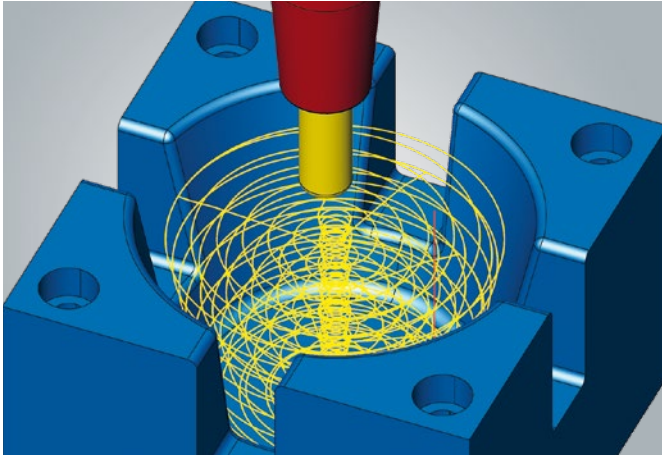
3D Optimized Roughing

This strategy now allows you to sort the machining sequence by pocket or by plane. Machining of open pockets has been improved. Depending on the tool diameter, this makes it possible to machine a pocket with a single cut, and without requiring additional infeeds. When 'Adaptive Pocket' is used, the software now checks whether the selected tool is able to plunge. This way, the largest possible adaptive pocket is fitted into the area to be machined.

Benefit: Improved machining of thin-walled geometries.

Highlights

3D Cutting Edge and 5-axis Cutting Edge Plunge Milling
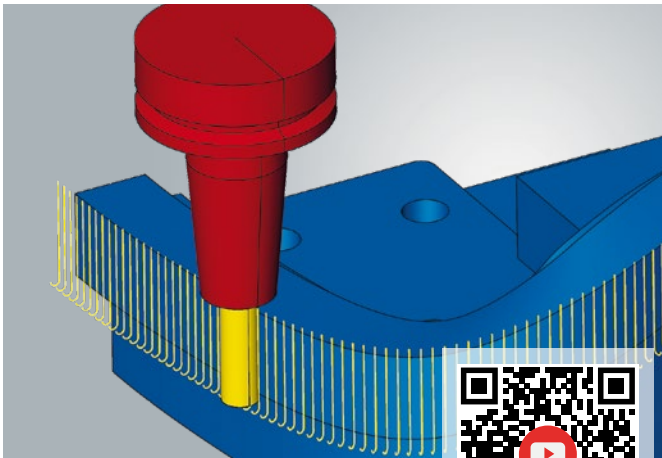
For the machining of cutting edges in particular, the plunge milling strategies offered by 3D and 5-axis machining represent an efficient way of removing material quickly and reliably. For this, the cutting edge is defined either via a curve or a face. You can restrict machining in the axial direction by defining a secondary curve or a distance.

With 3D machining, the material can be removed by swarf cutting or plunging. Rest material machining is easily calculated using a reference job.

With 5-axis machining, you can also include undercut areas in the plunge job, such as for cutting edge. The tool tilt is specified by the lateral inclination. In order to optimally adapt a retract movement to the component, you can specify both a distance as well as a circular or linear movement profile.

Benefit: Efficient machining of cutting edge.
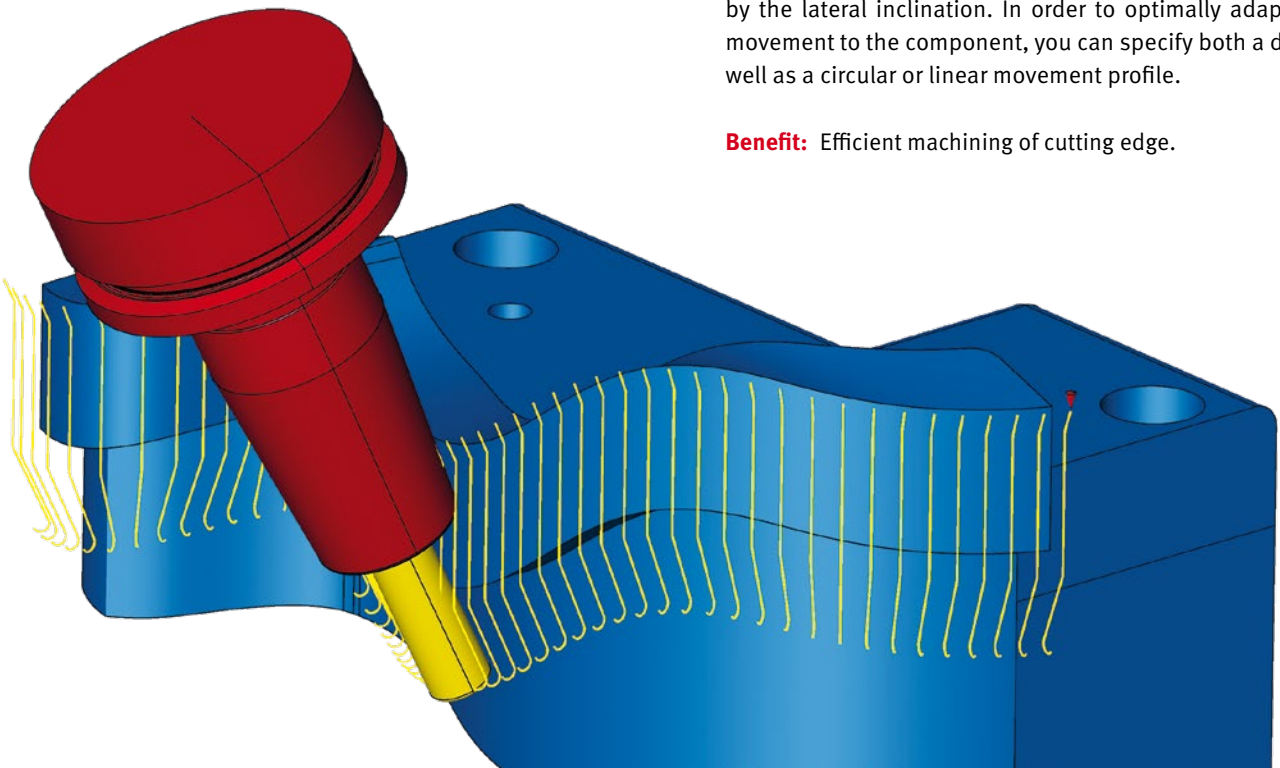
*hyper*MILL® AUTOMATION Center

The *hyper*MILL® AUTOMATION Center is the foundation for further automation, and serves as both a development and runtime environment. This makes it possible to standardize 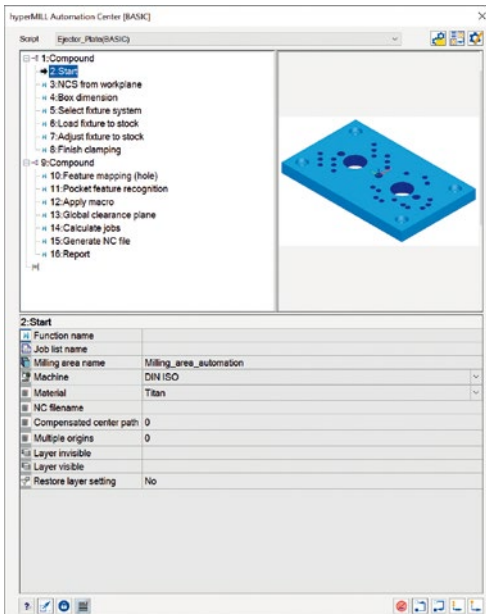and automate complex process workflows in *hyper*CAD®-S and *hyper*MILL®. As a central software component, the *hyper*MILL® AUTOMATION Center offers not only the automation experts at OPEN MIND comprehensive functionality for process automation; this functionality is now also available in two versions for OPEN MIND customers as well.

Basic

With 2020.2, the functions of the basic version have been extended. It is now possible to independently create small-scale automation projects for prismatic components. As well as job list creation and clamping device selection, feature recognition and macro application are now also available. This makes it possible, for example, to automate the entire process of machining an ejector plate.

Features

- Job list creation with extended stock model options and clamping device management
- Hole and pocket recognition
- Compound job creation
- Macro application including optimization of job list and sorting of job IDs
- Calculation of global clearance plane
- Calculation of all jobs
- Creation of NC program and report

*hyper*MILL®
AUTOMATION Center

Basic   Advanced

Advanced

The *hyper*MILL® AUTOMATION Center Advanced offers a level of technology that reaches far beyond the automation of standard geometry features. Here, you can define and standardize complex processes. The overall shape of the CAD models is only of secondary importance in this context. This solution primarily focuses on the individual elements that may be contained within a CAD model.

With our automation solution, nearly all of the functions from *hyper*MILL® as well as the CAD functions from *hyper*CAD®-S can be accessed in order to automate complex manufacturing processes. This involves defining all the individual steps for data preparation and programming, right up to simulation and NC program generation. Once a manufacturing process has been defined, it can be applied to any new components, and it can be run automatically. If there are any decisions that cannot be made with full certainty within the automation process, the user is prompted to make the relevant choices during the program run. The user is interactively guided through the individual process steps, making it possible to program the machining job in a fraction of the time.

Features

- *hyper*CAD®-S and *hyper*MILL® functions can be automated
- Comprehensive template functions
- Processing of complex geometry information
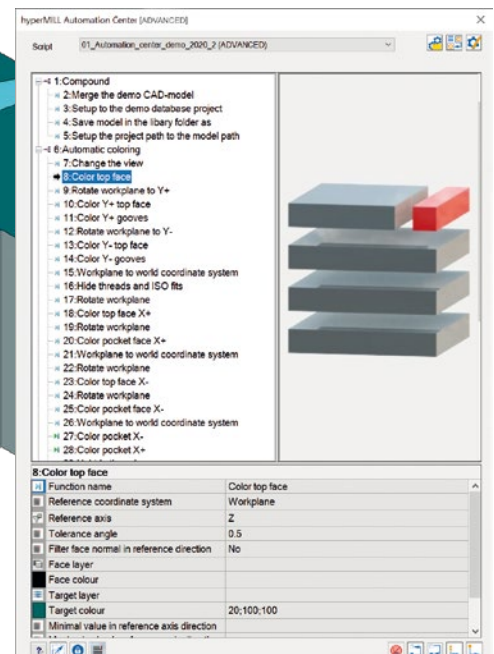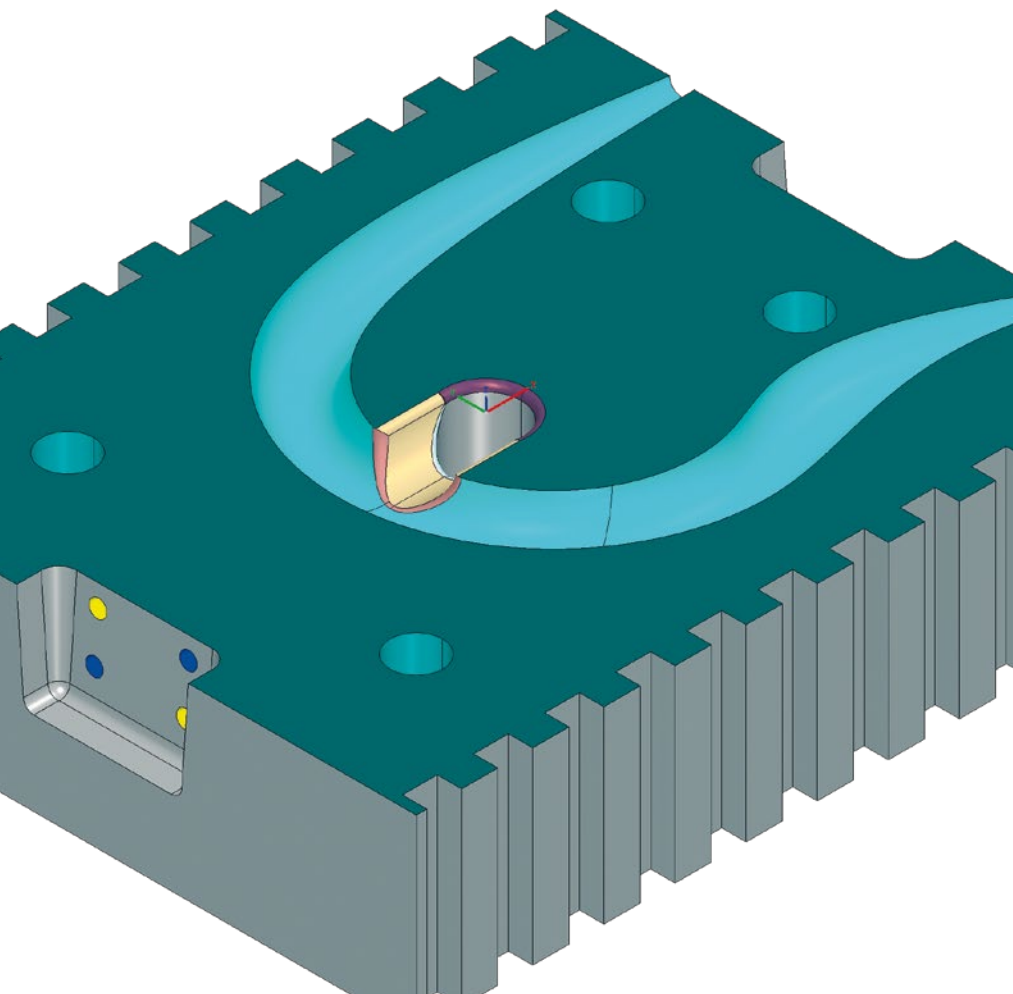
Additive Manufacturing –
It's Only Truly Perfect with CAD/CAM

*hyper*MILL® ADDITIVE Manufacturing is a powerful solution for additive production, and it makes it possible to fully exploit the potential of this new and fast-growing technology. It provides optimal control of both additive and subtractive processes.

New in this Version

Modifying the Machining Job

Complex components frequently require 5-axis material application. *hyper*MILL® offers the option of applying material with five axes simultaneously, given a suitable machine. It furthermore provides the user with active collision avoidance, which makes it easier to create additive toolpaths within areas that are difficult to access. Applying material to an existing stock freely within the workspace is very easy. Calculation of the toolpaths is performed automatically using a reference job for the original stock surface.

Benefit: 3D material application to a stock.

**hyperMILL®**
ADDITIVE Manufacturing

Directed
Energy
Deposition
(DED)
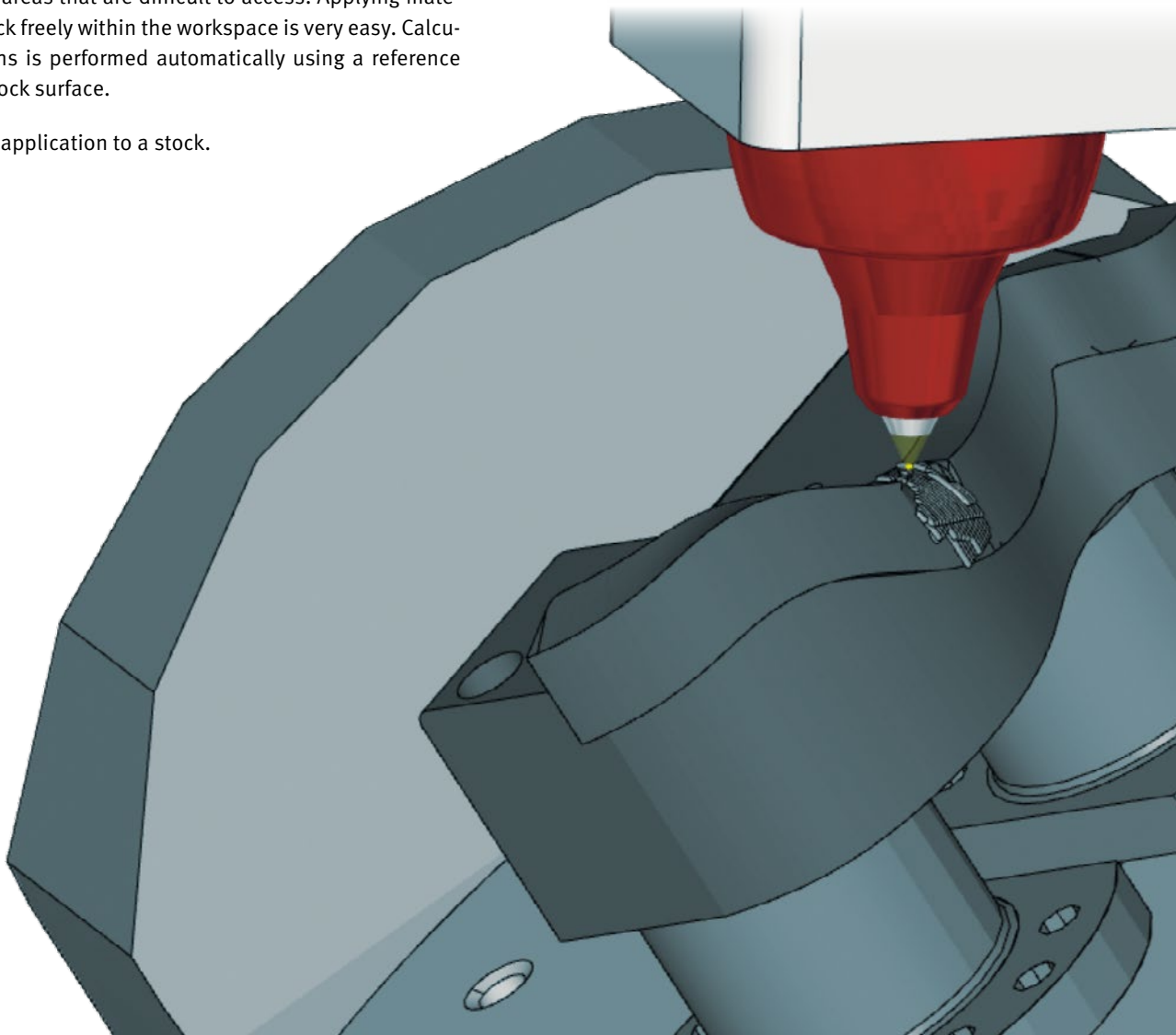
Mold Core Modification

Here is a practical example: an existing mold core needs to be modified. Let's say that there was a design change, and that two additional features need to be added (shown in purple). Because the core has already been milled, the two features first need to have their material added and then be milled into shape. On a DED hybrid milling machine, this can be easily performed within a single clamping, and the resulting quality is flawless.

1 The two new features are loaded and checked against the existing CAD model. The stock model and the additive toolpaths are generated on the basis of the physically machined mold core. With this, the toolpaths are generated automatically when the new feature faces are selected.
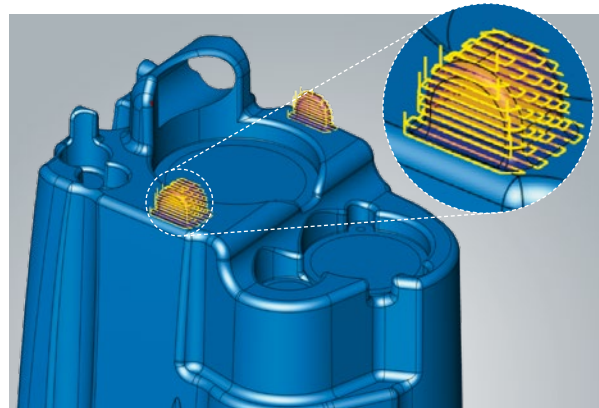
2 The material for the two new features is applied using the DED hybrid milling machine. In the subsequent subtractive machining job, the simulated material application also serves as a stock model, which means it is included in the collision check.
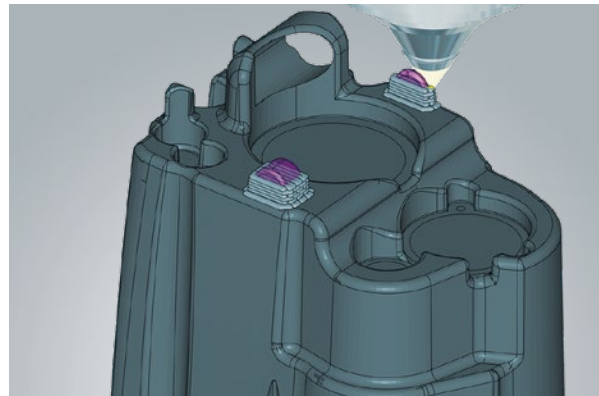
3 The user can access all of the *hyper*MILL® machining strategies for the subsequent machining of the two features. The programming of the material application and removal takes place within the same user interface, and it is output using the same postprocessor. In addition, *hyper*MILL® ensures programming continuity from the simulation right through to the stock chains.
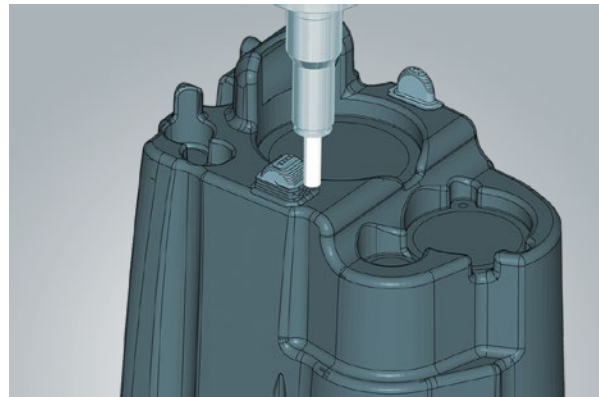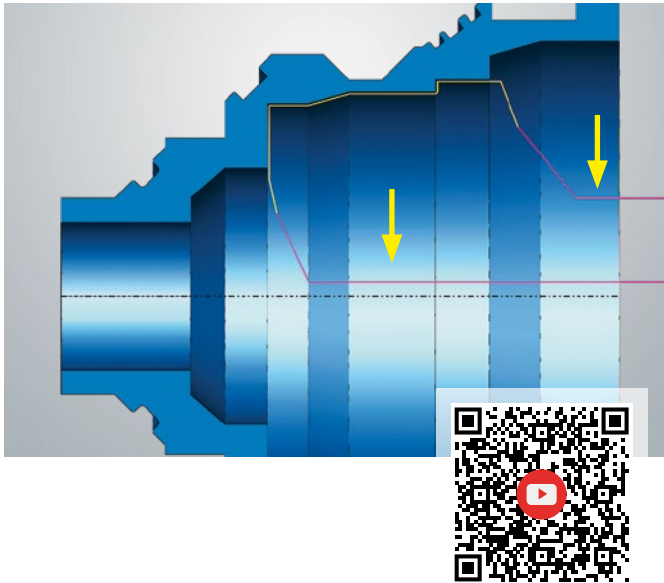
Manual Approach and Retract

There now is an extension for individually adapting approach and retract movements using drawn curves. This makes it possible for the user to control the component properties very precisely and to direct the machining process more efficiently. Note that all movements are fully collision-checked.

Benefit: More user-friendly.

3-axis Simultaneous Turning

New insert types are now available for roughing and finishing in 3-axis simultaneous turning jobs. As well as round inserts, rhombic, T, and W inserts are now supported.

Benefit: New tool types.
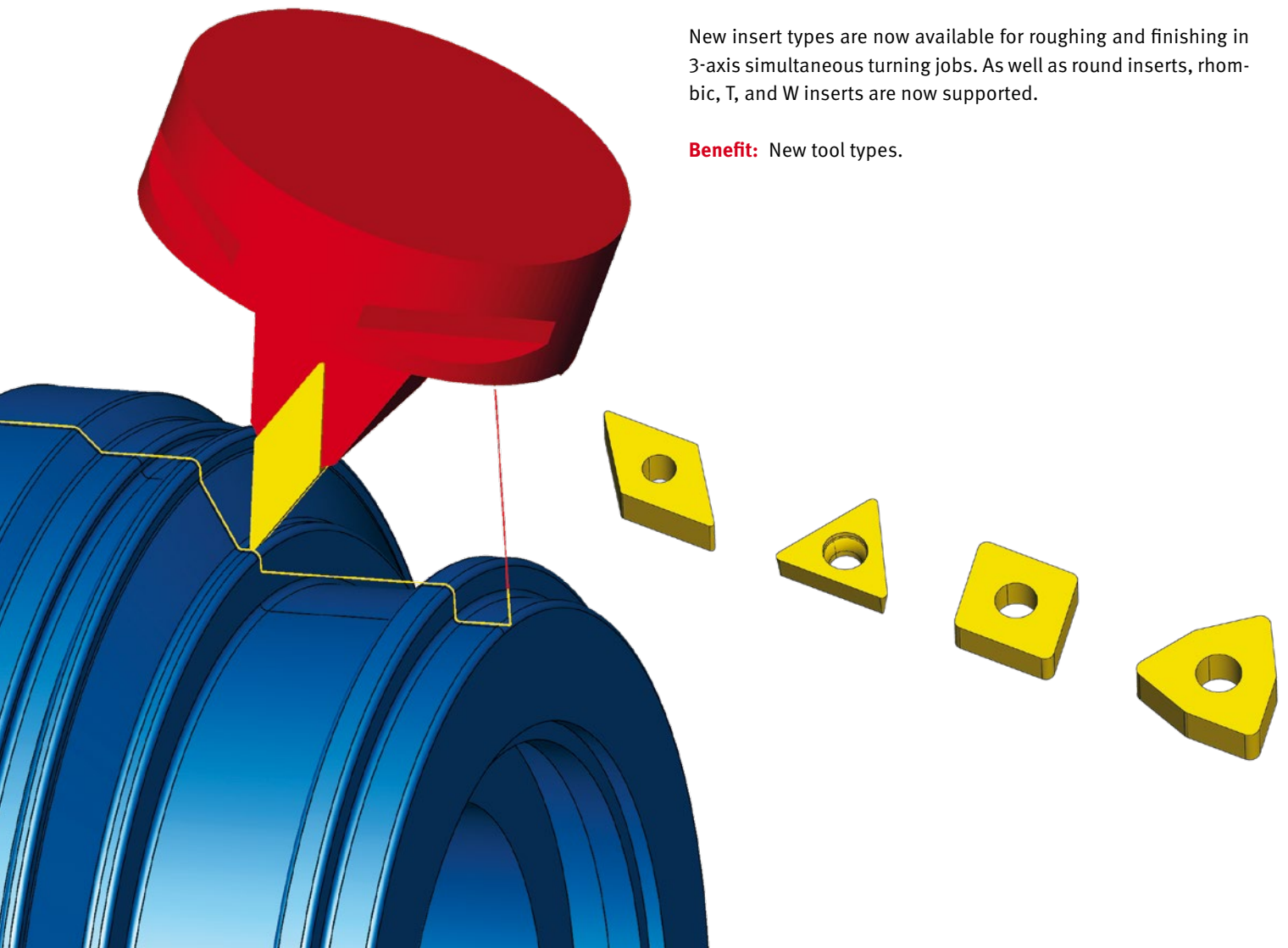
hyperMILL® CONNECTED Machining

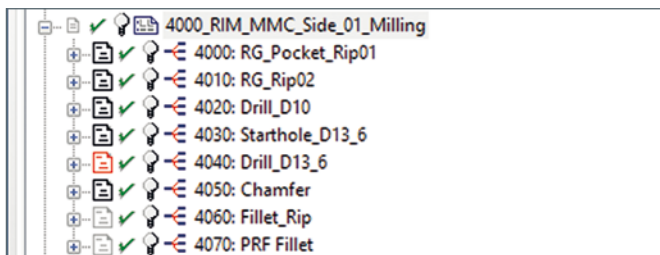In the new version, compatibility with new controllers has been expanded, and *hyper*MILL® CONNECTED Machining now supports Siemens controllers on Grob machines.

Benefit: New controller types.

Job List NC Status

*hyper*MILL® now shows a more accurate program status. Jobs that have not had an NC program generated yet are shown in gray. Jobs that have already had an NC program generated are given a black status, and red indicates that a job has been modified since the NC program was generated. This way, the user always has a quick overview of the status of the individual machining jobs.

Benefit: Improved overview; increased reliability.

Highlight

Continuous Simulation

Connectivity between *hyper*MILL® and the VIRTUAL Machining Center has been further improved. With the 'Generate NC File in Batch Mode' option, a newly-generated NC program is loaded directly into the currently active simulation application, where you can simulate and check it in the familiar manner, as well as releasing it for machining. This method significantly reduces loading times, as the machine and model data does not need to be reloaded. Particularly when multiple individual programs need to be set up for a component, this makes for a faster and more straightforward workflow.

Benefit: Faster simulating.

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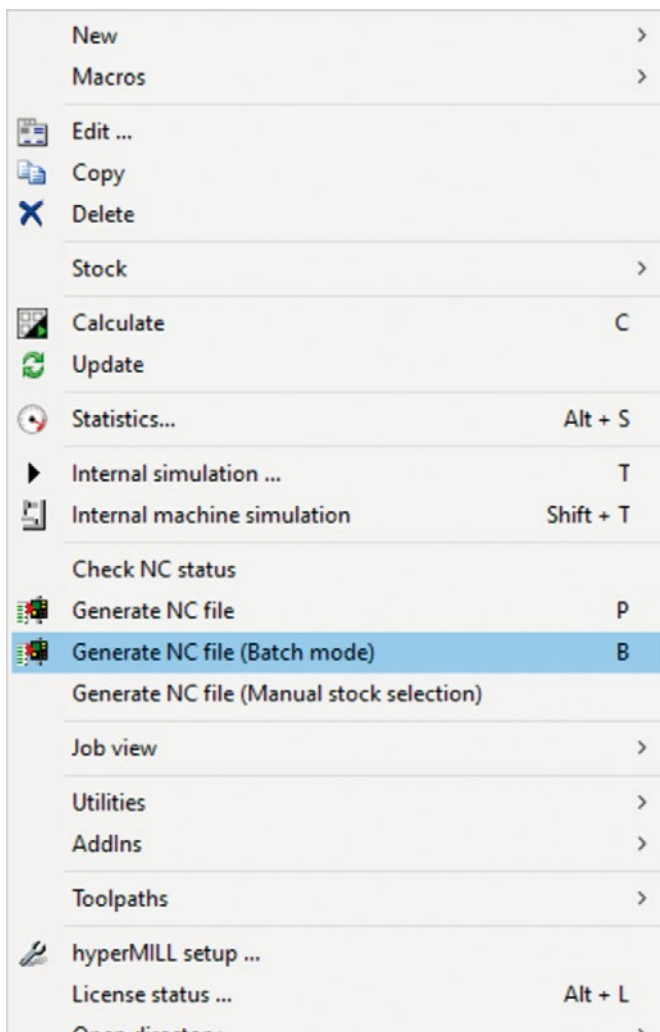
Parametric modeling now in *hyper*CAD®-S

The new version of *hyper*CAD®-S includes a major technology update: parametric modeling. This enables the user to not only model components directly but also based on modeling history and parametrics. *hyper*CAD®-S is a very flexible solution in this regard, as it permits both methods to be used at the same time. For example, you can design a fixture plate parametrically and also place a static vice model inside the same dataset. Similarly, you can use a static solid model in parametric mode and add parametric features to it, or you can convert a parametric model into a static solid. Parametric geometry data used in *hyper*MILL® is associatively linked, and when there are any changes, it is updated automatically.

Parametric Modeling

Parametric design begins with a variable sketch, which you put together using various dependencies and parameters. On the basis of this V-Sketch, you can then create an extrusion or rotation feature, for example. You can change the shape by modifying the individual parameters. In doing so, you are creating the model gradually. *hyper*CAD®-S calculates all changes are instantly visible. The model does not need to be recalculated.

## Direct and Parametric Modeling within the same Environment

You can use the same dataset for direct modeling and parametric designing. You can include your static solid models in the parametric design and add parameterized features to them. Similarly, you can convert a parametric model into a static solid, for example, should you wish to perform further direct modeling. Using these two design methods side by side is therefore very straightforward.
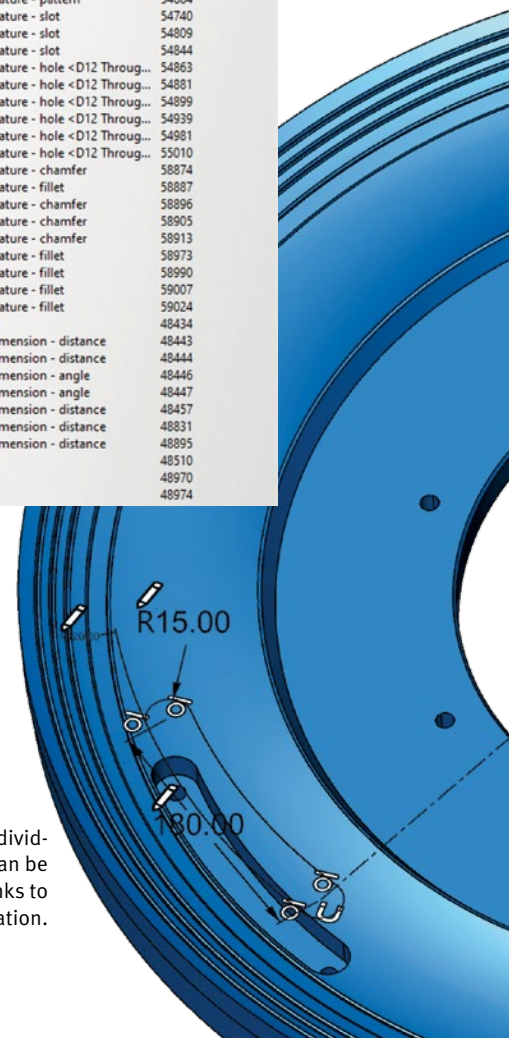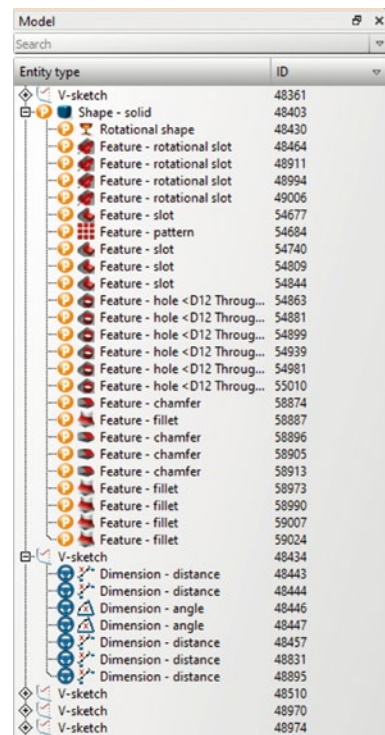
Tire molds with individual pitch angles can be adapted quickly thanks to parameterization.

Typical Applications

■ **Turning holders** can be designed parametrically. Using the same base model, you can quickly create variants in different sizes.
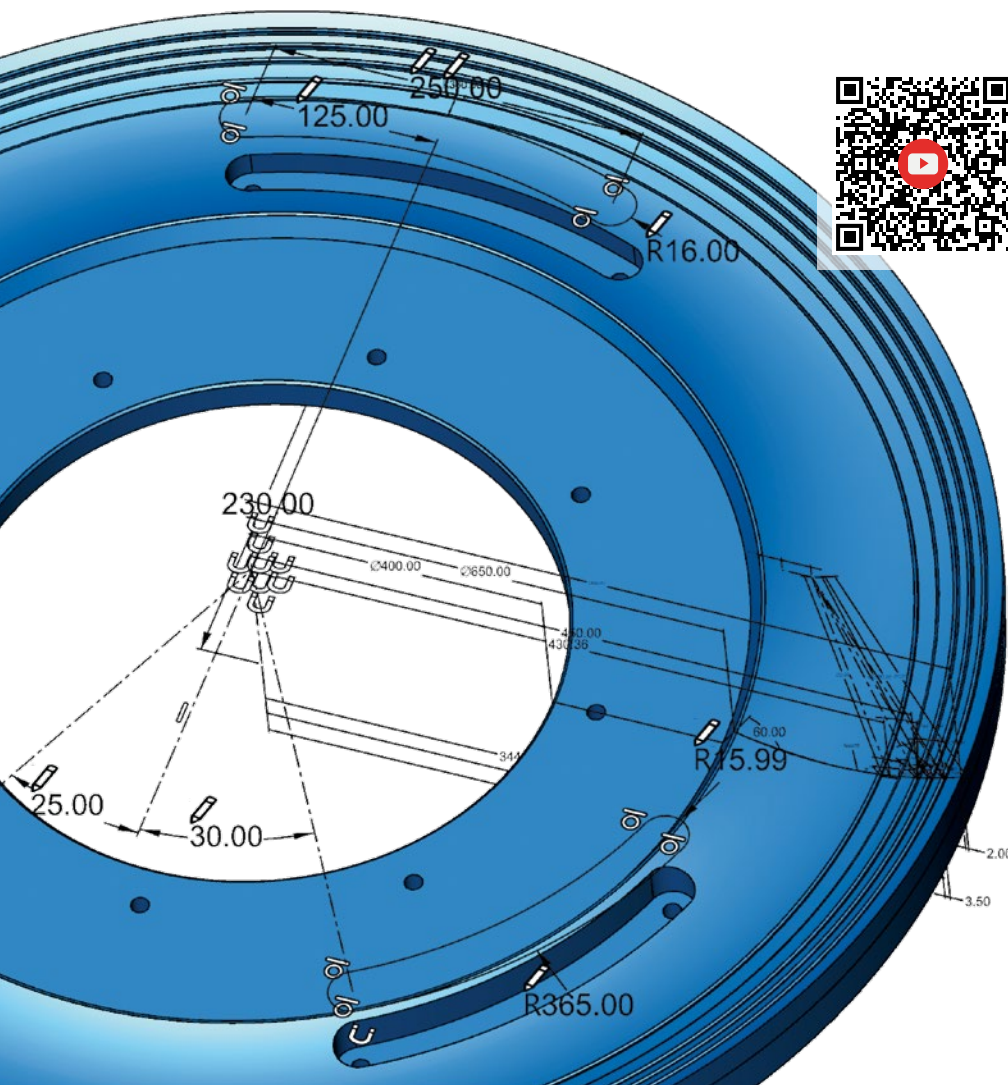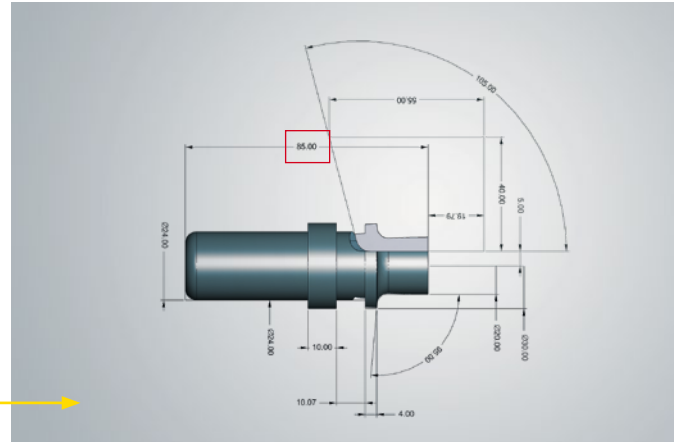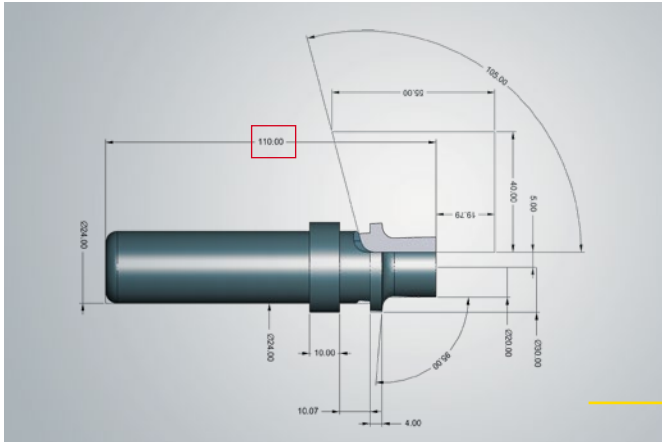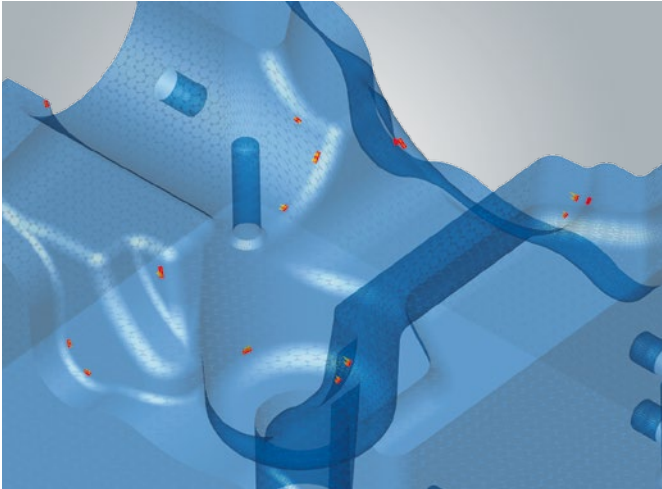
Check Quality

With the 'Check Quality' function, meshes can also be checked quickly and reliably now. The user is shown any open, multi-shell, and multi-part areas within the meshes.

Benefit: Quick analysis of meshes.

Highlight

New Interfaces

A number of new interfaces are now available. This has significantly improved CAD data importing. When you import CATIA, Creo, JT, NX, SOLIDWORKS, and STEP files, the PMI data is also imported and displayed as a vector graphic. In addition, there are new interfaces for CATIA V6 3DXML and Rhino 3dm.

Benefit: Faster importing of external CAD data.
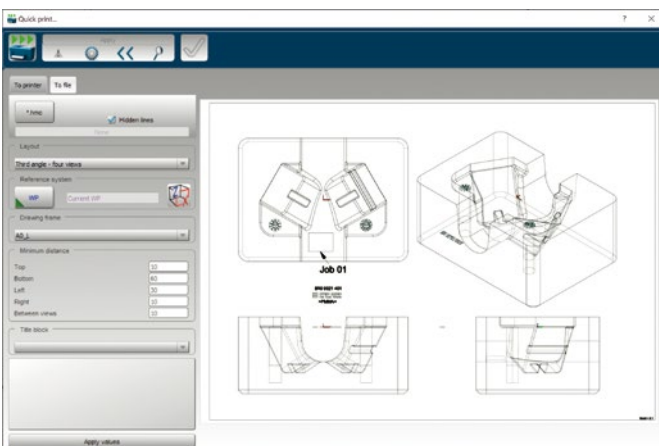
Quick Print to File

With the 'Quick Print to File' printing function, you can save your component views as 2D drawings directly within an HMC file. You can easily create the required print view and configure the scaling, view, and edge settings as needed.
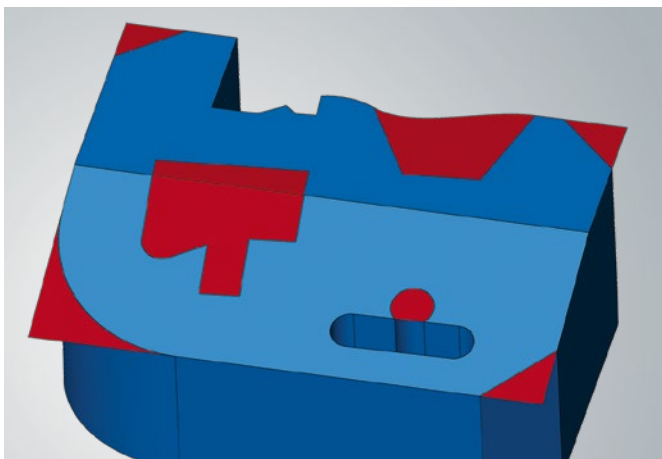
Benefit: Fast creation of 2D drawings and contours for downstream processes.
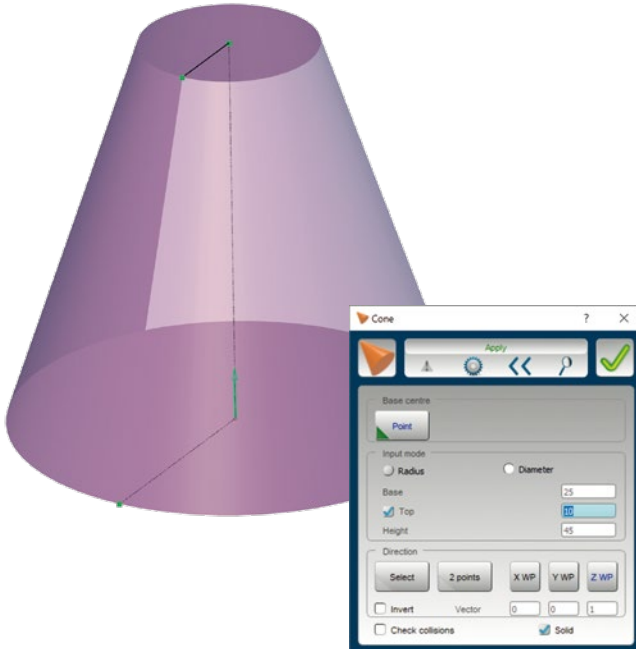
Create Cone

You can quickly create cone shapes using a simple definition. Any areas where other faces are touched are indicated visually, showing you exactly where the faces overlap.

Benefit: User-friendly.

Untrim Face

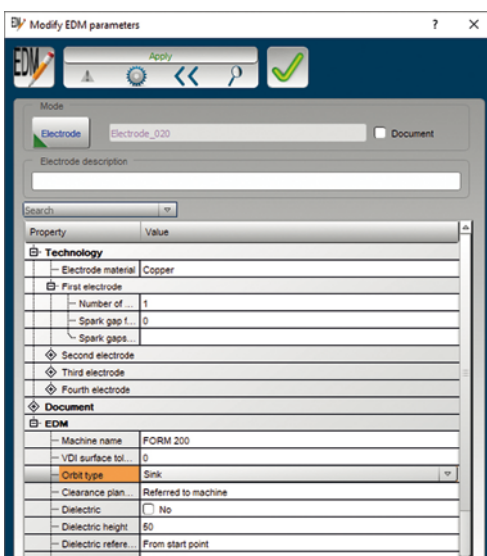You can now untrim faces locally. This means that instead of the entire surface boundary being affected, only the specified area is untrimmed. A number of options are available for specifying such areas.

Benefit: Simplified face modification.

Modify EDM Parameters

Various parameters for EDM machining can now be modified later on using *hyper*CAD®-S Electrode.

Benefit: Simplified control of EDM technologies.

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