hyperMILL®

2017.2

What’s new?

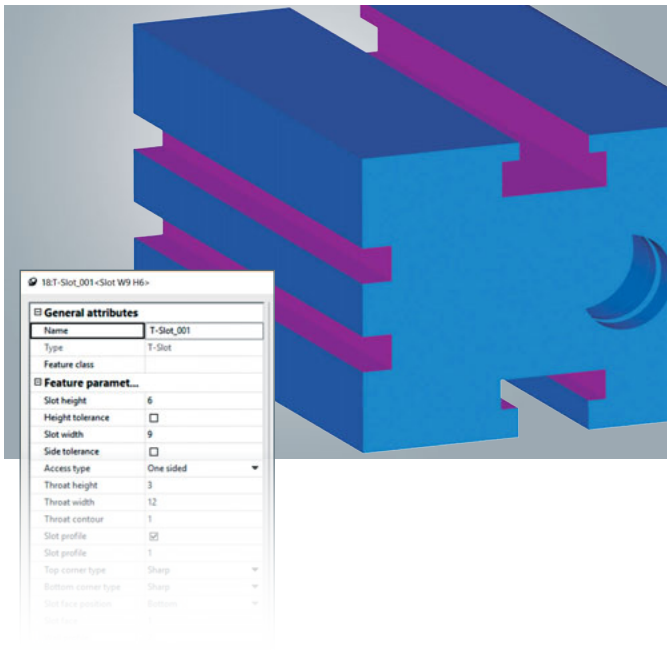
OPEN MIND
THE CAM FORCE

What's new in 2017.2?

Faster, easier and more versatile: *hyper*MILL® 2017.2! One absolute highlight is the new electrode module that can be used to reliably and efficiently manufacture electrodes. There is also a new feature type to quickly detect T-slots in T-slot milling. Meanwhile, an expansion to the 3D-optimised roughing ensures a significant increase in efficiency. And finally, during 5axis swarf cutting with one curve, it is now easier for *hyper*MILL® for SOLIDWORKS users to create programs for swarf cutting operations.

Contents

System requirements: Windows® 7 (64-bit), Windows® 8.1 Pro and Windows® 10, DVD-capable drive
CAD integrations: *hyper*CAD®, *hyper*CAD®-S, Autodesk® Inventor®, SOLIDWORKS, ThinkDesign
Software languages: de, en, es, fr, it, nl, cs, pl, ru, sl, pt-br, ja, ko, zh-cn, zh-tw



Highlight

T-slot feature and feature recognition

The new feature type allows T-slots to be quickly and easily recognised in the component. Two types are available for feature recognition: 'T-slots' and 'Pockets with bottom and T-slots'. This feature information is incorporated into the 'T-slot milling on 3D model' strategy so that slots can be manufactured in a highly efficient way with just a few clicks.

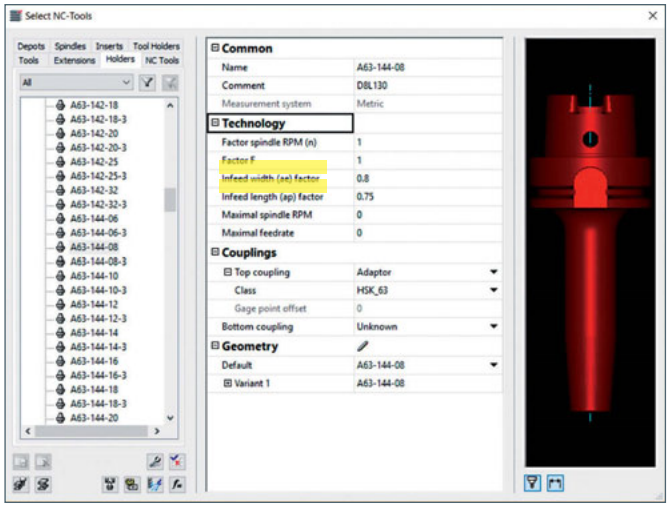
Benefit: Simple and fast T-slot recognition and programming.

Feature and macro technologies

New functions in the Macro database simplify the programming of multi-axis machining.

- Frame limits and repeated use of macros in several job lists allow multi-axis machining to be controlled very precisely. If frame limits are specified in a job list, the macro takes these into account.
- The direction can be changed when the macro is transferred while machining individual macros.

Benefit: Simplified programming.



Tool database

It is now possible to define factors for axial (a_p) and side (a_e) infeeds for holders, NC tools and extensions in the tool database. This allows longer tools to be automatically adjusted to the infeed in *hyper*MILL®.

Benefit: Improved control of the feedrate value for long NC tools.

*hyper*MILL® SHOP Viewer

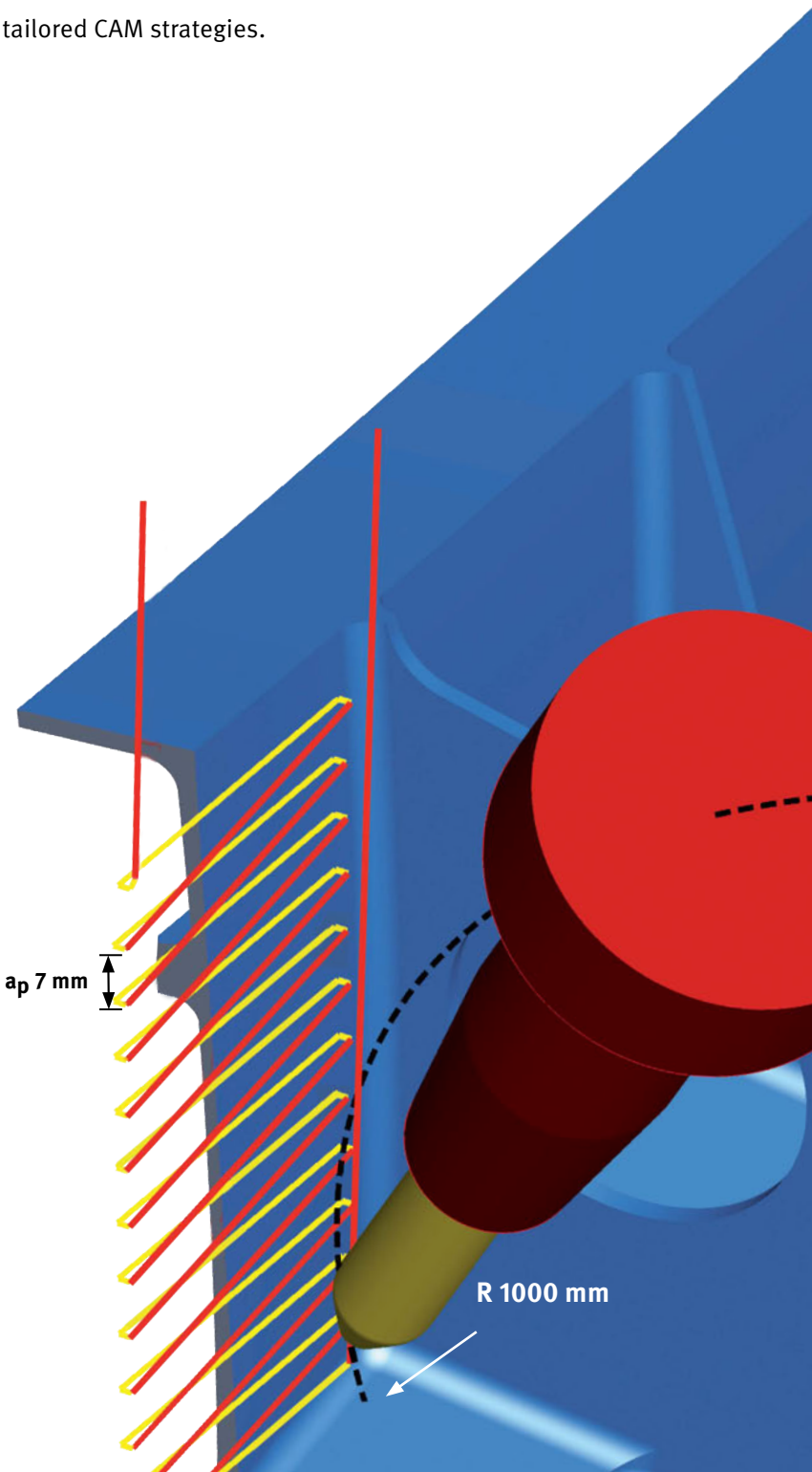
The new 'Display statistics' command can be used to quickly access all important information on machining, such as machining time or number of tool changes.

Benefit: Quick overview of machining information.

Finishing, reinvented

As one of the first CAM manufacturers, OPEN MIND has not only perfected 5axis machining, we have also focused on finishing using special milling tools and have developed a totally unique package for this type of finishing. The finishing module in *hyper*MILL® MAXX Machining offers high-performance strategies for finishing planes and any continuous faces using different types of barrel cutters. Huge time savings and excellent surface quality are achieved thanks to the special cutting geometry of the tools as well as perfectly tailored CAM strategies.

- **_hyper_MILL® MAXX Machining supports barrel cutters**
  The different cutter types are available in many 5axis cycles
  – Tangent plane machining
  – Tangent machining
  – 5axis rework machining
  – 5axis machining for impellers, blisks and turbine blades
  – 5axis swarf cutting with one curve



hyperMILL MAXX Machining

Finishing

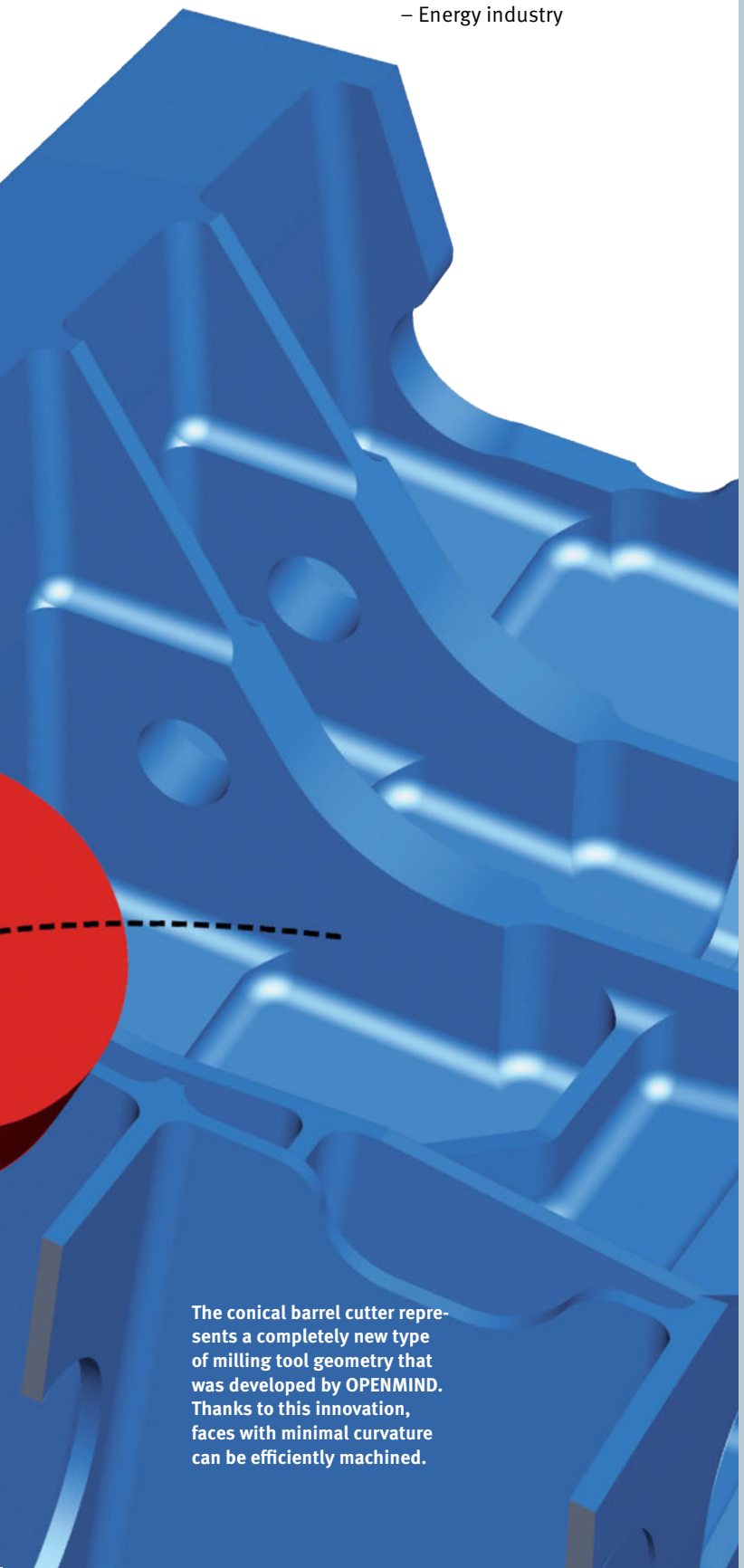
Machining with barrel cutters

Tangent plane machining

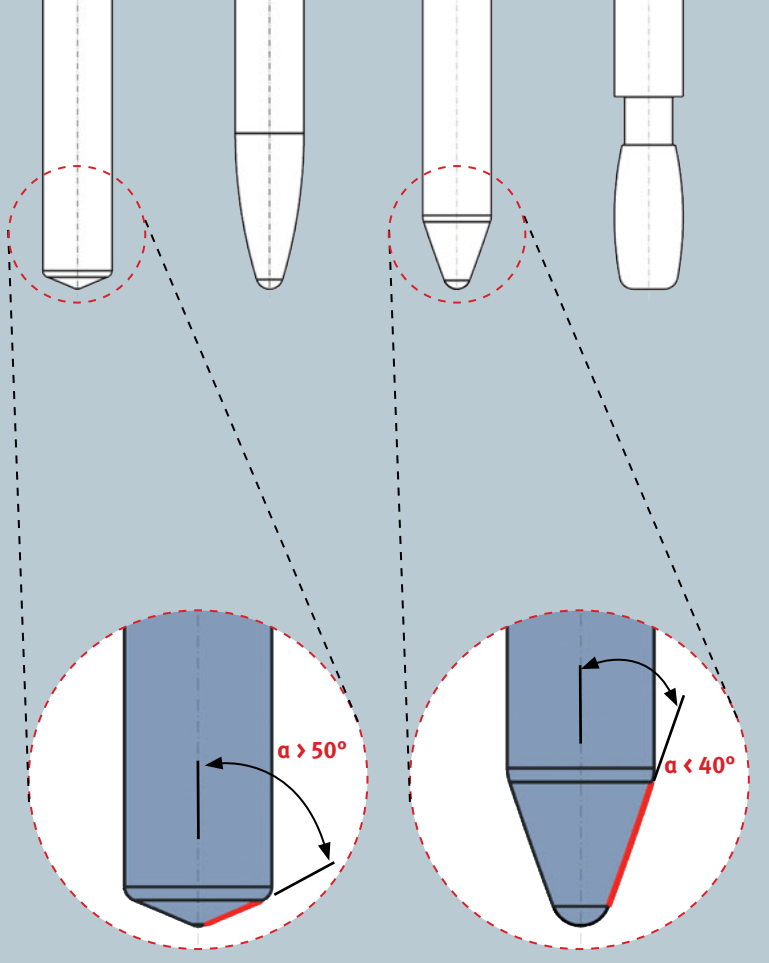
Tangent machining

■ Advantages
– Highly efficient
– Perfect surfaces
– Protects the tool
– Simple to program

■ Possible applications
– Tool and mould making
– Production machining
– Aerospace
– Automotive
– Motor sports
– Energy industry



The conical barrel cutter represents a completely new type of milling tool geometry that was developed by OPENMIND. Thanks to this innovation, faces with minimal curvature can be efficiently machined.



Barrel cutters with a conical angle greater than 50° are excellent for bottom finishing.

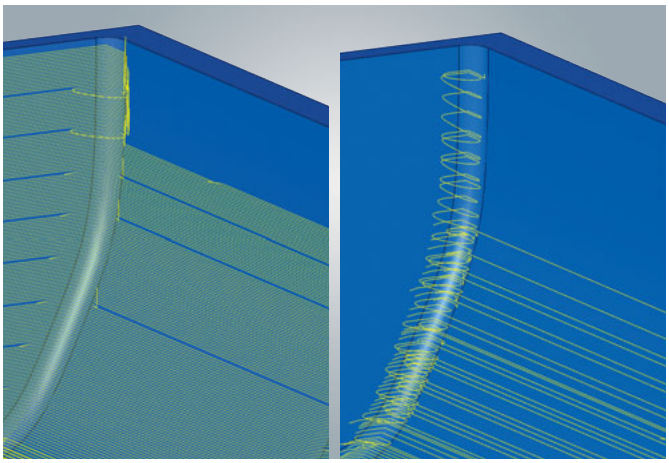
Barrel cutters with a conical angle of less than 40° are excellent for machining steep areas.

Barrel cutters
Barrel-shaped tools use a section of the circumference, allowing for very large radii. For example, the compact design of the tools allows for a cutting radius of 500 mm.

Advantages

- Barrel cutters enable a greater step-over than other cutters to achieve the same theoretical scallop height
- More efficient production thanks to shorter machining times with the same or better surface quality
- Increases tool life while simultaneously reducing the number of tools required
- Tolerance deviations due to heat distortion at the tool are reduced to a minimum
- The impact of spindle growth on the part quality is reduced.
- Simple tool definition in *hyper*MILL®
- Full mapping of barrel cutters, even during the simulation
- Barrel cutters with ball mill tips can be simultaneously used as barrel cutters and ball mills

CAM – 3D strategies



Without step optimisation | With step optimisation

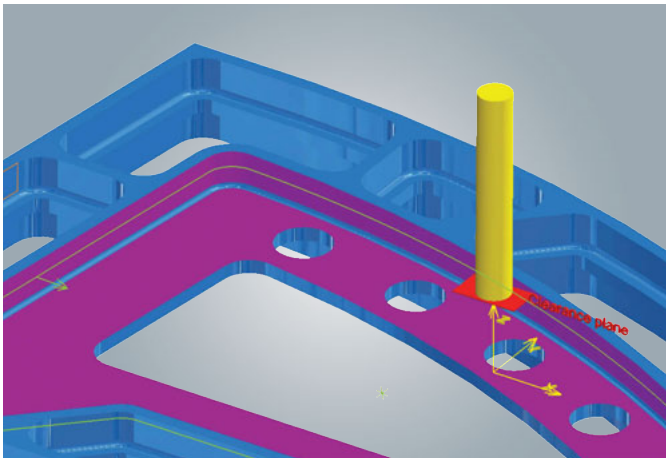
Highlight

3D-optimised roughing

The infeed strategy has been optimised for the ‘Rest material roughing’ machining mode. The optimum infeed value is calculated using the ‘Use infeed optimisation’ option in connection with the ‘Additional chip thickness and depth’ values. The user can adjust the machining to the conditions of the tool. This allows tools with long cutting lengths to be optimally exploited and precisely controlled through the ‘Maximum infeed’ parameter.

Benefit: Faster machining and more economic exploitation of the tool.

CAM – 5AXIS strategies

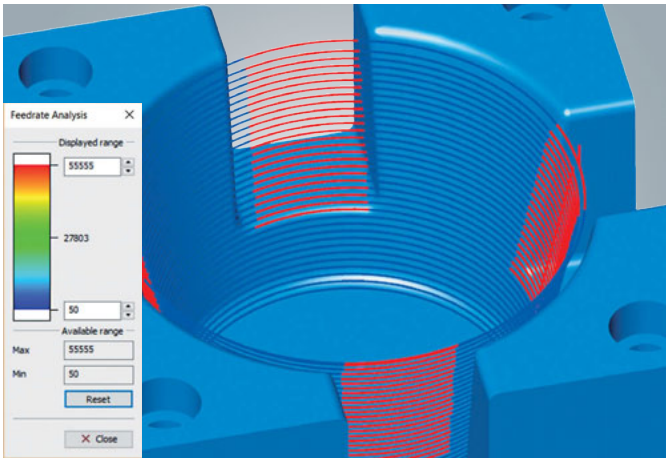


Highlight

5axis swarf cutting with one curve

Two new functions ensure greater user-friendliness for *hyper*MILL® for SOLIDWORKS. A perfect face and an equally perfect curve are created automatically for swarf cutting based on selected geometries via a face selection. Automatic filleting for interior corners ensures optimal machining.

Benefit: User-friendly, fast and easy programming.



5axis rework machining

Optimised feedrate adjustment has been implemented in areas without material contact. If the toolpaths are shorter than the defined minimal trimming distance, the feedrate is increased in these areas instead of trimming the toolpath.

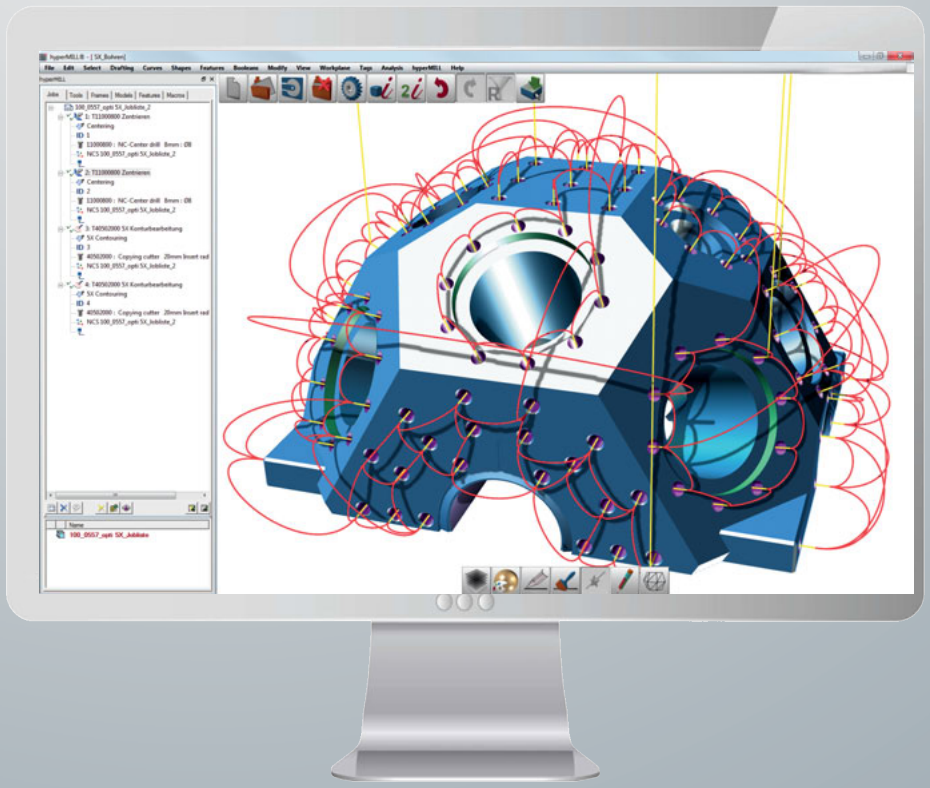
Benefit: Fewer retraction movements and consequent time savings for machining.

CAD for CAM

In a class of its own among CAD systems

Only a high-end CAM developer can do CAD for CAM. With this in mind, OPEN MIND Technologies AG – known as an innovative pioneer – developed a new CAD system from scratch that is perfectly matched to *hyper*MILL®. The system has its own 3D CAD kernel made by OPEN MIND. The result is a unique CAD system for CAM programmers that is very easy to learn and that vastly accelerates NC programming processes.

*hyper*CAD®-S fully exploits the performance offered by contemporary hardware systems to create digital manufacturing data. The advanced and extremely powerful 64-bit system is the perfect solution for mastering many of the daily challenges that arise when working with meshes, faces and solids to create precise components and tools. Large volumes of imported data can be prepared for subsequent NC programming easily, quickly, safely and completely independently from the original CAD system. *hyper*CAD®-S is pure 'CAD for CAM'.



hyperCAD®
CAD for CAM

Interfaces	Geometric Engine	Solids	Mesh	Deformation	Electrode

Highlight

Electrode – Fast electrode derivation and programming

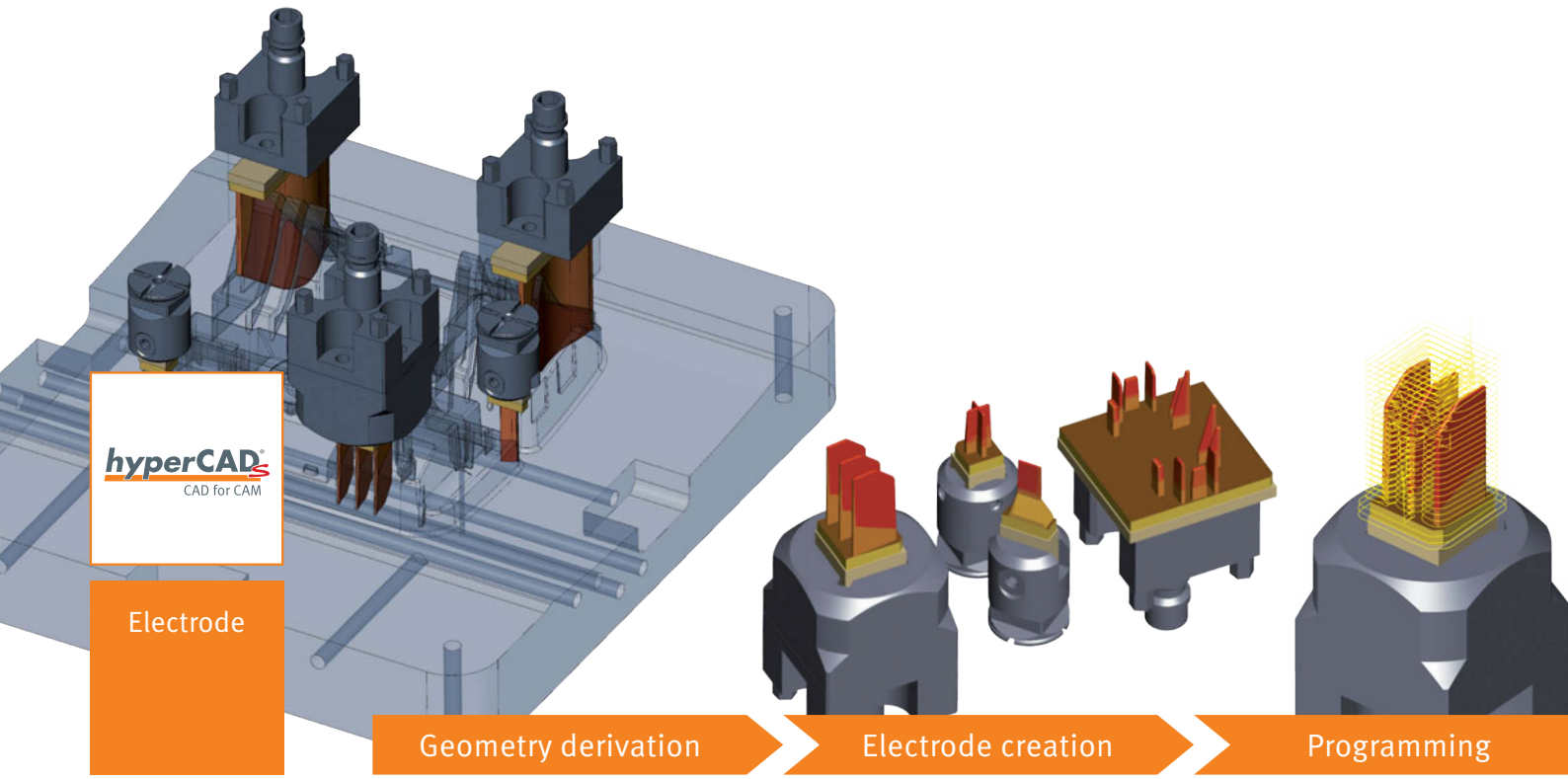
Sharp-edged and difficult-to-mill component areas are die-sunk with electrodes. The die sinking process requires suitable electrodes that need to first be constructed, then programmed and then finally milled. Without the *hyper*CAD®-S electrode module, realising this manufacturing process would take a great deal of construction and programming.

A few short steps to constructing an electrode

The electrode module largely automates the construction process in *hyper*CAD®-S. Seamless technology and component data transfers in *hyper*MILL® also ensure fast, reliable programming. The entire process is so highly supported that programmers can carry it out with just a few clicks, without requiring any construction knowledge.

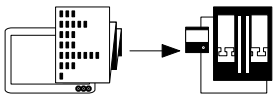
Highlights in creating electrodes

The programmer selects the faces to be eroded on the component geometry. The module creates corresponding collision-free electrodes, which means that, when necessary, it automatically ensures extension of the electrode faces and the derivation of raw material and holders. Seamless transfer into the *hyper*MILL® CAM system is based on the geometry as well as the technological information. The programmer selects the electrodes to be programmed at this point and starts the programming using further technology definitions. If there are machining macros in place, the programming is carried out automatically.



Features

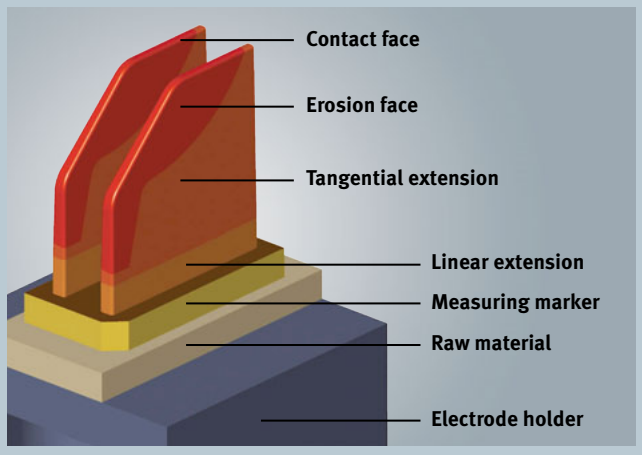
- Suitable for solid and face models
- Geometry selection through face and contour selection
- Automatic extension of electrode geometry
- Holes in the geometry can be automatically closed
- Measuring markers for the electrode
- Automatic colour and layer definition for the individual electrode areas
- Automatic raw material and holder selection with best fit option for optimal alignment
- Automatic stock calculation and collision avoidance
- Electrode reference as chamfer or radius
- Detailed reports
- Incorporation of manually created electrode geometries into the automated process
- Automatic calculation of the minimum rib distance
- Automatic calculation of the length and adjustment options for the length of useless raw material
- Fast programming in *hyper*MILL®:
  All technology data, such as the spark gap, stock size and positional reference, are automatically transferred in *hyper*MILL®. The programming work can even be further automated using machining macros.



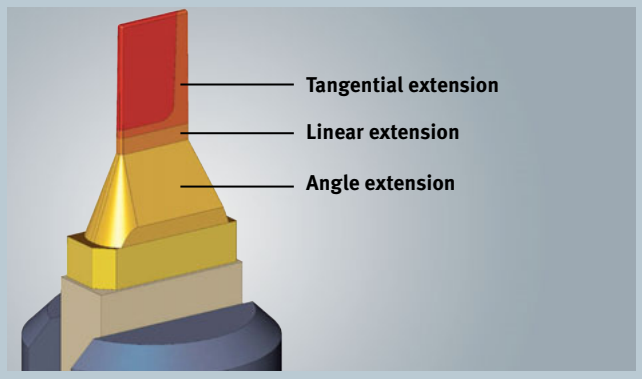
Milling program | EDM

Electrode module functions:

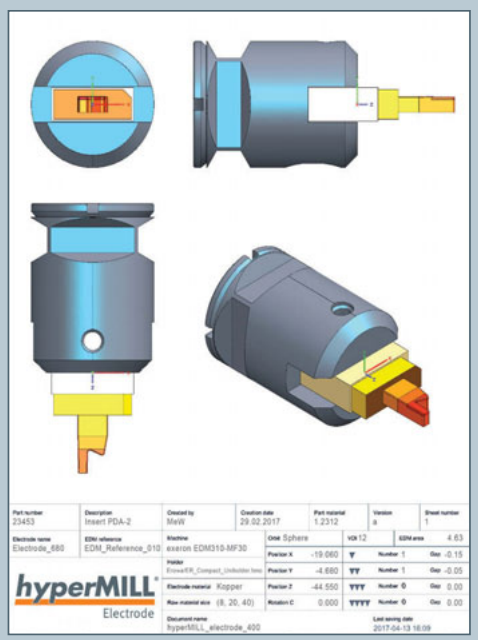
- **Colour coding**
  User-specific colour information is automatically applied to the geometry areas of the electrode.



- **Geometry extension**
  Automatic tangential or linear extension of the electrode geometry. Angle extension is also available for stabilisation.



- **Production report**
  A print view with technological information or electrode and raw material reports can be issued for each individual electrode.



Highlight

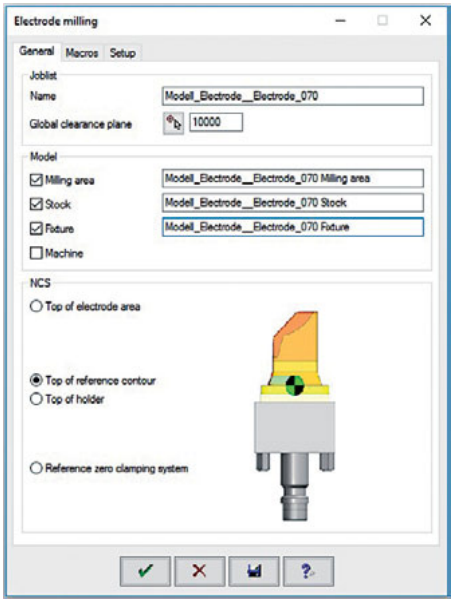
Electrode – Programming made easy

*hyper*MILL® supports the programmer with its own dialog window and feature type during electrode programming. All of the important technology data is transferred directly from the *hyper*CAD®-S electrode module into the feature information, which simplifies programming and allows errors to be avoided. This process can be partially or fully automated using machining macros.

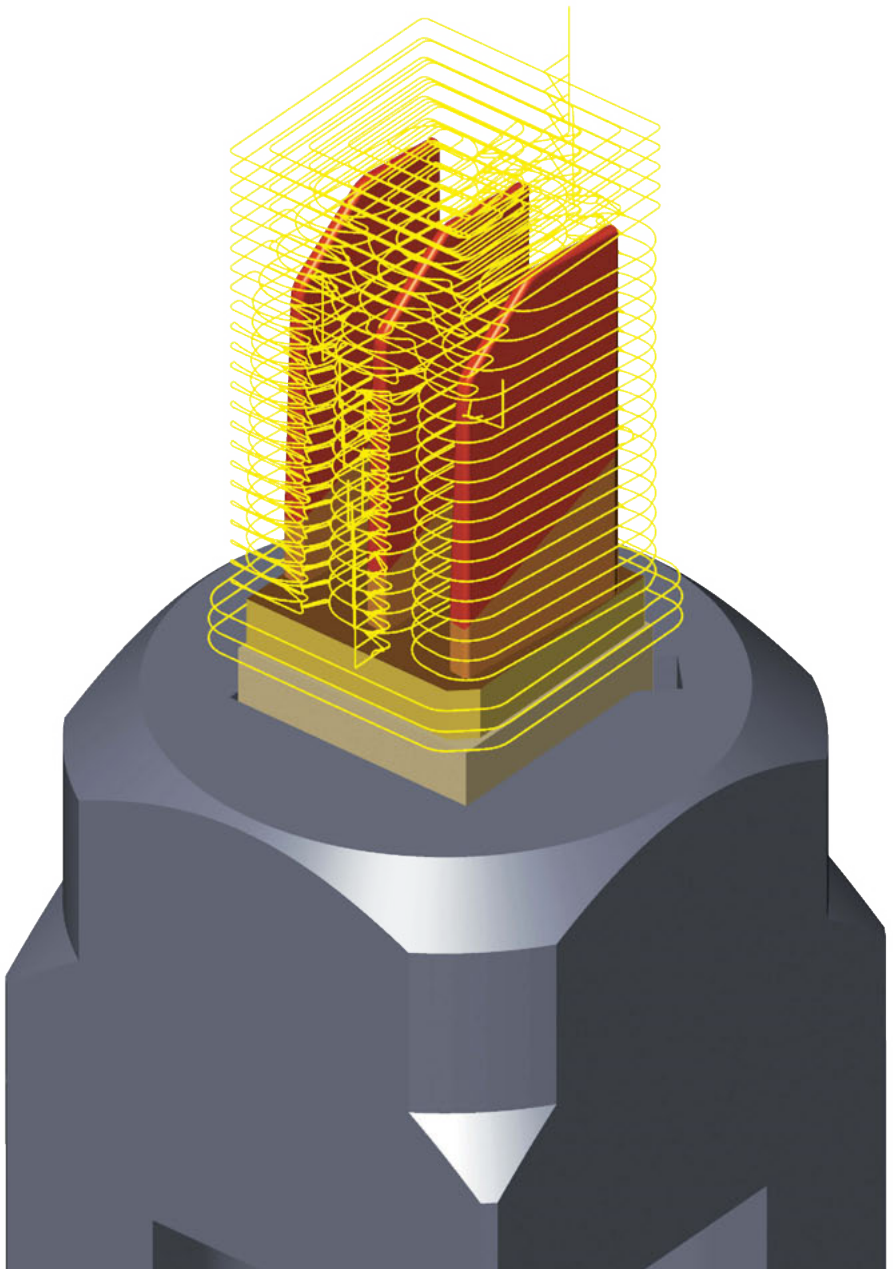
The user specifies milling with a few clicks, and *hyper*MILL® automatically creates the job list with the milling area, stock model, clamp and zero point. All parameters relevant to milling are directly assigned during manual programming as well as during automated macro programming.

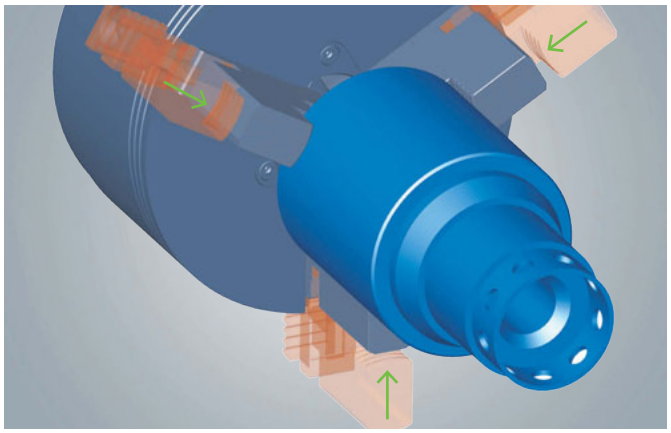
Features

- Display of the minimum rib distance for the right milling selection
- Technology data is transferred
- Parameter programming based on geometry information
- Comprehensive automation options



User Interface for electrode milling in *hyper*MILL®





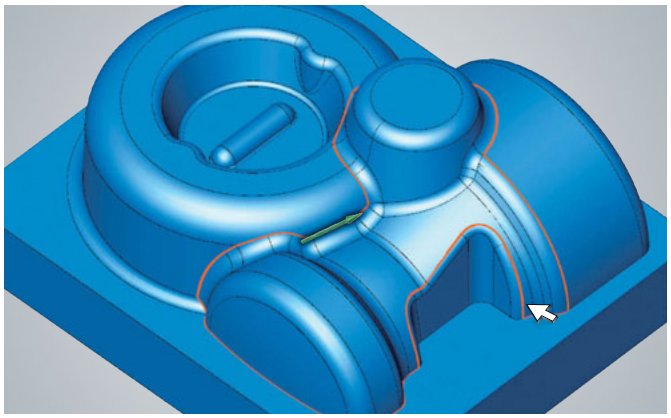
Highlight

Positioning

In *hyper*CAD®-S, components can be precisely positioned with the help of relationships. That means solids, faces and groups can be geometrically set in relation to one another.

The 'Position clamps' function allows elements such as clamping jaws to be moved linearly or radially towards a central point between each other.

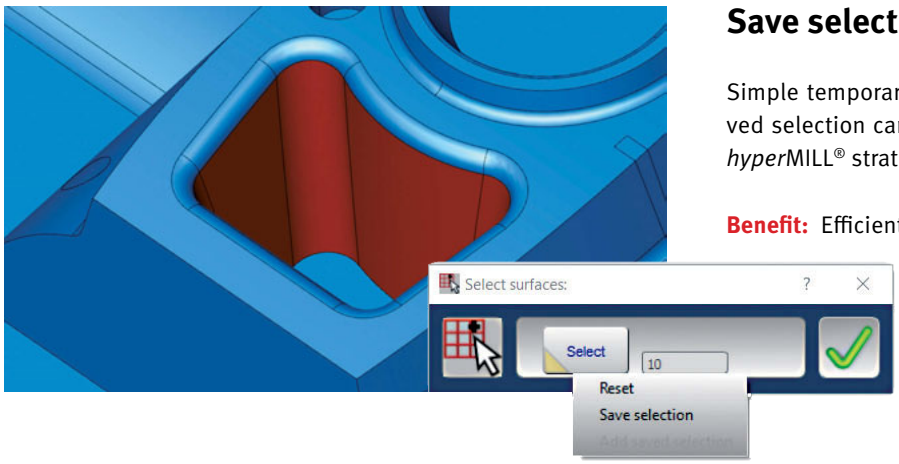
Benefit: Simple alignment of various components relative to one another and convenient clamp alignment.



Chain selection

The chain selection has been extended to include the 'User driven' function. The user can influence the direction of the chain through edge selection.

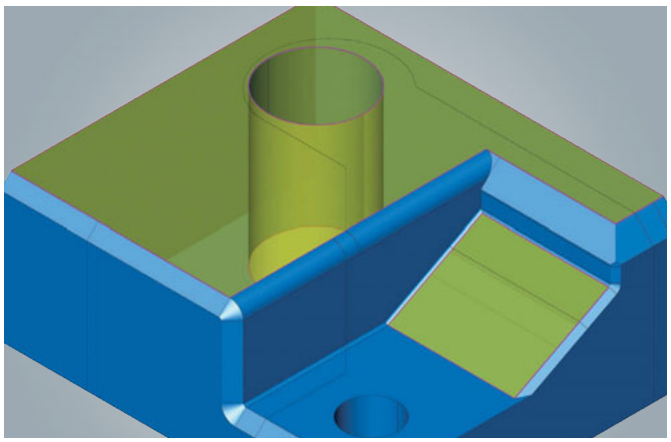
Benefit: Faster edge selection for complex contours.



Save selection

Simple temporary saving of selected faces and curves. The saved selection can be reused in all *hyper*CAD®-S commands and *hyper*MILL® strategies.

Benefit: Efficient mode of operation in selection.



Simplify faces

The 'Simplify faces' command allows planar, cylindrical and rotational faces, even within solids, to be simplified.

Benefit: Fewer processing stages.

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