

**PEPS**  
**CAD/CAM**  
**SYSTEM**

**V8**



[Camtek.de](http://Camtek.de)

PEPS

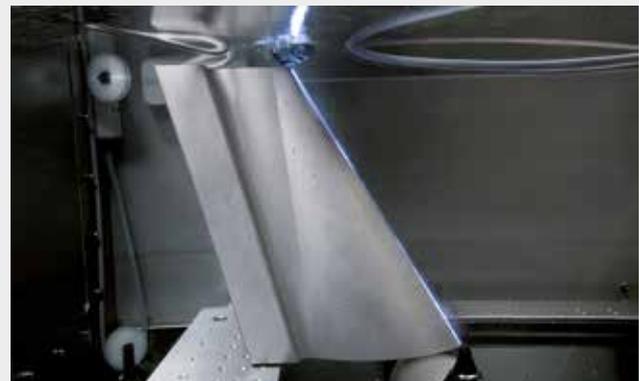
VO

A HIGH DEGREE OF FLEXIBILITY AND VARIETY FOR COMMON MACHINING TYPES.



### PEPS MILLING

- MILL-Expert ..... 13
- 2.5D Milling ..... 14
- 3D Milling ..... 16
- High Speed Machining ..... 17
- 5 Axes Simultaneous Milling ..... 18
- Machine Kinematics Simulation ..... 18



### PEPS WIRE EDM

- WIRE-Expert ..... 07
- Wire EDM Module ..... 08
- Technology Databases ..... 09
- Optimized Functionality ..... 10



### PEPS LASER & WATER JET CUTTING

- 2D Sheet Metal Working ..... 25
- 3D Sheet Metal Working ..... 26
- PentaCut & TubeCut ..... 27



### PEPS TURNING

- Complete Turn/Mill Machining ..... 21
- Optimized Functionality ..... 22

### SUPPORT & SERVICE

- Training ..... 30
- Telephone & E-Mail Support ..... 30

### PEPS ADDITIONAL MODULES

- Solid-Electrode ..... 28
- Jig & Profile Grinding ..... 28
- Gear Module ..... 28
- DNC-System ..... 29
- CAMMAN & JOBMAN ..... 29

# SIMPLY PRODUCTIVE

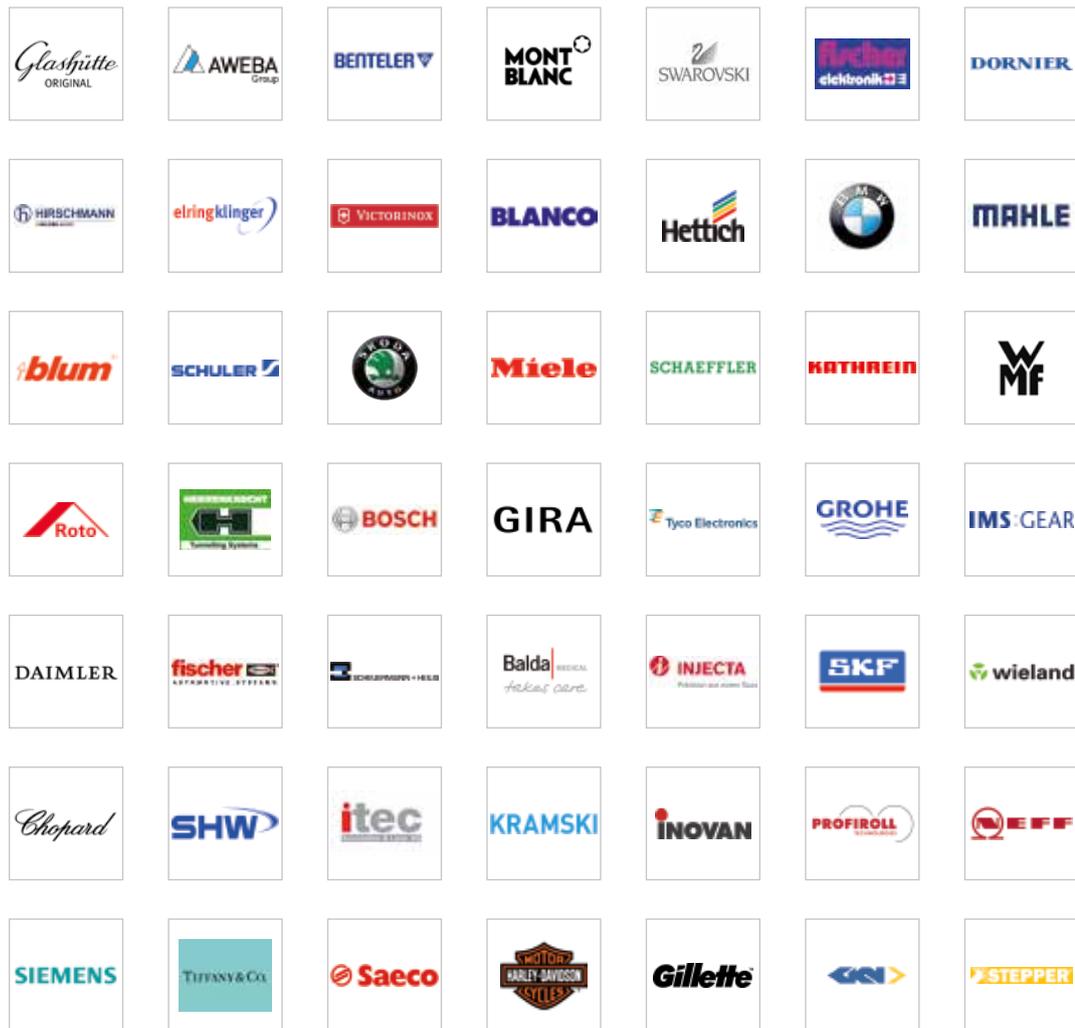


PEPS is one of the leading CAD/CAM systems. With more than 30 years of practical experience and more than 40,000 installations, PEPS is unparalleled: innovative, machine-independent, CAD-independent and flexible.

## NEW:

### PEPS VERSION 8.0:

- ✓ NEW  
USER INTERFACE
- ✓ NEW  
MACHINE KINEMATICS SIMULATION
- ✓ NEW  
HIGH SPEED MILLING STRATEGIES



The practical know-how of our leading CAD/CAM system has been built up in a variety of different industries, for example micro-technology, machine construction, tool manufacturing, metal processing, wood construction and sheet metal working. This experience helps us to recognize and resolve the problems of our customers beforehand, where possible.

## PEPS DELIVERS:

- An intuitive user interface resulting in short programming times
- Fully automatic creation of the NC program using integrated feature recognition
- Extensive machining functionality
- Intelligent operation strategies to increase unattended machine run times
- Intelligent post-processors including cycles and subprogram output
- Extensive technology databases
- 3D simulation including collision check

### Parasolid-based SolidCut CAD module and high-quality CAD interfaces:

STEP, XMT, SAT, PTC Creo Parametric (ProE), Catia Version 4, 5 and 6, Siemens NX (Unigraphics), SolidWorks, Inventor, HiCAD, SolidEdge, Rhino, VDAFS, STL, DXF, DWG, IGES, HP-MI, Gerber, Mecanic and Daveg.

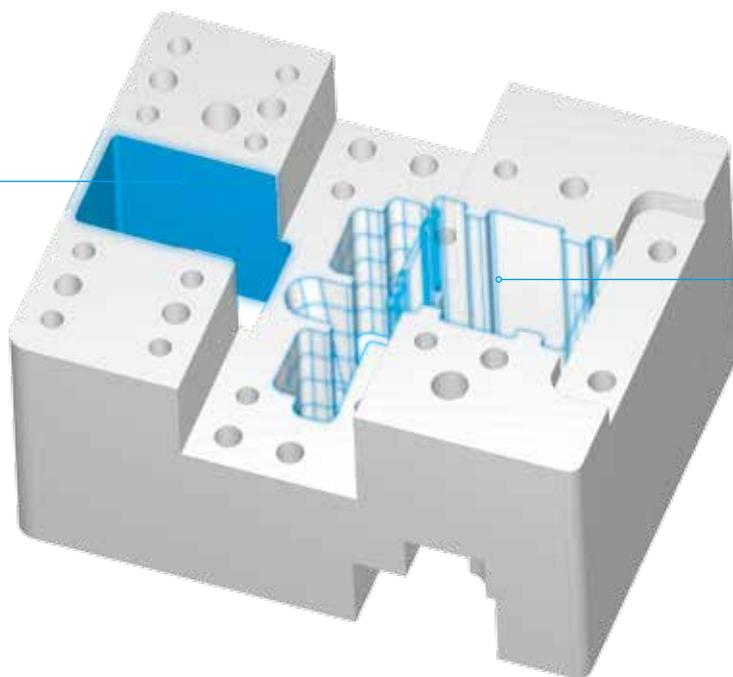
A close-up photograph of a wire EDM (Electrical Discharge Machining) process. A thin, blue-tinted wire is shown cutting through a metal workpiece. The wire is positioned vertically, and a bright blue spark is visible at the point of contact with the workpiece. The workpiece is a large, cylindrical metal component with a textured surface. The background is dark, and the overall scene is illuminated by a bright blue light. The text "PEPS VERSION 8.0" and "WIRE EDM" is overlaid on the bottom left of the image.

PEPS VERSION 8.0  
**WIRE EDM**

PROGRAM HIGHLY COMPLEX PARTS  
IN JUST A FEW SECONDS!

# WIRE- EXPERT

With the Wire-Expert module, everything points towards automation. Automatic feature recognition and automatic creation of machining features – in just a few seconds!



## AUTOMATIC FEATURE RECOGNITION OF WIREABLE GEOMETRIES

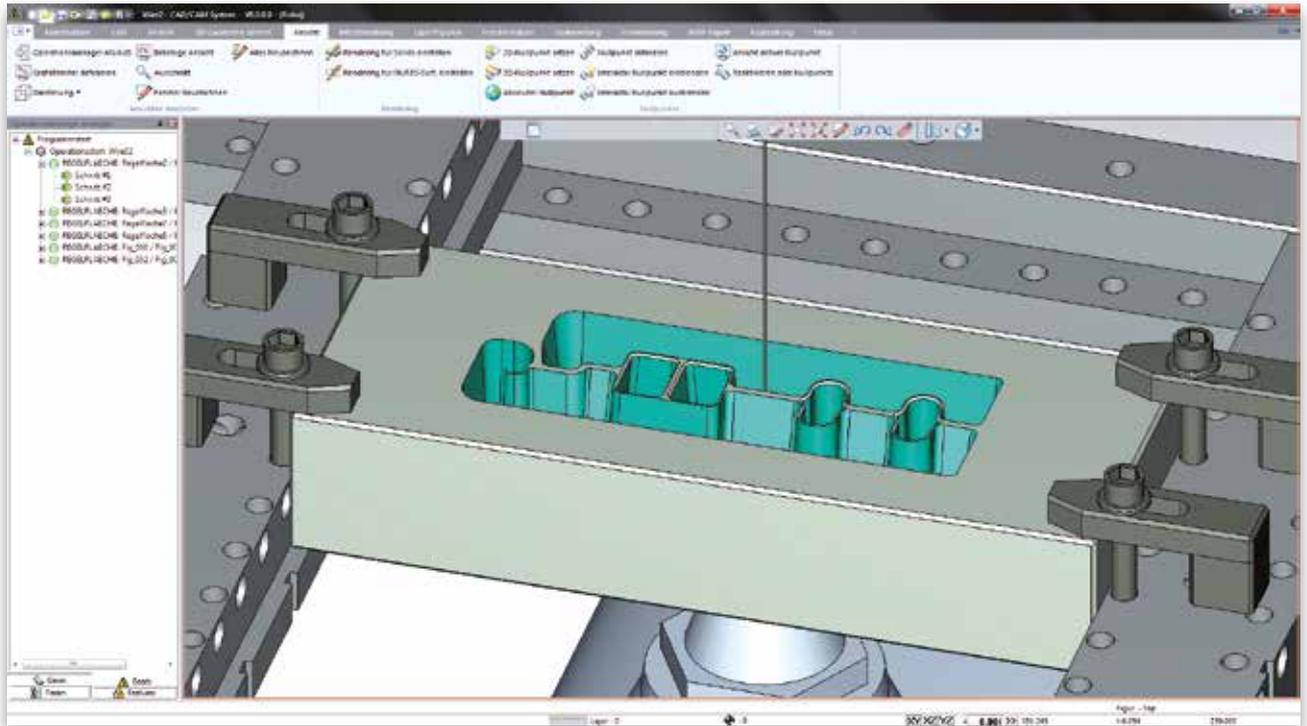
Wire-Expert searches the imported 3D part for wireable geometries. Accordingly, it is possible to either examine the complete part or to manually select individual geometries, surfaces or edges.

## AUTOMATIC CREATION OF THE MACHINING FEATURES

A proposed machining solution will be created for the recognized features. The user has the possibility to allocate existing cutting schemes beforehand or to automatically assign existing cutting schemes using the color recognition. Automatic machining features can be modified, expanded and optimized at a later time without any restrictions.

PEPS

# WIRE EDM MODULE



The PEPS Wire EDM module has been developed in co-operation with leading CNC-machine tool companies and is continuously improved with new machine functionality. The advanced capabilities of the product make PEPS the market leader in this field, and it is recommended by many machine manufacturers.

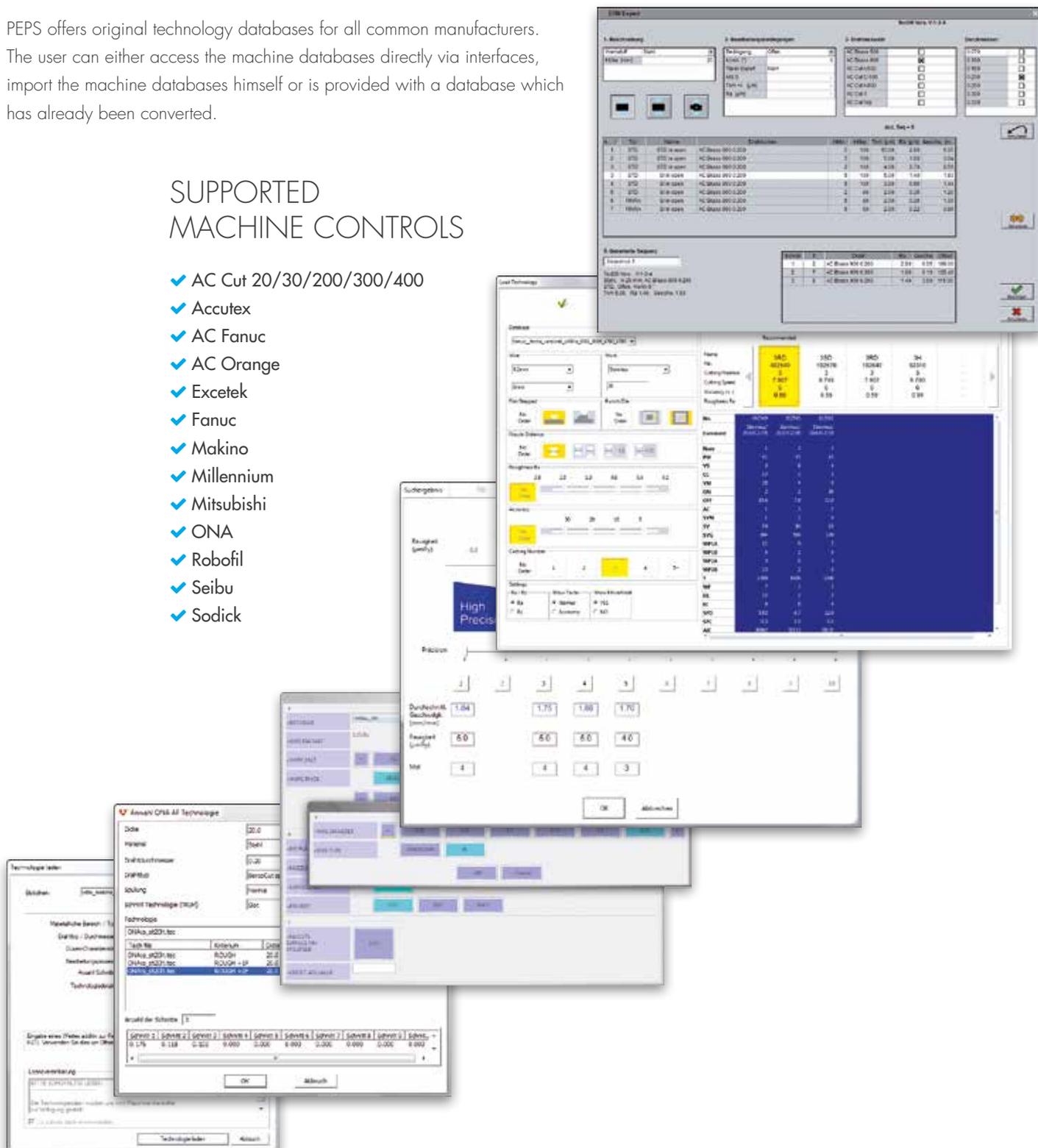
- Projection Wizard for the automatic creation of Z-constant geometries
- Simulation including offsetting, demoldability and collision checking
- Automatic threading, cutting and positioning of the wire
- Automatic calculation of the start position, including start hole output
- Constant and variable taper
- Ruled surface machining
- Undercut checking
- Inclined machining
- Tapered and cylindrical pocketing
- Automatic removal of slugs
- Triangular and multiple tagging
- Section offsetting
- Variable Reference Plane Height
- Technology databases for all common machine types
- Lead-in and Lead-out technology
- Operation strategies can be saved for rapid reuse
- Automatic creation of a graphical setup sheets

# ORIGINAL MANUFACTURER TECHNOLOGY DATABASES

PEPS offers original technology databases for all common manufacturers. The user can either access the machine databases directly via interfaces, import the machine databases himself or is provided with a database which has already been converted.

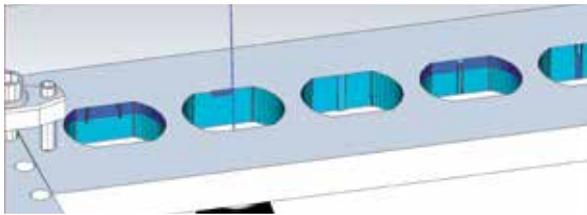
## SUPPORTED MACHINE CONTROLS

- ✓ AC Cut 20/30/200/300/400
- ✓ Accutex
- ✓ AC Fanuc
- ✓ AC Orange
- ✓ Excetec
- ✓ Fanuc
- ✓ Makino
- ✓ Millennium
- ✓ Mitsubishi
- ✓ ONA
- ✓ Robofit
- ✓ Seibu
- ✓ Sodick



## HIGHLIGHTS

# OPTIMIZATION IN ALL FIELDS OF APPLICATION



## SLUG RETENTION

The Slug Retention Module automatically creates markings in cutting plates; these markings prevent the punched-out part (created during the punching process) from sticking to the punch and thus from damaging the cutting tool. This extends the service life of cutting tools significantly.



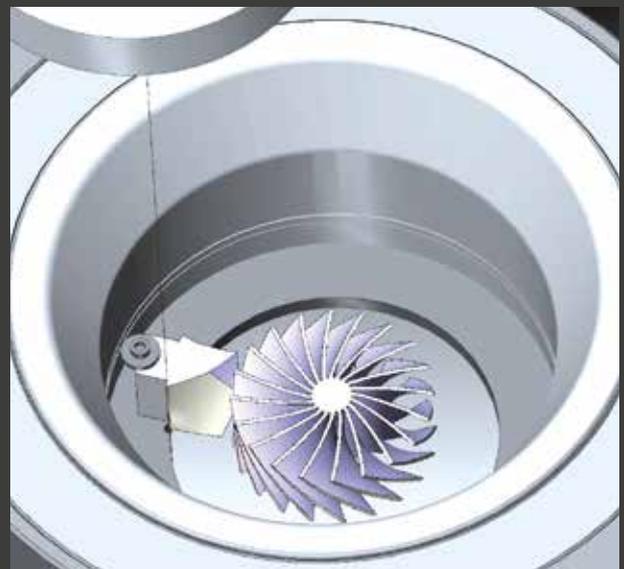
## COLLAR MACHINING

The projection under an angle enables the machining of variable reference heights. Accordingly, a circumferential cylindrical collar of constant height can be created in the work-piece. The tapered section is calculated by PEPS – it does not have to be included in the construction of the 3D model.

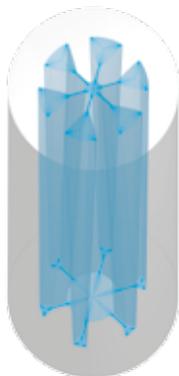
## CONTROLLING ADDITIONAL AXES OF ROTATION

PEPS offers the functionality to control additional axes of rotation to provide multi-axial machining during wire EDM. Consequently, it is possible to machine complex work-pieces without any restrictions.

- ✓ MAXIMUM TAPER ANGLE
- ✓ MAXIMUM ACCURACY
- ✓ MAXIMUM SURFACE QUALITY
- ✓ MACHINING IN ONE CLAMPING OPERATION

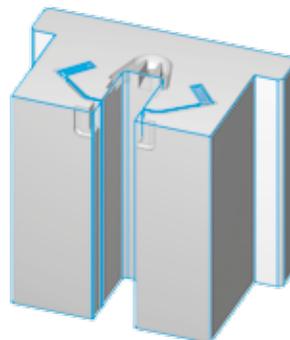


## POCKETING



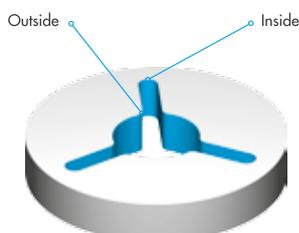
### RULED SURFACE POCKETING

Ruled Surface Pocketing enables the machining of ruled surfaces without any slugs. This reduces the programming effort significantly, and the machining operation can be executed without having to be monitored.



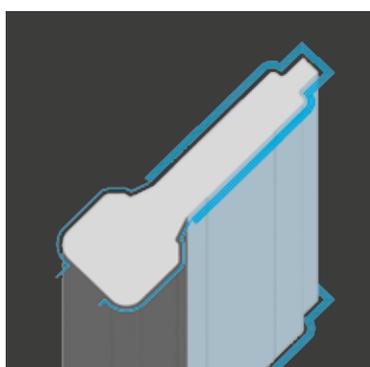
### PARTIAL POCKETING

Partial Pocketing is used to combine normal roughing and pocketing. It prevents the creation of slugs during roughing, enabling unattended and undisturbed production processes.



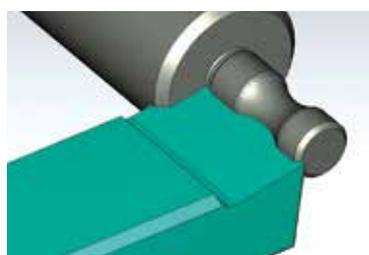
## RADIUS MANIPULATION

To improve the accuracy of fit between punches and dies, this macro modifies the radii contained in a geometry.



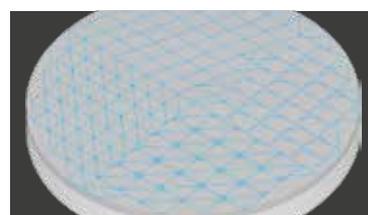
### PART FIGURE MACHINING

The Part Figure Machining is used to machine geometry sections with different qualities.



### TURNING TOOL MODULE

The Turning Tool Module calculates the geometry necessary for the wire EDM of profile turning tools, depending on the cutting angle and the frontal and lateral clearance angle on the turning tool.

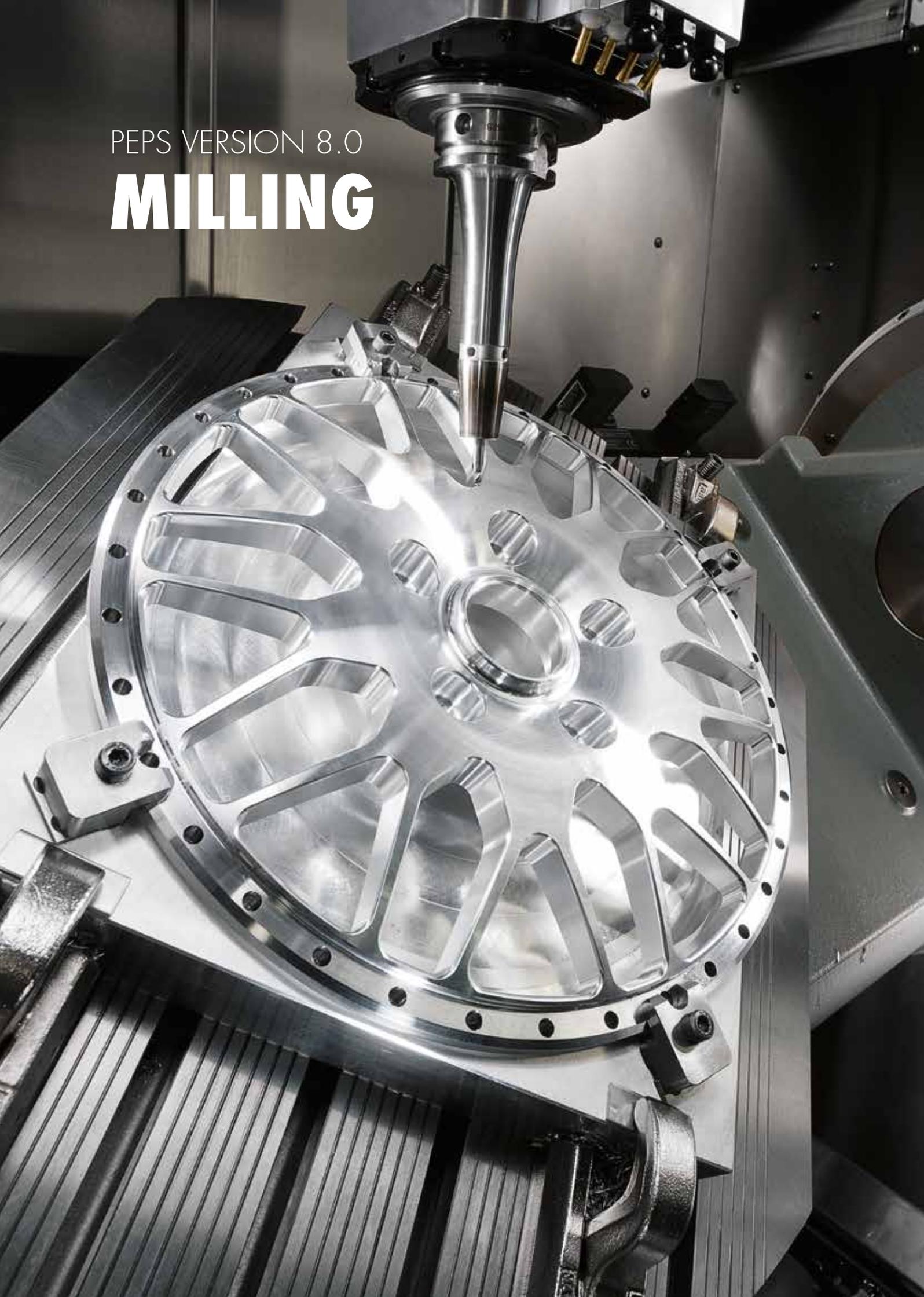


### TRUE CONTOUR MACHINING

The True Contour Machining is used for the production of industrial diamonds (PCD). An optional possibility is the automatic nesting of geometries. The machining is executed on the given geometry without radius compensation.

PEPS VERSION 8.0

# MILLING



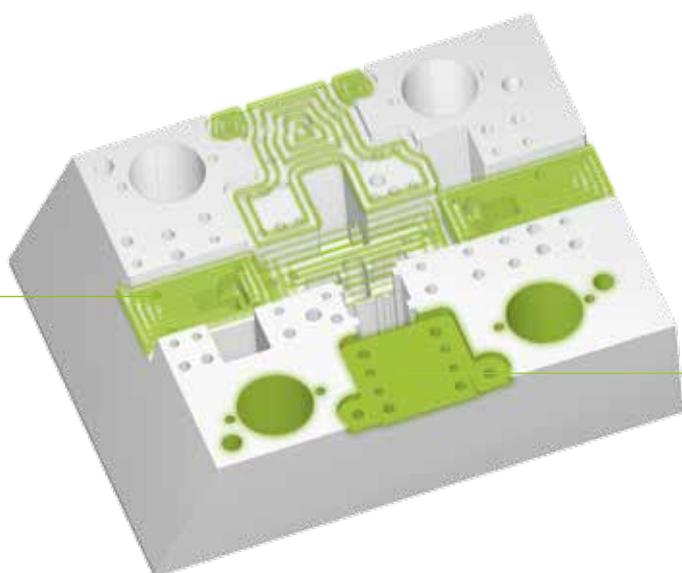
AUTOMATION  
PAR EXCELLENCE

# MILL- EXPERT

## Automatic Feature Recognition in the PEPS Milling Module.

The Feature Recognition is based on 3D CAD data which is read in via direct interfaces or neutral formats such as STEP or Parasolid.

**Your advantage:** Complex parts can be programmed very quickly and comfortably due to the combination of machining schemes. Thanks to the integrated color recognition, a clear allocation of the machining features is possible.



## AUTOMATIC CREATION OF MACHINING FEATURES

Freely definable machining features are assigned automatically to recognized geometries. The allocation of the matching machining scheme is based on the geometry and/or the color of the feature. The tool paths and the tool sequence are optimized and the machining time – including the number of tool changes - are minimized. If necessary, the automatic machining features can be modified at a later time without any restrictions.

## AUTOMATIC FEATURE RECOGNITION

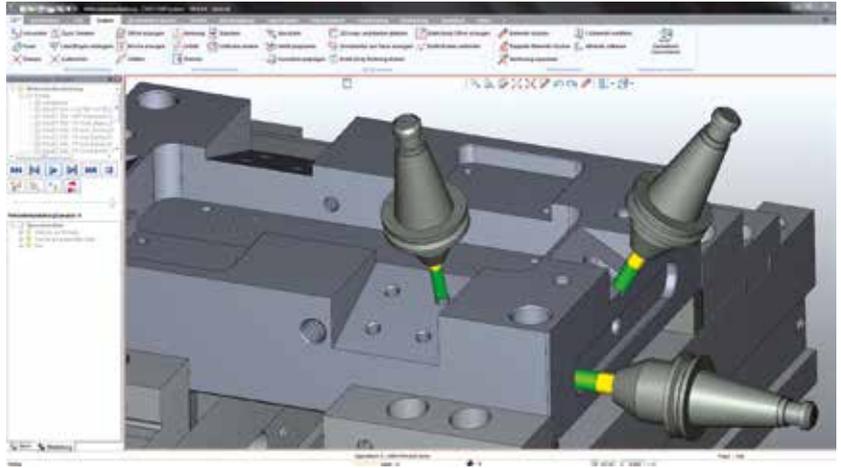
The MILL-Expert automatic Feature Recognition recognizes all kinds of hole types and profiles, as well as open and closed pockets within a 3D model.

Origins are automatically assigned to the respective machining direction.

## 2,5D MILLING

**SIMPLE & INTUITIVE****MULTI PLANE MACHINING**

The additional Multi Plane Machining module is used to program machines with 4 and 5 axes. In combination with MILL-Expert, the origins will be positioned automatically.

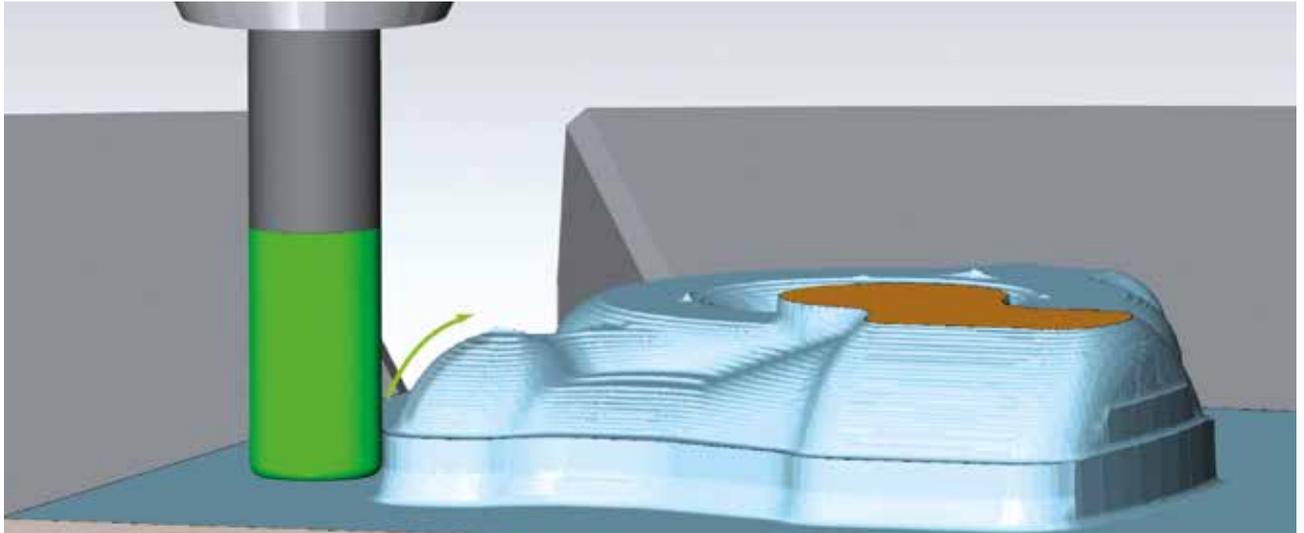
**MULTI PART MACHINING**

Multi Part Machining enables the quick programming of work-pieces on different origins with the part programmed only once, allowing for duplication thereafter. The parts are machined with work-piece or with tool change optimization.

**ROUGHING STRATEGIES**

- High speed roughing strategy
- Rest material machining
- Optimized face milling
- Plunge roughing
- Pocketing of open or closed profiles with multiple islands
- Entry strategies: helical, ramp angle or along the geometry
- Calculation of constant taper, top and bottom radius and circumferential profile geometry on any profile





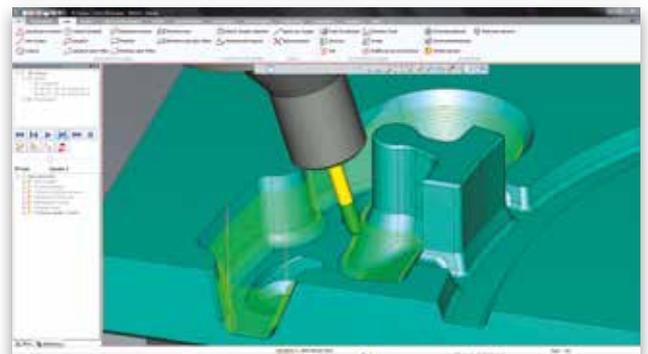
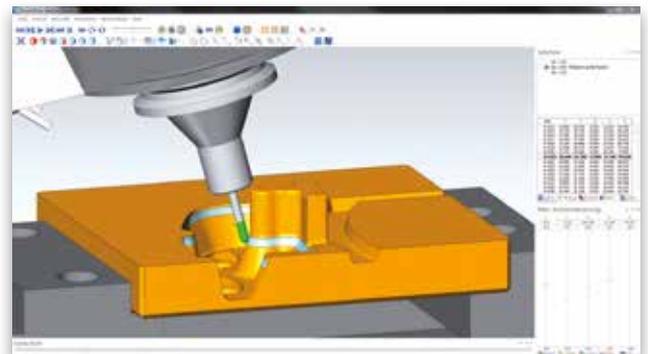
Reduction of roughing steps

## 3D MILLING

# FAST & INTELLIGENT

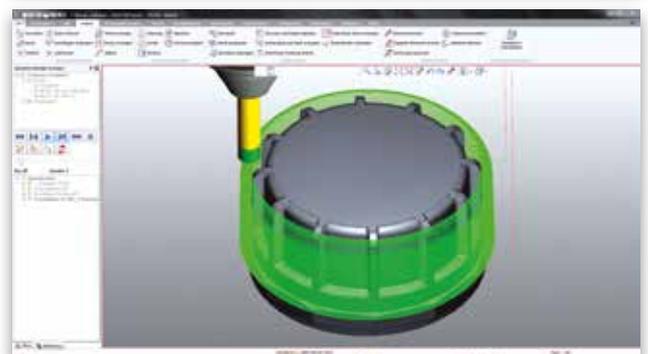
### ROUGHING

- High speed machining  
Trochoidal HSC roughing
- Zigzag
- Offset
- Contour parallel
- Rest material machining
- Entry strategies contour parallel  
Helical, directly or with ramp angle
- Work-piece (billet) management
- Automatic creation of a new work-piece (billet) at the end of a machining operation



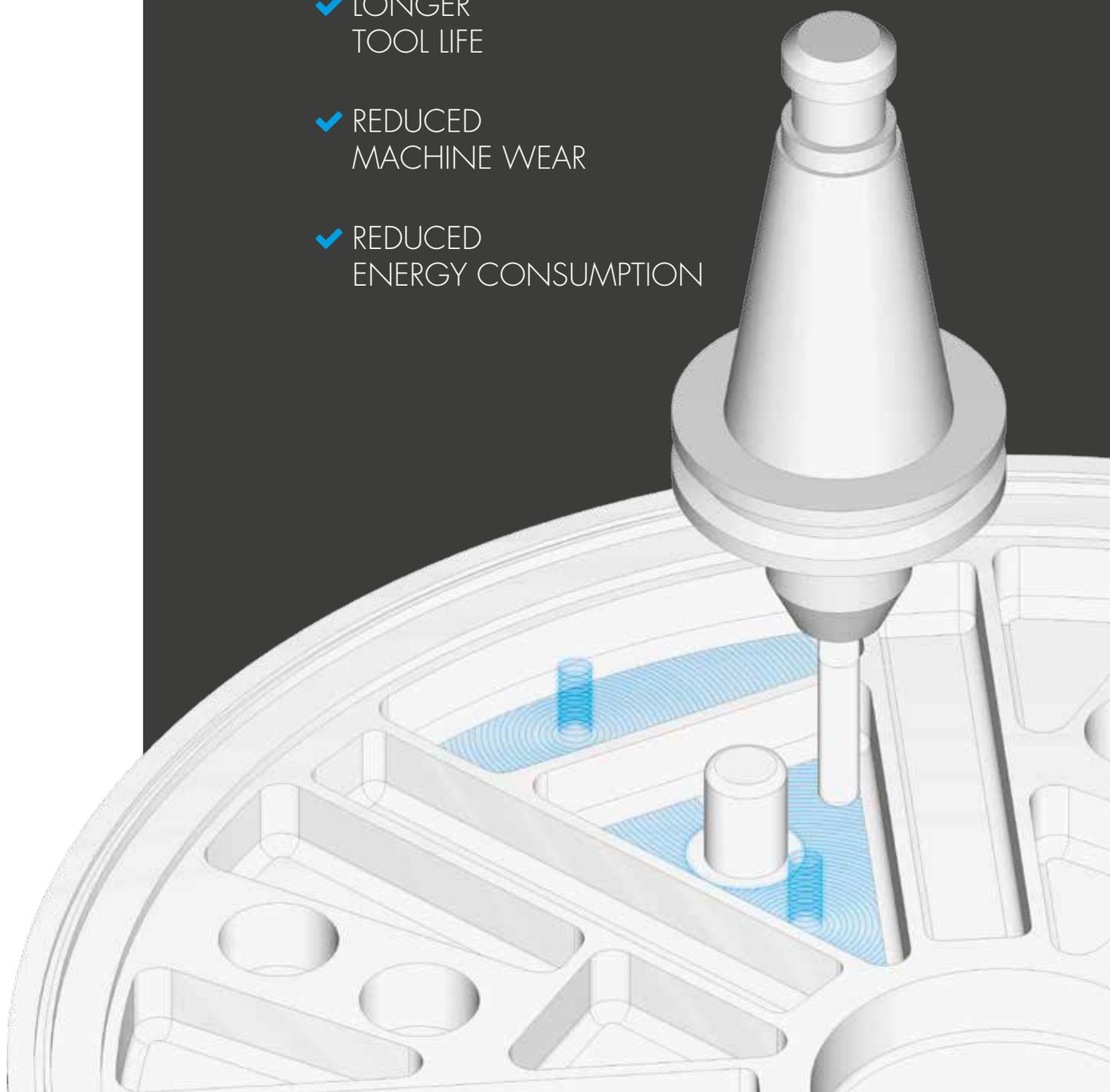
### FINISHING

- Z-planes
- Zigzag
- Offset
- Projection
- Profile
- Steep and flat areas
- Helical
- Morphing (between two limits)
- Rest material machining



INCREASED POWER DUE TO  
**HIGH-SPEED  
MACHINING**

- ✓ OVER **70%**  
TIME SAVING
- ✓ LONGER  
TOOL LIFE
- ✓ REDUCED  
MACHINE WEAR
- ✓ REDUCED  
ENERGY CONSUMPTION



## 5 AXES SIMULTANEOUS MILLING

# SIMULTANEOUS & EFFICIENT

### ROUGHING

- Multi-axis roughing
- Adaptive fully automatic roughing
- Calculation of collision-free tool paths
- Calculation of the lead in, lead out and of the connecting paths

### FINISHING

- Swarf machining with and without tilting
- Undercut machining
- Molding channel machining
- Rotational machining
- Conversion from 3 axes to 5 axes machining
- Calculation of collision-free tool paths

## MILLING

# MACHINE KINEMATICS SIMULATION

The PEPS milling machine kinematics simulation provides a high-quality representation of the machining features. Thanks to the display of the complete machine environment, machining processes can be simulated, checked for collisions and optimized during the creation of the program. The machine run times are significantly decreased, and expensive collisions are avoided. Additionally, the simulation can be saved – thereby facilitating the viewing on any computer, independent of PEPS.

- Simulation of several axes in real time
- High-quality 3D display including material removal
- No loss of quality during detail magnification
- High simulation speed
- Fast simulation without depiction of the tool
- Colored rest material display
- Colored display of damaged parts
- Axial limitation check
- Numerous tool path analysis functions

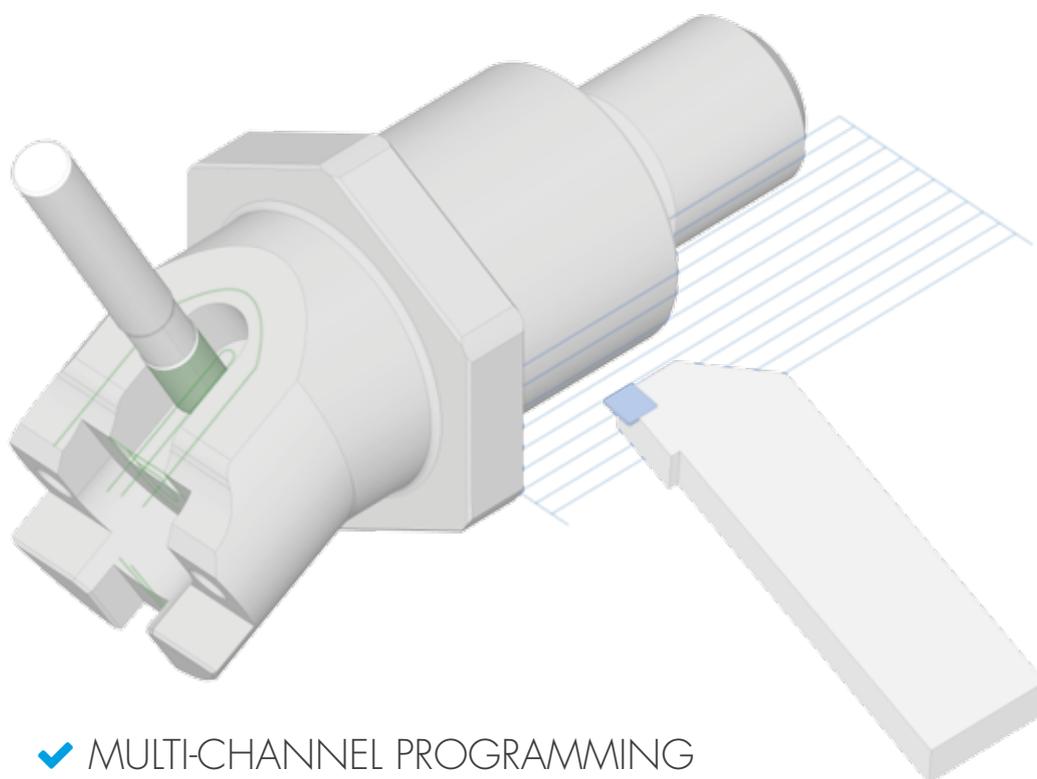


PEPS VERSION 8.0  
**TURNING**



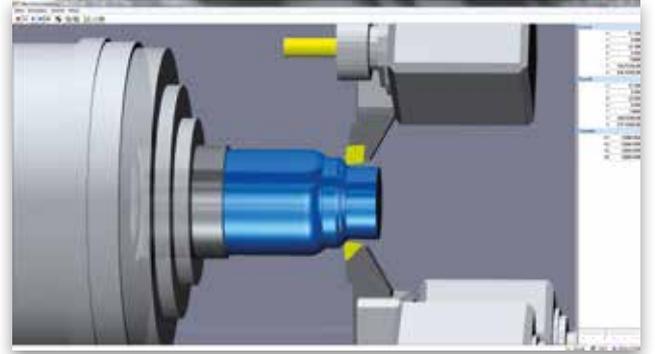
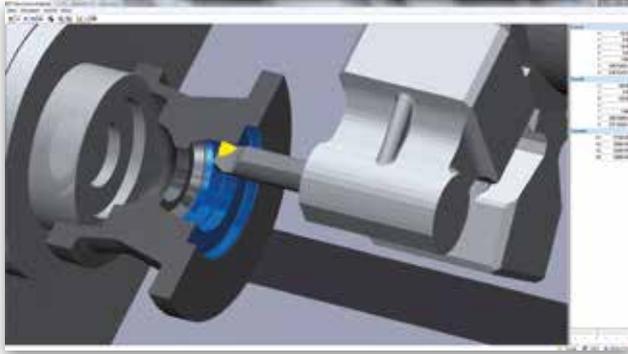
COMPLETE MACHINING

# MULTI-AXIS MILL/TURN



- ✓ MULTI-CHANNEL PROGRAMMING
- ✓ MACHINE CYCLE OUTPUT
- ✓ MACHINE KINEMATICS SIMULATION
- ✓ COLLISION CHECK
- ✓ TIME CALCULATION

The integration of the Milling module into the Turning module - plus a fully integrated machine kinematics simulation - result in the perfect solution for the programming of combination mill/turn machines. Due to the representation of the complete machine environment, machining processes are simulated and optimized in real time. To avoid input data errors, the actual state of the part can be checked at any time during the simulation.



## HIGHLIGHTS

# OPTIMAL FUNCTIONAL

### MULTI-CHANNEL PROGRAMMING & MACHINE KINEMATICS SIMULATION

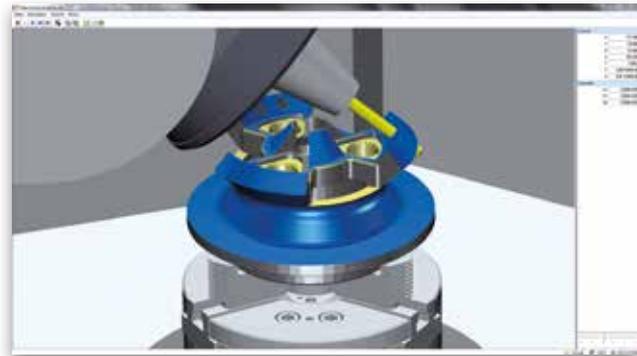
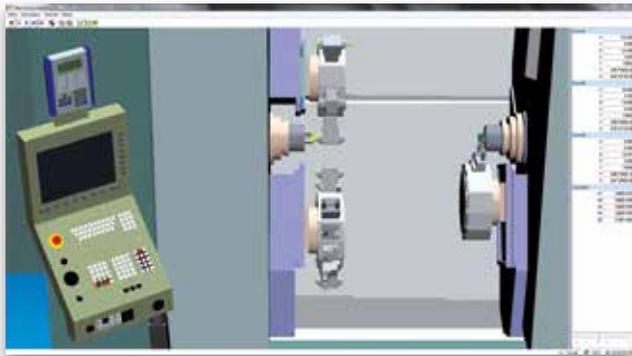
Main and sub-spindle machining, roughing with two tools at the same time, automatic synchronization and collision check by the integrated 3D machine kinematics simulation.

### OUTPUT OF MACHINE CYCLES

Machining strategies such as longitudinal turning, facing and free hand turning are complemented by the machine cycle output for roughing, drilling, thread turning and tapping, grooving and automatic sub-spindle, which shortens the NC programs significantly and simplifies subsequent optimization.

### TECHNOLOGY CHANGE IN INDIVIDUAL SECTIONS OF THE GEOMETRY

The PEPS Turning module offers the possibility to modify the technology in different sections of the geometry. This includes parameters such as feed, RPM or the insertion of any M-code and/or G-command.



# ALITY

## VARIANTS PROGRAMMING FOR FAMILIES OF PARTS

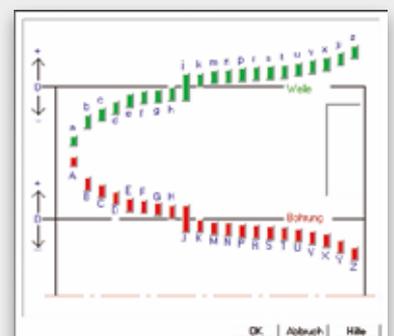
The variants programming for families of parts is used for the automatic creation of geometry and machining features.

## MEASURING THE ACTUAL STATE

The part to be manufactured can be measured in its current simulation state in the machine kinematics simulation.

## FIT DIMENSION MANUFACTURING WITHOUT GEOMETRY CHANGE

The nominal dimension-dependent center of tolerance is calculated via the intrasystem ISO tolerance system; the CAD model is not changed.



## TIME CALCULATION

The machining times are output to an Excel worksheet per tool, including main, rapid and non-productive times.



PEPS VERSION 8.0

# LASER & WATER JET CUTTING

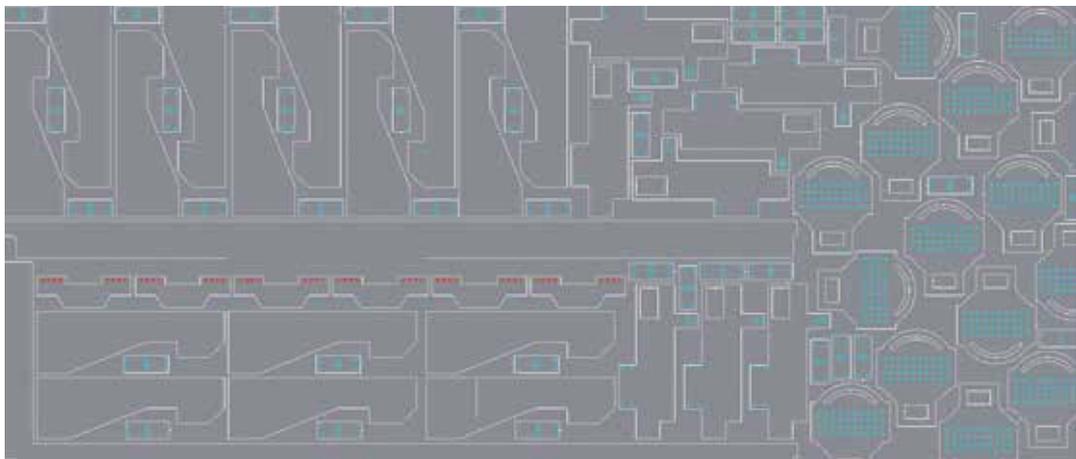
## 2D SHEET METAL WORKING

# EXCELLENCE AND EFFICIENCY – ALMOST SINGLE-HANDEDLY

### 2-AXES LASER, PLASMA AND WATER JET CUTTING AND PUNCHING

These powerful PEPS modules for 2D sheet metal working are characterized by an effective creation of the NC program and a very high level of automation. CAD files are imported and cleaned, and a fully automatic nesting module ensures optimal material utilization.

The expert machining system integrated into PEPS creates the machining completely automatically, based on predefined technology parameters. PEPS enables the creation of the NC program and machining simulation for machines from different manufacturers, including job management. Due to preset priorities, urgently needed parts are machined first, despite full automation.

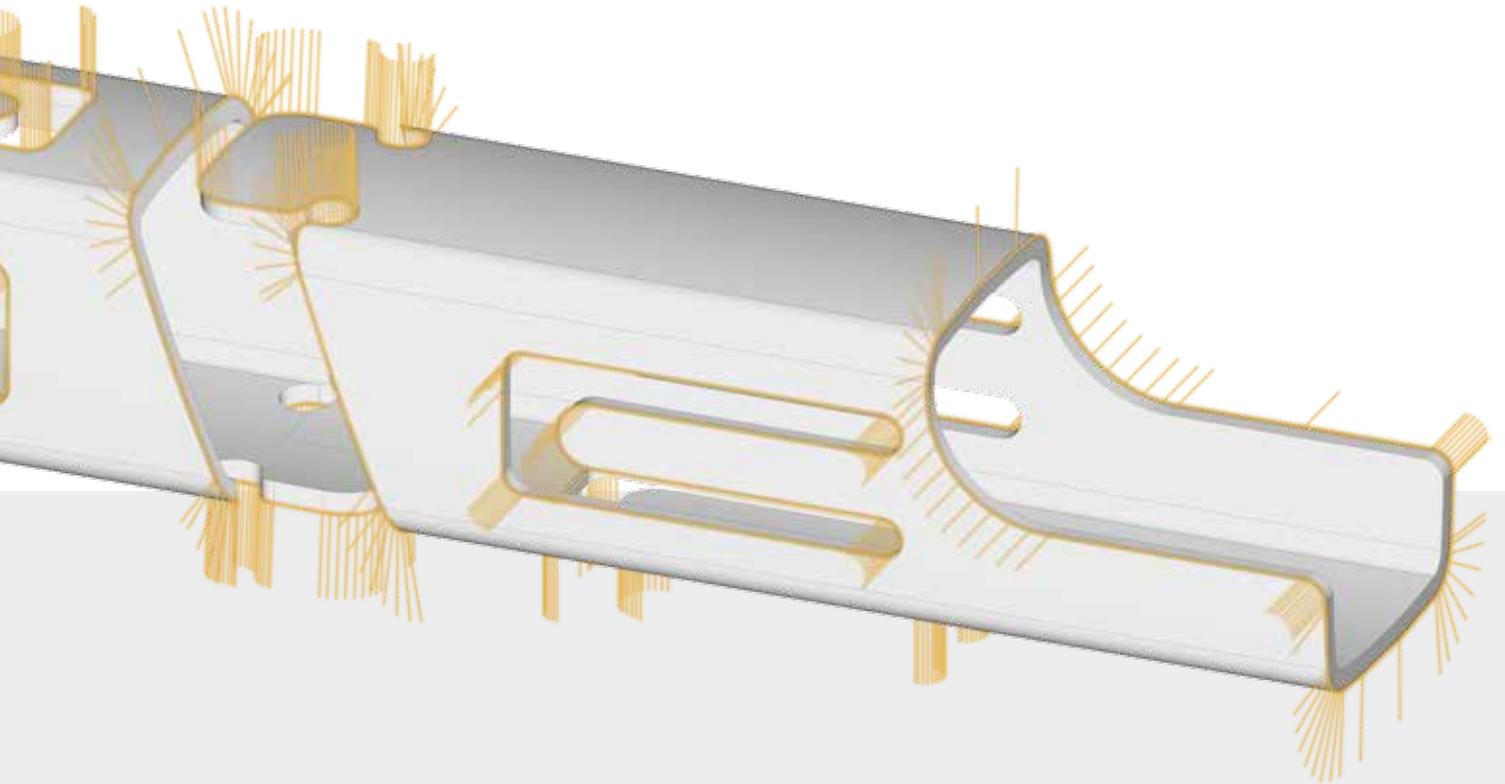


### CLUSTER NESTING & RANDOM SHAPE NESTING

Cluster Nesting enables the fully automatic or semi-automatic nesting of parts on metal sheets. The semi-automatic nesting contains numerous functions which support the interactive nesting of parts. The automatic nesting places the parts on the metal sheet, depending on various parameters. Here it is possible to output the sizes of the metal sheets as well as the distances between the parts and the permitted rotation angles of the parts. Filler parts can also be added – all for the purpose of an optimal material utilization.

## 3D SHEET METAL WORKING

# COMPLEX BUT NONE- THELESS VERY SIMPLE

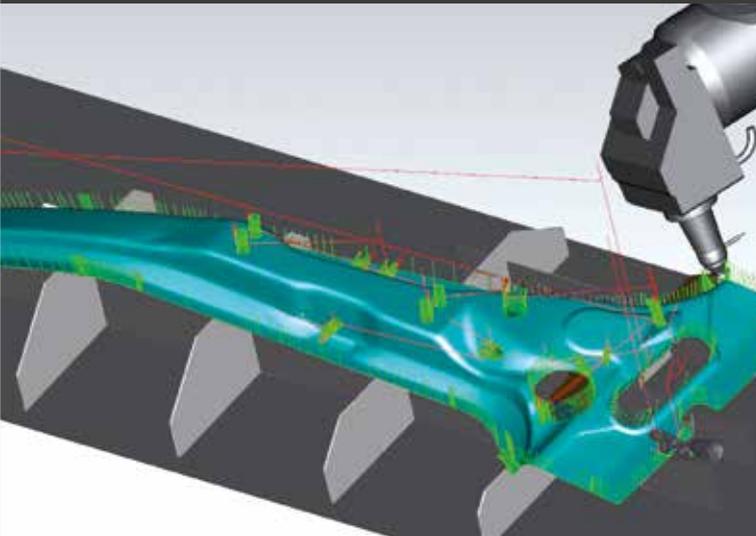


The powerful PEPS PentaCut and TubeCut modules have been developed for the programming of complex laser and water-jet cutting machines with up to 6 simultaneous axes. They are characterized by a very high level of automation. The tool paths are created automatically by the integrated feature recognition system. If necessary, it is possible at any time to optimize the created machining suggestion.

The collision check simulation integrated in PentaCut and TubeCut ensures the necessary safety of the machining process.

# PENTACUT

POWERFUL DUE TO A HIGH LEVEL OF  
AUTOMATION



PENTACUT

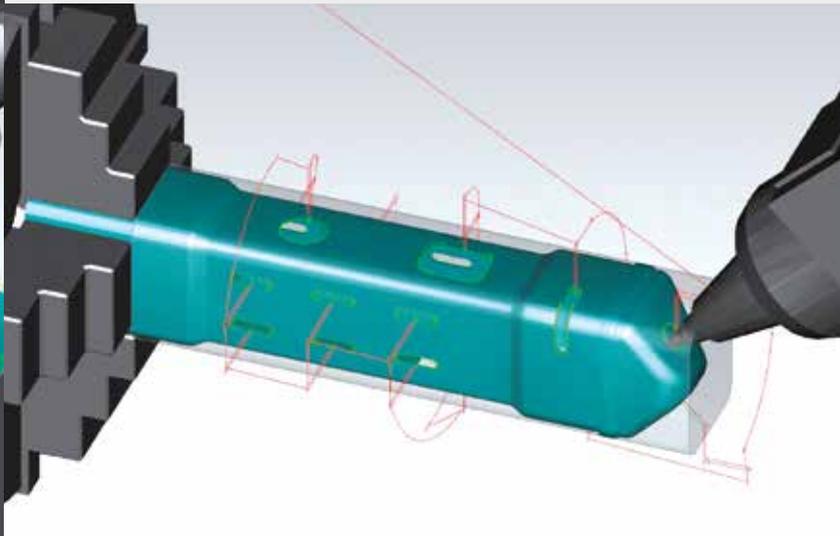
5

AXES SIMULTANEOUS LASER AND  
WATERJET CUTTING

- Automatic position calculation, including transformation and rotation possibilities for the exact positioning of the work-piece on the machine table
- Fully automatic calculation of grid-shaped supporting and clamping fixtures
- Fully automatic nesting of fixture plates
- Fully automatic recognition and machining of internal and external boundary curves
- Fully automatic and interactive change of the nozzle angle to avoid collisions
- Automatic optimization of the machining feature including smoothing of the tool paths
- Automatic technology selection from integrated technology database
- Possibility to define arbitrary technology change points within the machining feature in order to change nozzle angle, machining technology and micro joints

# TUBECUT

POWERFUL DUE TO A HIGH LEVEL OF  
AUTOMATION



TUBECUT

6

AXES SIMULTANEOUS LASER AND  
WATER JET CUTTING

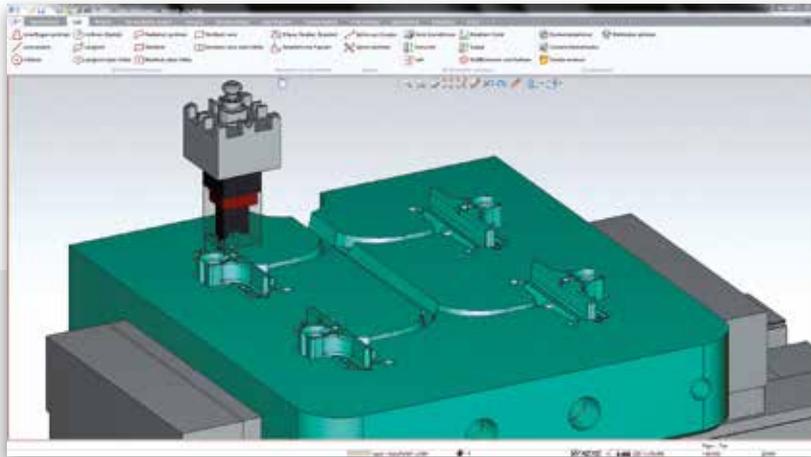
- Fully automatic alignment of imported CAD data on the machine
- Fully automatic creation of all machining features
- Creation of standard pipe sections and creation of non-standard shapes
- Nesting of pipe geometries
- Fully automatic recognition and machining of the internal and external boundary curves of pipes including control of rotation axes (work-piece fixture in the rotation axis)

SIMULATION

- Integrated 3D simulation taking into account the machine kinematics
- Fully automatic collision check

PEPS

# ADDITIONAL MODULES



## SOLID-ELECTRODE

The Solid-Electrode module is used for the creation of electrodes as well as for machining simulations with collision check. In conjunction with the corresponding post-processor, it enables the creation of NC programs for EDM sinker machines.

- Deriving and archiving of 3D electrode geometries
- Modification of the electrode geometry
- Assignment of the solid geometry of the electrode holder
- Archiving of electrode blanks

- Automatic creation of a measuring frame with alignment surface
- Placing the electrodes in the CAMMAN database, including additional information such as position, depth of erosion, electrode ident number, undersize, measurement data, program name, name of the roughing/finishing electrode as well as any additional information
- Automatic creation of a graphical setup sheet



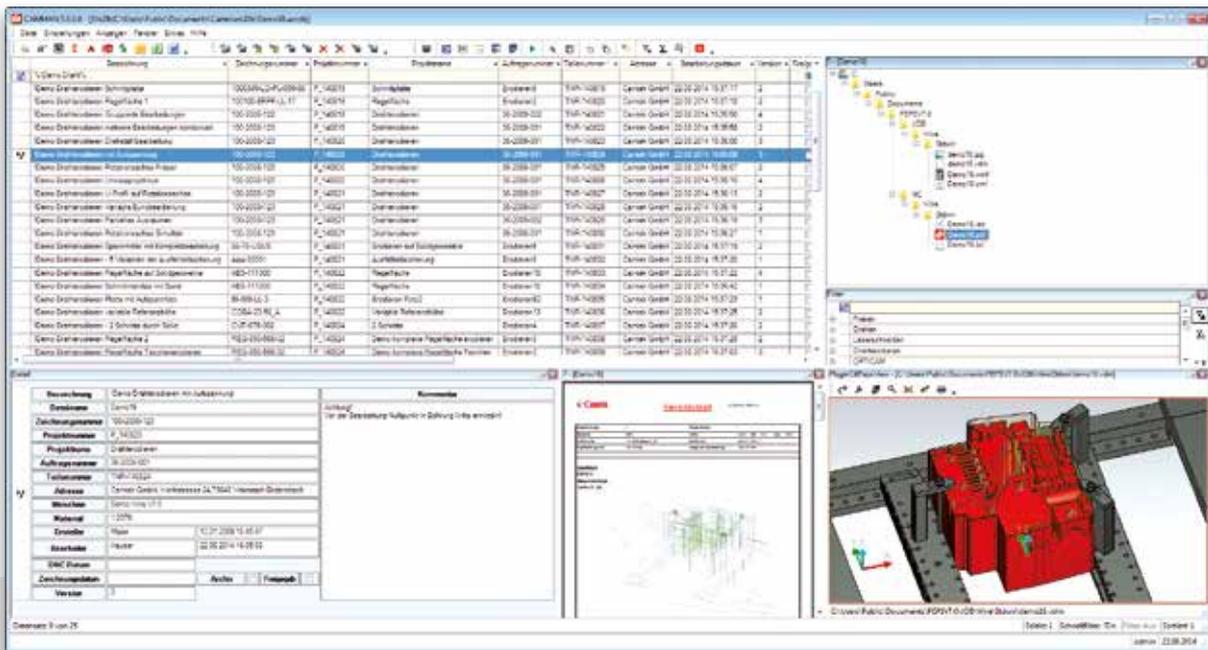
## GEAR MODULE

The gear module is used to calculate involute gears. The involute can be manipulated very easily by entering a profile shift, the roller distance, testing mass across teeth, tip and root diameter in addition to tip and root radii. Furthermore, the gear module provides all the data and dimensions for machining and inspecting the gear.

## JIG & PROFILE GRINDING

- Jig grinding cycles for holes
- Roughing and finishing strategies
- Plunge roughing and longitudinal roughing cycle
- Profile grinding with automatic calculation of the C-axis positions and the feed rate
- Fully automatic calculation of collision-free C-axis positions and 3D simulation (optionally in combination with SolidCut CAD)
- Origin offsetting
- Multiple clamping





## CAMMAN 5.0

NC-program and  
drawing management

CAMMAN is a powerful data management system for the administration of NC programs, fixture plates and CAD data including SAP and ERP-interfaces. CAMMAN gives you easy access to existing data files and allows the input of additional information, e.g. drawing number, order number, project number, version number, customer, comment, date, programmer and machine as well as security confirmations for DNC systems. The file selection is supported by an integrated 3D graphic viewer. By using the CAMMAN data management system, the designer, the programmer and the machine operator share the same database, thus avoiding file duplication and mistakes.

It is easy and inexpensive to individually adjust and connect to existing databases.

## JOBMAN 5.0

Job Manager in connection  
with automatic nesting

The JOBMAN Job Manager automatically creates lists for nesting orders. Parts of the same material and thickness are selected by JOBMAN and transferred to the Random Shape Nesting module. The parts are automatically selected from all available orders and then nested on the sheet. With the JOBMAN Job Manager it is guaranteed that all parts of an order are made out of the correct material at the right time.

## INTERFACES

to PPS-systems

For CAMMAN and JOBMAN several interfaces to all ERP/PPS-systems, e.g. SAP, 3R Sigma, Zwicker, Schubert etc., are optionally available.

## DNC-SYSTEM FOR MS-WINDOWS

Safe CNC data transfer between the server and the machine control, including recharging.

- Transfer of CNC data via intranet
- Easy integration into networks
- Direct call of the NC program files from the CNC control
- Support of standard and intelligent interfaces
- Uses software protocols for DNC-connections (e.g. Heidenhain, Deckel Maho, Mazak, AGIE, CHARMILLES)
- Forwarding of machine information via SMS or e-mail (optional)

# TRAINING

Our committed and experienced engineers impart basic and advanced knowledge of each PEPS module at our training centers or at the customer's site.

A relaxed atmosphere, small groups and practice-oriented examples make sure that PEPS can be used efficiently within a short period of time.

You can find our training dates online at [Camtek.de](http://Camtek.de)

# SUPPORT & SERVICE

We offer our customers a free telephone and internet support, free test installations and a free software download.

Support hotline: [+497151-979202](tel:+497151-979202)

E-mail: [support@Camtek.de](mailto:support@Camtek.de)

Test installation: [www.Camtek.de](http://www.Camtek.de)





Camtek GmbH  
Werkstraße 24  
71384 Weinstadt / Germany

Tel: +49-7151-979202  
Fax: +49-7151-979205  
E-Mail: [Info@Camtek.de](mailto:Info@Camtek.de)  
[www.Camtek.de](http://www.Camtek.de)