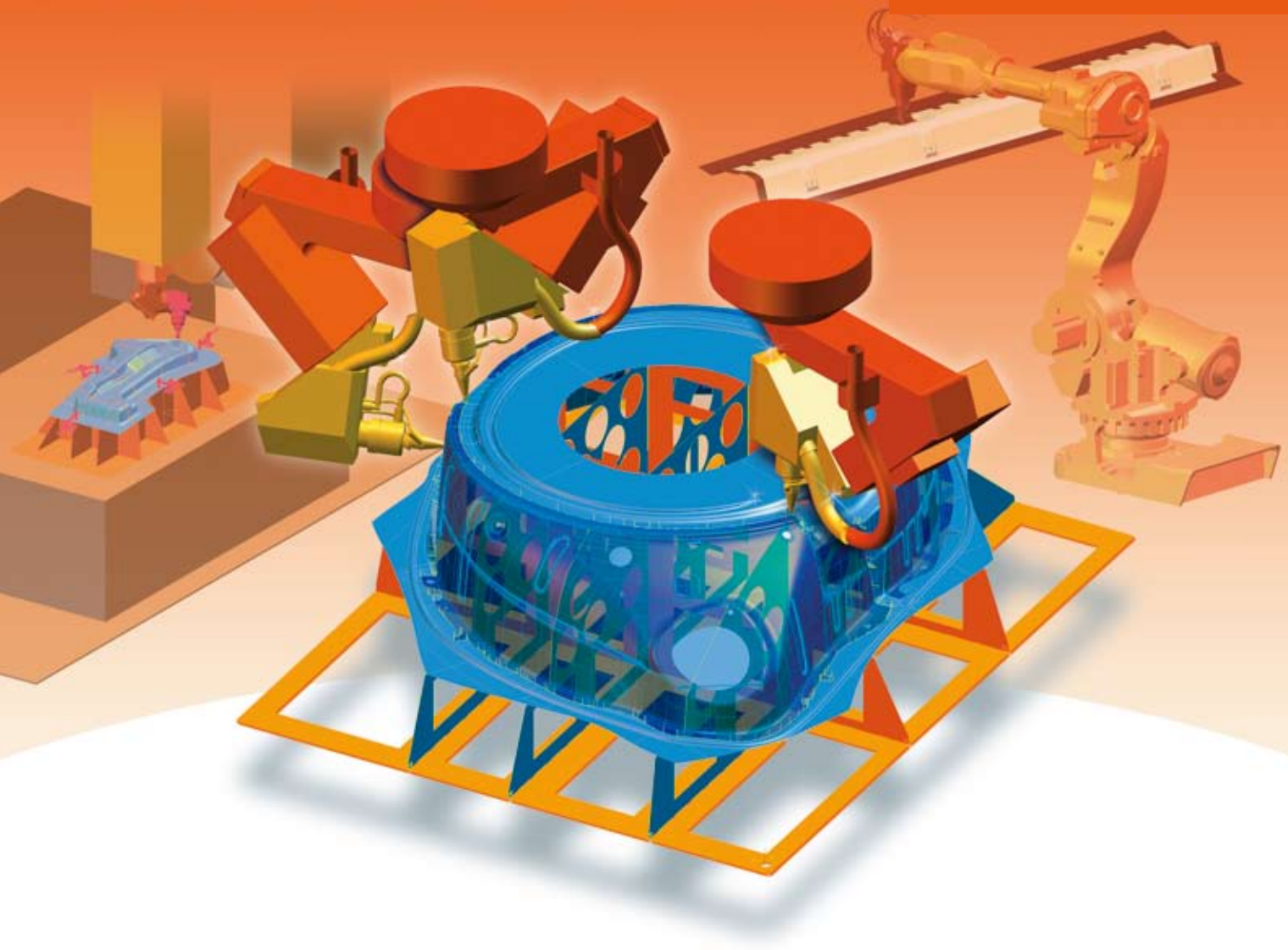


VIRTUAL TEACHING IN PROTOTYPE AND SERIAL PRODUCTION.

5-Axis
Laser Cutting

Just load the part, design the fixture with a few clicks of the mouse, and then quickly and safely create the NC program for laser cutting the part. The Tebis 5-Axis Laser Cutting CAM module lets you use your cutting machines with maximum efficiency, taking their kinematics and head geometry into consideration in every calculation.

The Tebis 5-Axis Laser Cutting CAM module calculates NC programs offline for multi-axis laser cutting. The software supports machining processes from sheet-metal deep drawing and profiling to the production of fixtures, as well as the operation of welding robots and water-jet cutters. Die makers regularly use Tebis laser cutting while testing draw operations in the try-out phase to define compensation for springback behavior in trimmed sheet metal parts.

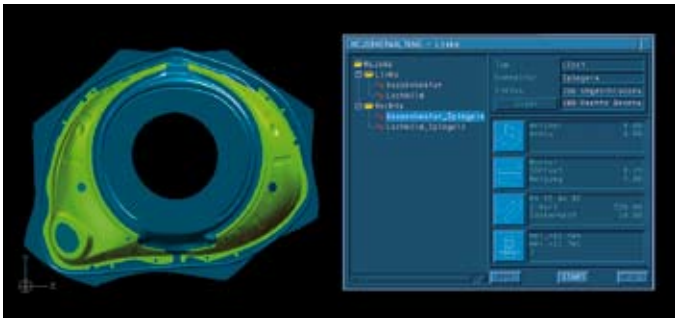
All calculations can be quickly and easily simulated and analyzed. That lets the system automatically recognize and graphically highlight areas with major rotational movements or high lateral inclination, just as it recognizes and highlights areas at risk for collisions. Powerful, graphically interactive functions are available for subsequent processing of the identified path areas. Using them, you can quickly and easily moderate excessive rotational movements and eliminate collision hazards by changing the 3D orientations of the laser head.

Calculating the contour cut programs – Automatically or step-by-step in the dialog

The cutting programs contain macros for the approach and retraction of the laser head and take into account both the machine and the material to be cut. Tebis calculates the toolpaths either automatically or in the interactive step mode. In the interactive mode, the system shows the intermediate result, which you can then accept or change. This will allow you to affect the start position and the 3D position of the machine head, as well as the areas to be cut and their machining sequence. You will thus be able to integrate your own production expertise into the programming.

NC job administration – for engineering changes and mirrored parts

All data that you enter – including all the intermediate results produced – are saved in the integrated NC job administration and can be subsequently changed there. This gives you constant access to all the developmental, series and engineering changes of a part. With the transformation functions, you can create mirrored, rotated, moved or scaled copies of a cut with a few clicks of the mouse. This lets you quickly create NC programs for mirror-symmetrical parts, with constant monitoring of the machine's kinematic limits.



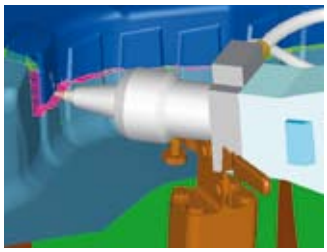
Use the NC job mirroring function to transform optimized machining of the left trim area to the right side of the part. This also works with areas that are only partially symmetrical.

Reverse processors simplify change cycles

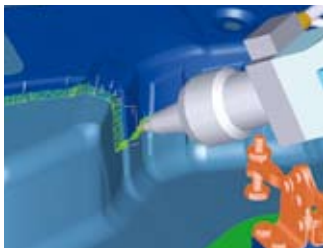
Modifications added to the NC program at the machine can be reversed back into the NC jobs, allowing convenient editing of changes in Tebis.

Semi-automatic and fully automatic collision checking

When calculating NC programs, the system automatically checks the complete laser head for collisions with the part. These collision checks can be extended to include clamping elements. Tebis automatically identifies areas at risk for collisions with the part or with other obstacles and uses the graphic interface to help users circumvent them. During the cutting path calculations, the system automatically monitors the machine's kinematic properties, such as its tilting limits and preferred starting position. In the fully automated mode, the system automatically calculates evasion movements for identified collisions.



At the click of a button, the collision check will identify all areas of the cutting curve (red) where the laser head would come into contact with the part or another obstacle.

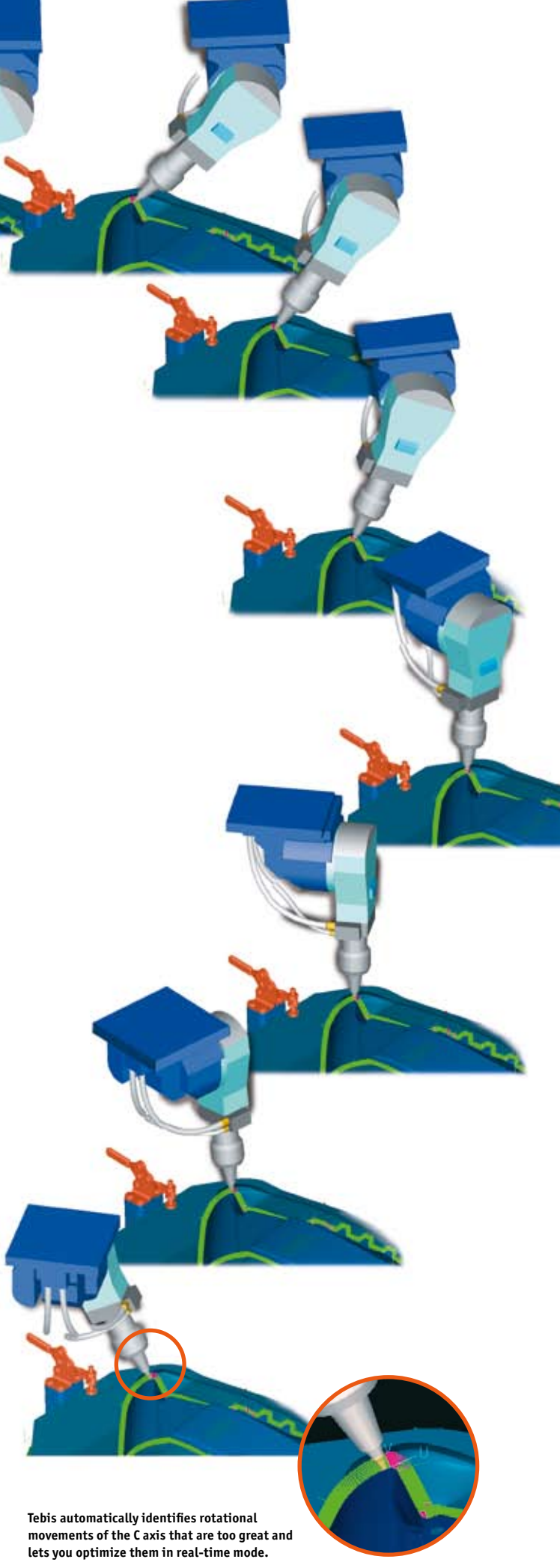


Working online, you optimize the laser head's 3D orientation. Now the collision analysis displays only green vectors.

Machining form elements separately to save time

When calculating the cutting programs, Tebis identifies regular forms such as circles, slots and rectangles with sharp or rounded corners. These standard geometries are passed on to the NC program and can be quickly worked through in a targeted and rational manner with the appropriate NC control cycles.

Tebis automatically recognizes form elements, such as circles and slots, and labels them as machining features.

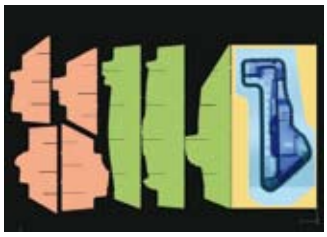


Tebis automatically identifies rotational movements of the C axis that are too great and lets you optimize them in real-time mode.

Fixtures at the click of a button

Tebis 5-Axis Laser Cutting automatically calculates the complete supporting ribs geometry for fixtures – either with a base plate or with a machine table's holder grid as a guide. But you can intervene at any time and change the system's suggestions, such as the number and position of the ribs or their table allocation on the sheet metal blank. Everything works toward one goal: the fast delivery of a precisely cut part.

Tebis automatically calculates the base plate and all supporting ribs for the fixture.



The fixture's table allocation can be optimized to reduce waste.

Technology support for all machines

Tebis supports technological subprograms such as those for transferring into the NC program table-based cutting parameters, including firing and shutting positions, speed, power output, beam width and gas composition. SPS commands can also be integrated into the NC program – to surround the clamping system, for example. This lets you flexibly create complete NC programs containing their own company-specific technology parameters for machines from Trumpf, PrimaIndustries, Schuler, Arnold, Mazak, NTC, Mitsubishi, and others.

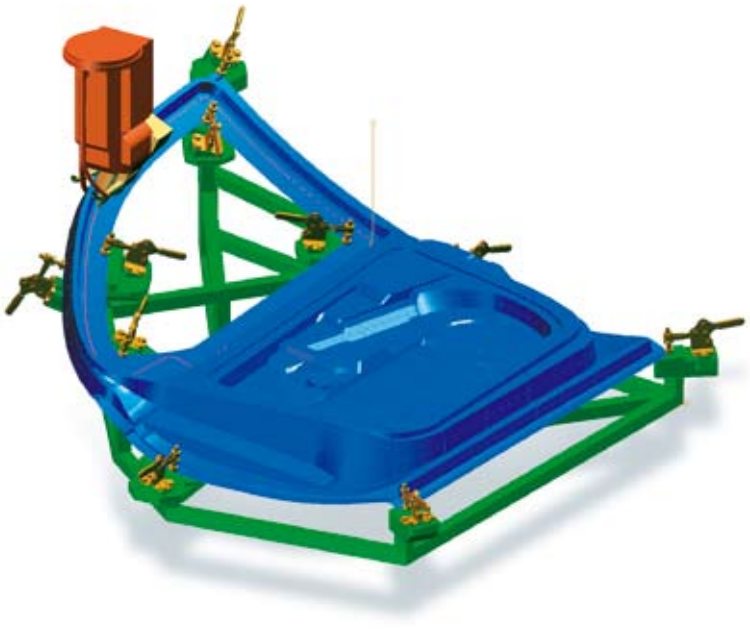
The insertion slot of the ribs can be configured according to your preferences. Tebis automatically creates recesses where the ribs cross the laser beam to prevent welding to the product.

Comfortable part orientation

The part's actual position on the machine can be quickly and comfortably oriented via a few prominent reference points or by alignment with a large number of recorded points. After this quick orientation procedure, the laser machine will immediately be available for production.

Flexibility thanks to CAD functions and interfaces

5-Axis Laser Cutting benefits from the module's tight integration with the Tebis CAD functions. Missing curves or surface areas can easily be created, allowing you to respond rapidly to any situation This is particularly important for collision control. CAD surfaces or meshes are not required for the operation of the Tebis laser module, however. Thanks to vector technology, the system can also be used with 5 axes even when you have only curves and no surface descriptions. The Tebis module for 5-Axis Laser Cutting can process current data formats such as VDA, IGES, DXF, Catia V4/V5, UG, ProE and Solidworks via optional interfaces.



tebis

THE CAD/CAM EXPERTS.

Tebis Technische Informationssysteme AG, Einsteinstr. 39, D–82152 Martinsried/München, Tel. +49/89/81 803-0, Fax +49/89/81 803-8200, info@tebis.com, www.tebis.de
Tebis America Inc., I-75 Tech Park, 1389 Wheaton Rd., Suite 500, Troy, MI 48083 USA, Tel. +1/248/52 404-30, Fax +1/248/52 404-34, www.tebisusa.com
Tebis (UK) Ltd., The TechnoCentre, Coventry Univ. Technology Park, Puma Way, GB-CV1 2TW Coventry, Tel. +44/2476/23 64-12 Fax +44/2476/23 65-04, www.tebis.co.uk
Tebis Scandinavia AB, Backa Bergögatan 18, S-42246 Hisings Backa, Tel. +46/31/70 017-40, Fax +46/31/70 017-49, www.tebis.se