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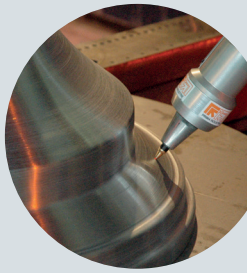
SPACE CUT



Programming software for 5-axis cutting machines and cutting robots

With its simple and intuitive user interface, the Almacam Space Cut CAD/CAM software is dedicated to the programming of any type of 3D-cutting machine (laser, plasma, water jet) regardless of the number of axes. Almacam Space Cut combines automation and simplicity of use. Providing support for advanced manufacturing functions, Almacam Space Cut adapts to every kind of situation, enabling you to cut complex parts.

Operating principle

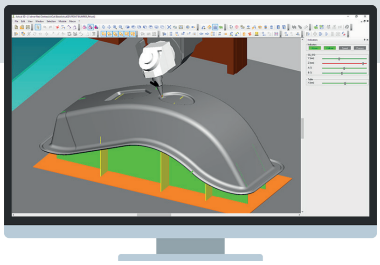
Based on an accurate 3D representation of the machine (including kinematics or axis limit elements) and its environment, Almacam Space Cut, thanks to automatic geometry analysis functions, can automatically define the cutting contours for CAD-imported parts. Using a powerful algorithm that optimizes the paths while avoiding collisions, Almacam Space Cut generates the tool head trajectories.

It also allows you to automatically model the tooling from the 3D model of the part to cut. With Almacam Space Cut, you will easily create and validate NC programs thanks to realistic simulation and automatic control functions combined with display features for visualizing anomalies.

Almacam Space Cut is an autonomous programming software that can interact with machines and robots of any trademark and be used with complementary software products of Almacam range. For the cutting of flat metal sheets by 5-axis machines, 2D programming modules are provided with Almacam Space Cut. For the cutting of tubes, Almacam Tube is available as an optional component and provides the required specific functions (modeling, nesting and programming).

Advantages and benefits

- ✓ **Comprehensive modeling of the machine and its environment.**
- ✓ **Optimized programming thanks to powerful functions automating the creation of cutting trajectories, the definition of lead-ins/lead-outs and the sequencing of cutting profiles.**
- ✓ **Automatic search for collision-free trajectories during cutting and rapid movements.**
- ✓ **Realistic simulation of the cutting sequence and visualization of possible anomalies (speed, collisions, accessibility, job tolerance).**
- ✓ **Automatic modeling of the tooling to support 3D parts, based on a 3D model of the part to cut.**
- ✓ **User-friendly: display of objects in the cell set-up, cutting profiles, and the program in the form of tree structures, object positioning function, capacity to easily modify cutting trajectories, etc.**
- ✓ **Extension to other technological processes such as laser welding and polishing.**



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Main functions

Working environment

- Integrated Visual Basic® programming language for macros development.
- Hierarchical display (tree-view) of the cell objects, cutting contours and NC programs.
- Possibility to work from this tree as from a directory by selecting one or multiple items.
- Possibility via Almacam Space Cut control panel to visualize axis movements and check visual indicators for limit values of certain parameters (accessibility, collision, speed, job).
- Possibility to apply the characteristics of a selected object to another one or several other ones (Isology function).
- Easy and simple handling of objects in space using the graphic tool.

3D-CAD model import and tooling modeling

- Import of parts in neutral formats (IGES and STEP).
- Import of 3D models in native formats in option (Catia® V4/V5/V6, PTC Creo®, Inventor®, Parasolid®, SAT/ ACIS®, Solid Edge®, SOLIDWORKS®, Unigraphics®, etc.)
- Import of 3D-tube models from the Tube Designer component.
- Automatic modeling of tooling based on 3D models using the optional Tooling component.

Cell modeling and representation

- Comprehensive modeling of the cell and its environment (if the cell modeling elements are not available from the library, specific cell modeling developments can be completed by Alma).
- No limitation regarding the number of cell or robot axes.
- Integration of the cell kinematics parameters including the speed, the acceleration and other specific points.
- Visualization, from the tree-view, of the cell components such as the head, gantry, part, ground, etc.
- Definition of the cell frame.

Creation of cutting contours and trajectories

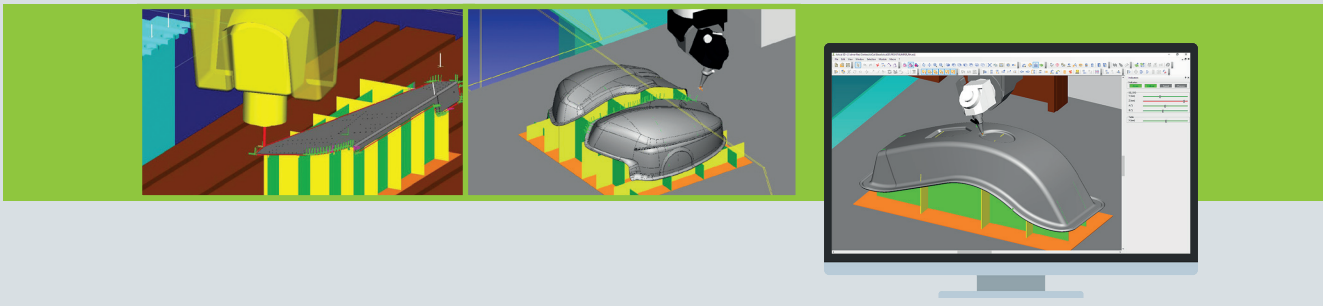
- Automatic recognition of cutting contours.
- Automatic definition of lead-ins/lead-outs (position, types and values).
- Contour-offset function (positive or negative).
- Possibility to manually specify the head orientation for bevelled cutting or to automatically detect bevel angles when they are drawn in the CAD model.
- Optimized trajectory calculation by specifying "technological" tolerances for the head orientation.
- Manual sequencing of the contours to cut or automatic calculation resulting in reduced cycle times.

Program creation and simulation

- Management of the cutting parameters in a database (material and thickness characteristics).
- Adjustment of the head direction and cutting parameters at each program step.
- Automatic search algorithm for collision-free trajectories.
- Collision detection over the complete cell model (part, tooling and machine).
- Automatic checking of the whole program with the possibility to display potential anomalies from the tree-view (speed, collisions, accessibility and job tolerances).
- Realistic program simulation taking into account the machine characteristics (speed, acceleration and specific points) and cycle-time calculation.
- Management of safety distances (part, cutting head, machine, etc.) in the trajectories between cutting contours.
- Integration of the cutting beam information and detection of operating zone overrunning (waterjet).
- Availability of various post-processors for machines and robots of any trademark.

Workshop document

- Generation of workshop documents gathering all the information related to the cutting program.



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