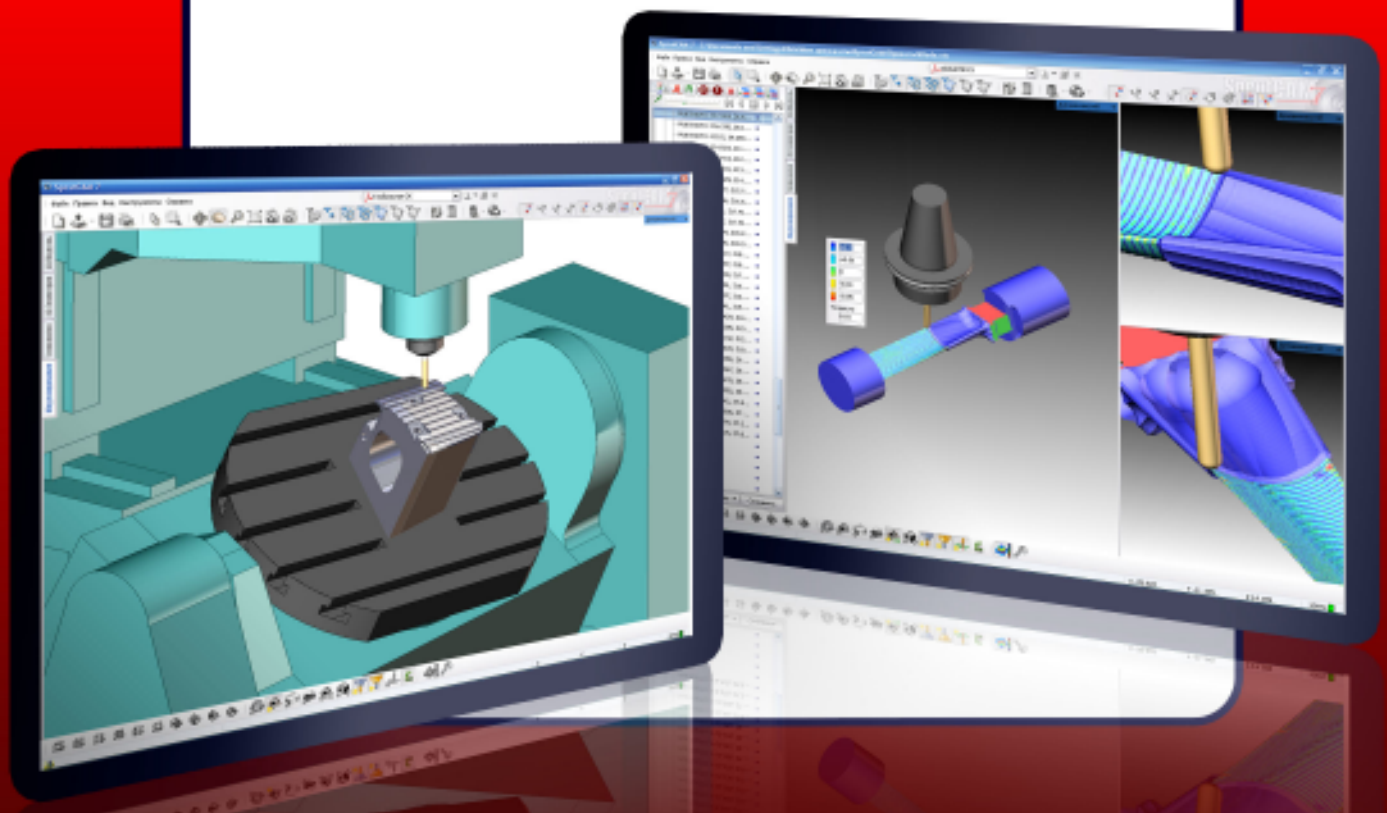
SPRUT TECHNOLOGY

SprutCAM

SprutCAM is a CAM system for NC program generation for machining using multi-axis milling, turning, turn/mill, Wire EDM numerically controlled machines and machining centers. The system enables the creation of NC programs for machines with a wide variety of kinematics and can be adjusted to NC equipment of virtually any kind.

SprutCAM functionality and wide range of features enables the efficient machining of dies, press tools, casting molds, preproduction models, master models, machine parts, original and mass production parts, basic parts, spare parts, wooden parts, templates, engraving of inscriptions and images



SprutCAM

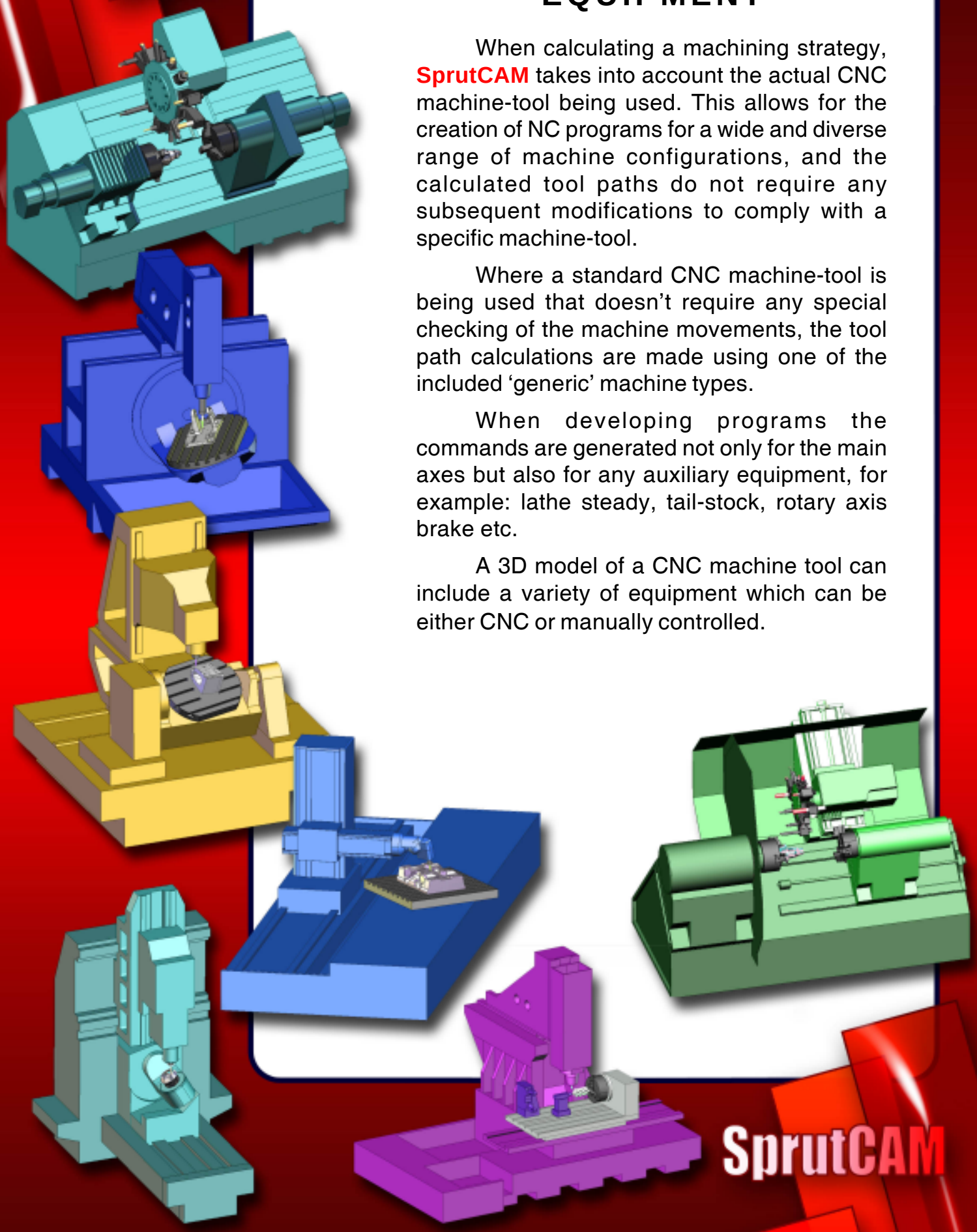
EQUIPMENT

When calculating a machining strategy, **SprutCAM** takes into account the actual CNC machine-tool being used. This allows for the creation of NC programs for a wide and diverse range of machine configurations, and the calculated tool paths do not require any subsequent modifications to comply with a specific machine-tool.

Where a standard CNC machine-tool is being used that doesn't require any special checking of the machine movements, the tool path calculations are made using one of the included 'generic' machine types.

When developing programs the commands are generated not only for the main axes but also for any auxiliary equipment, for example: lathe steady, tail-stock, rotary axis brake etc.

A 3D model of a CNC machine tool can include a variety of equipment which can be either CNC or manually controlled.



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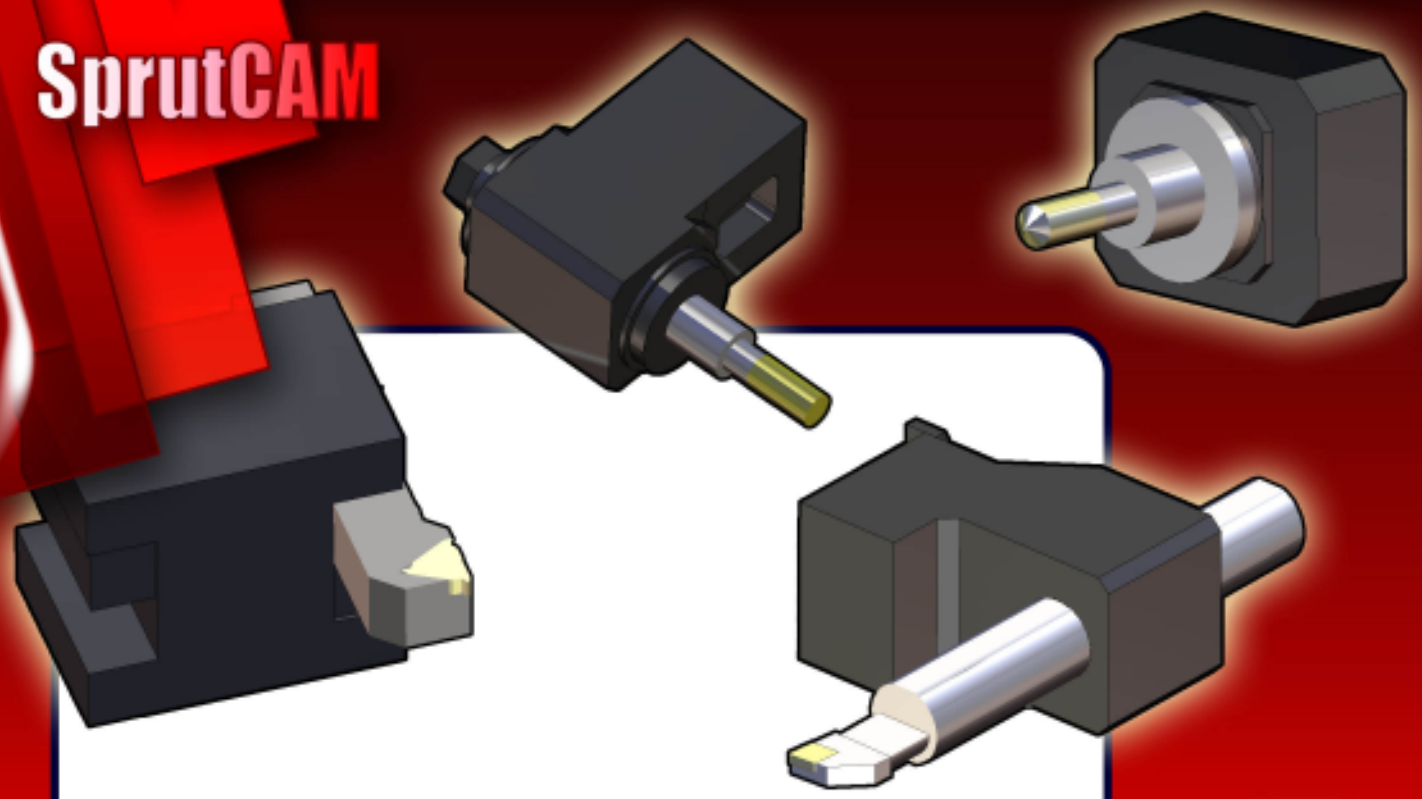
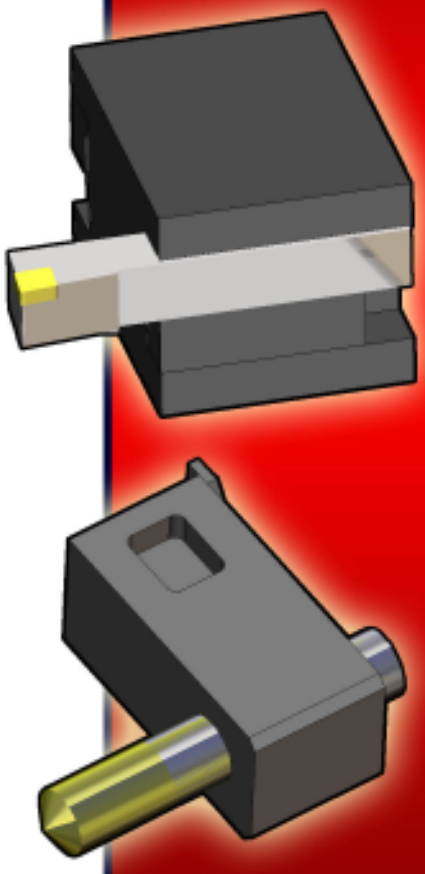


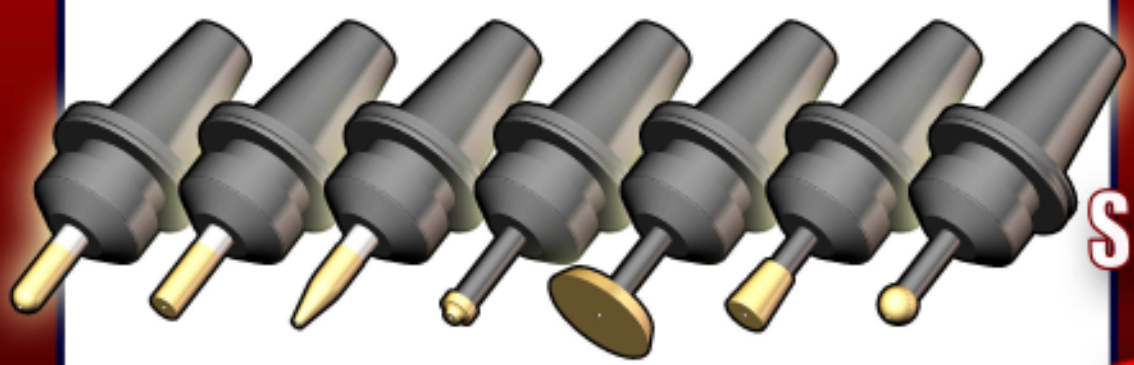
TOOLING

A variety of different cutting tools can be combined into user defined libraries. If required, these libraries can also be associated with specific CNC machine tools. It is also possible to use tool libraries provided by tooling suppliers / manufacturers. The user can modify these to suit the particular requirements of a machine or machining task.

The system displays only those machining operations which can be run with the currently selected tools.

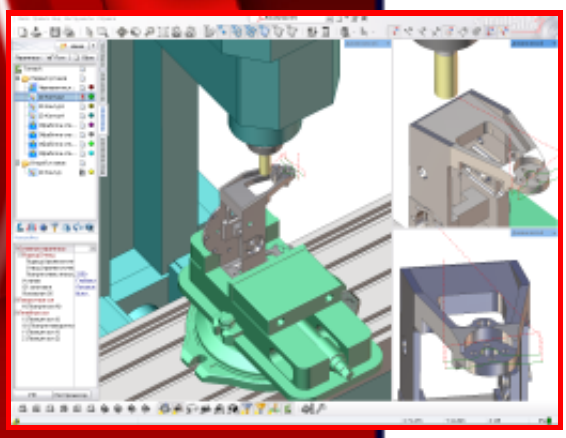
An operations default parameters may also be related to the currently selected tools.





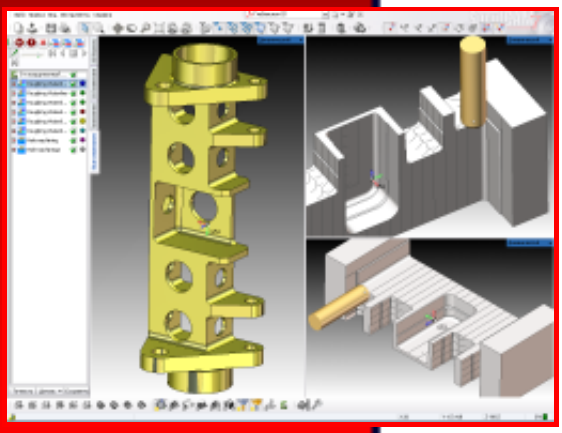
SprutCAM

MACHINING TYPES



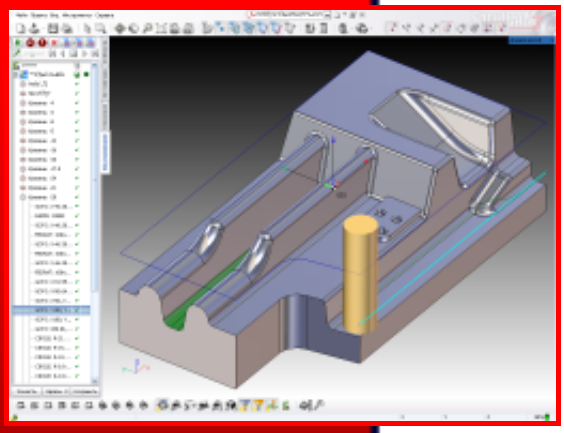
2.5D machining

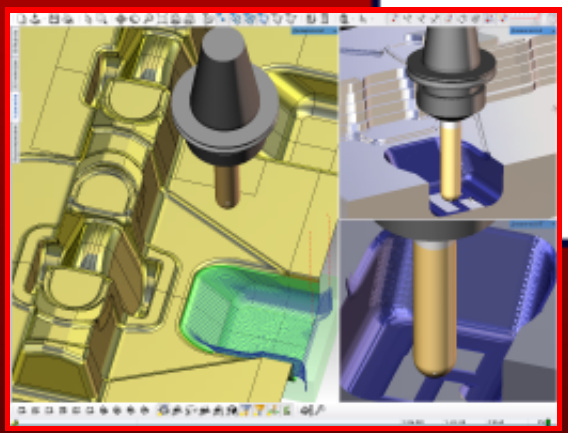
SprutCAM features several 2.5D machining strategies for the machining of multi-level 2D parts. Available strategies include the calculation of both roughing and finishing tool paths. Machining of simple or complex parts is achieved using machining strategies for: contour machining, island machining, vertical walls, slots and pocket with islands. **SprutCAM includes automatic feature recognition of both horizontal surfaces and holes etc**. The system supports all types of hole machining strategies including tapping and thread milling. Rest milling is an automatic process. **Full control over machining accuracy is included and is calculated directly from the native surface / solid model (no model tessellation is required).**



3D machining

SprutCAM has a wide range of 3D machining strategies that enables the machining of parts with complex freeform surfaces. The user has the capability to **create tool paths that are defined by the scallop height**; this ensures that the highest quality surface finish is achieved at all times. **The smooth tool paths** that are calculated help to avoid any sudden shocks and will considerably extend machine life. Another real 'labour saving' feature is the automatic recognition of any remaining material for subsequent rest milling operations. Rest milling can be based on 'actual' or 'theoretical' (previous tool diameter) models.





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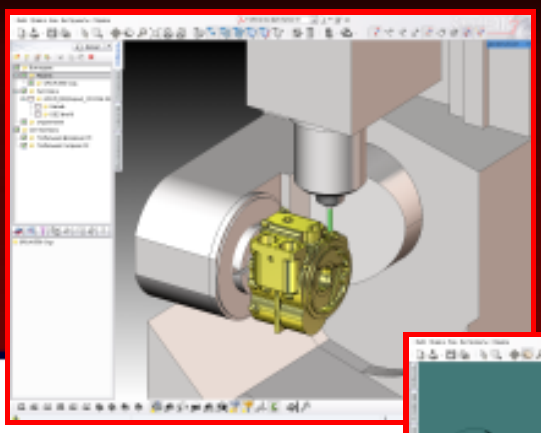
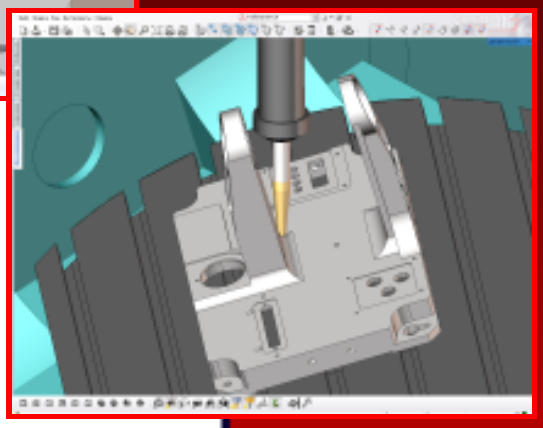
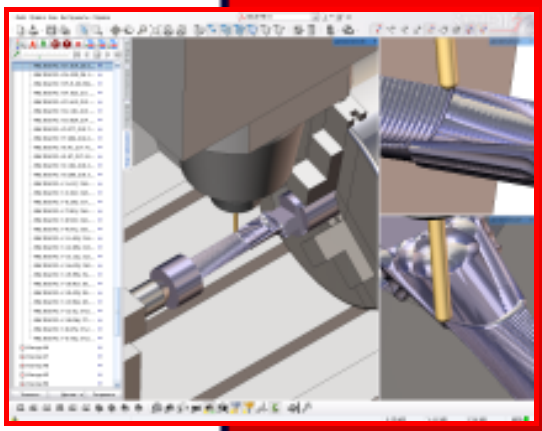




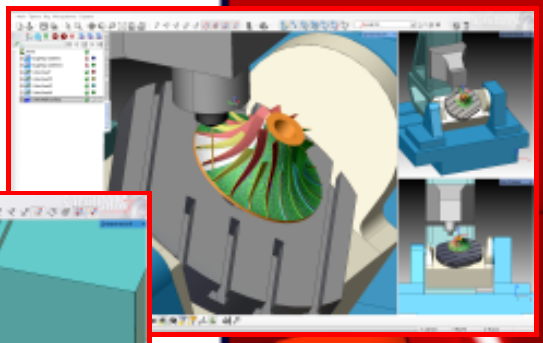
Multi-axis machining

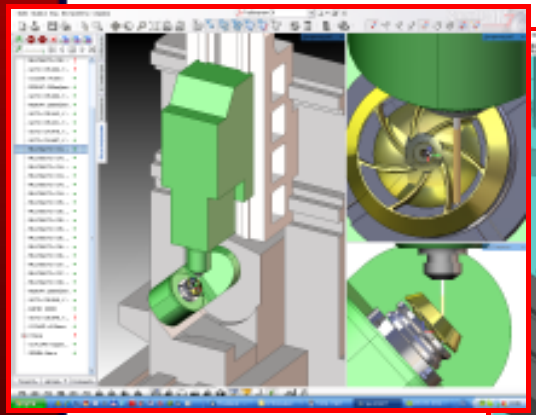
When undertaking multi-axis (indexed) machining, the required rotation angle of the part can be achieved interactively by simply clicking on the required part surface which will automatically position (rotate) the part. SprutCAM automatically calculates the necessary rotation angles and travel of the associated elements and generates the NC program. **The tool path is formed taking into account the predefined machine kinematics** for Multi-axis machines. Multi-axis machining comprises 2.5, 3 and 4 axis milling strategies. To carry out machining of the same part on a machine with a different configuration, all that is required is the selection of the new machine and subsequent recalculation of the operations.

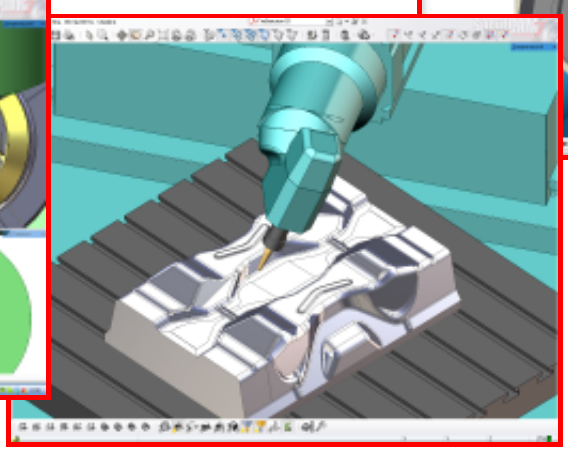


5-axis machining

The 5 axis module includes a large range of multi-axis machining strategies for 5 axis machines. This allows the rapid creation of high quality NC programs for the machining of complex parts on any type of multi-axis mill or mill-turn machines. The NC program is created taking into account the selected CNC machine model including the working zone which avoids any possible collisions during machining.

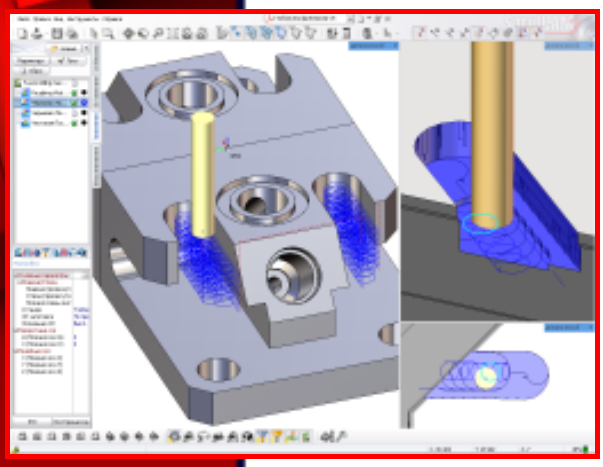






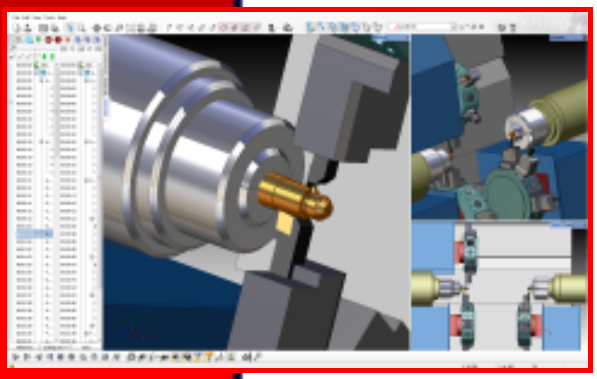
SprutCAM

SprutCAM



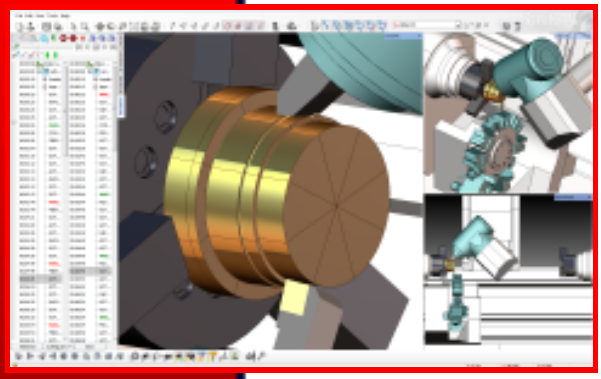
High speed machining

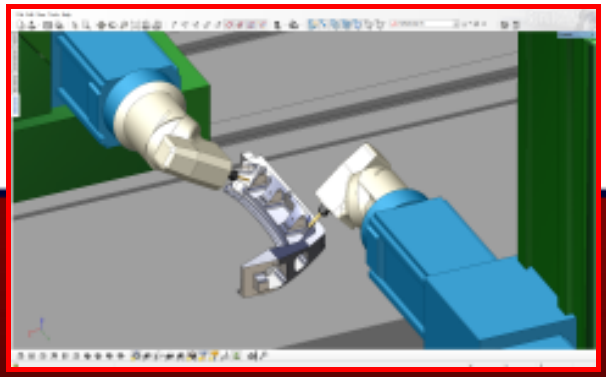
SprutCAM milling strategies include features for creating 'High-Speed' milling tool paths. Trochoidal 'penetration' tool paths**, smoothing of sharp corners, arc approach and retraction** all help to ensure smooth tool paths and a consistent area of cut, which, together with the calculated lead in / out moves enables the use of high speed milling.



Synchronised machining

SprutCAM can create NC programs for the synchronised control of multiple machine axes (spindles / turrets). In SprutCAM it is possible to insert synchronisation points between operations as well as between the commands inside an operation. This unique feature allows a substantially boost in machine output by avoiding time consuming machine program 'prove-outs' whilst also allowing the most efficient and safe (synchronised) use of the available machine axes.





SprutCAM

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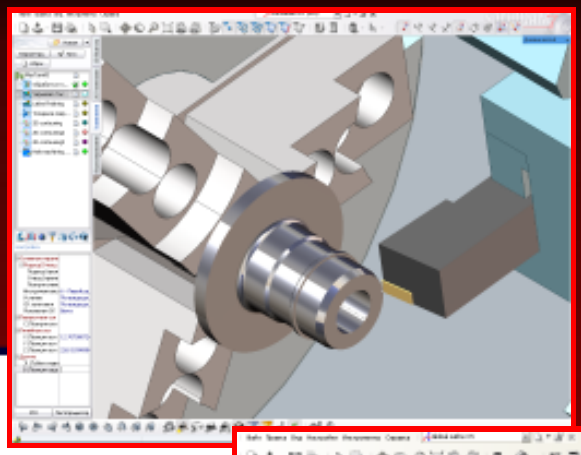
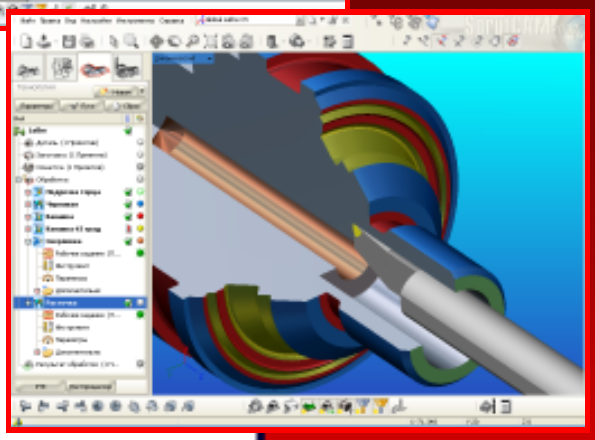


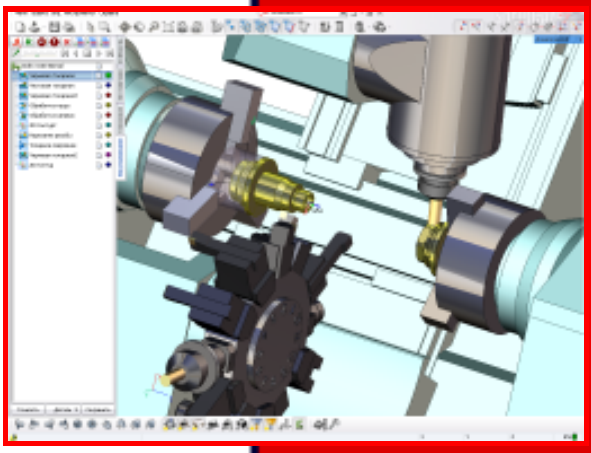
Lathe

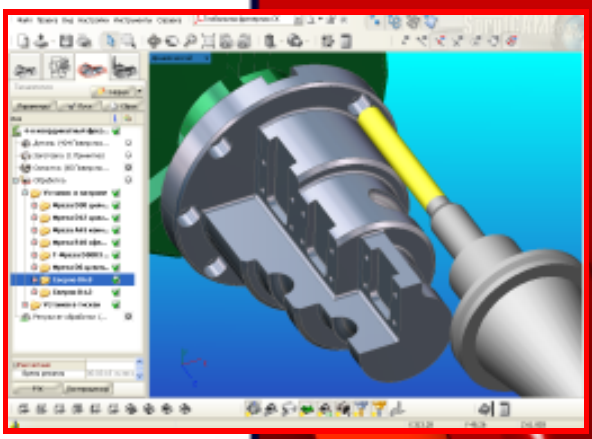
SprutCAM includes a full range of strategies for the turning of both simple and complex parts. Included are rough and finish turning and boring (both radial and axial) operations, grooving, axial bore machining and threading of all types are standard. SprutCAM supports **all known turning cycles**. All tool paths are calculated taking into account any remaining material. Machining options are set automatically based on the selected tool. SprutCAM enables complete control over all of the main as well as the auxiliary axes of the machine: steadies, tail-stock, chuck, parts catcher etc..

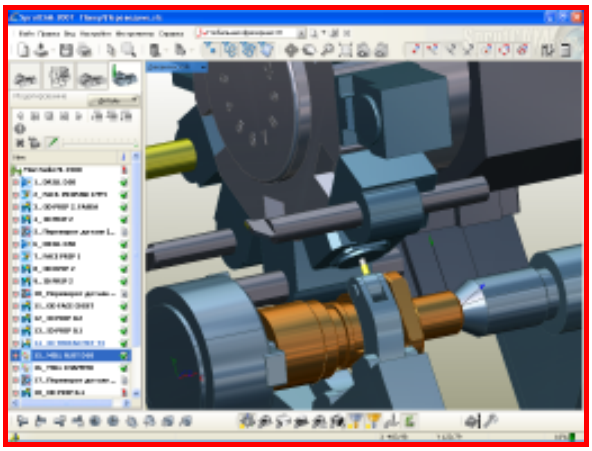


Turn/mill machining

SprutCAM ensures the creation of NC programs for all types of turn/mill machines including twin spindles. **CNC machine tool schemes that can include tooling systems with any tool position and number are supported**; hence, the NC program can include a combination of both lathe and milling abilities. All strategies for the lathe and 2.5-5 axes milling machining are available. Synchronisation of turrets on Multi-turret machines is also available.

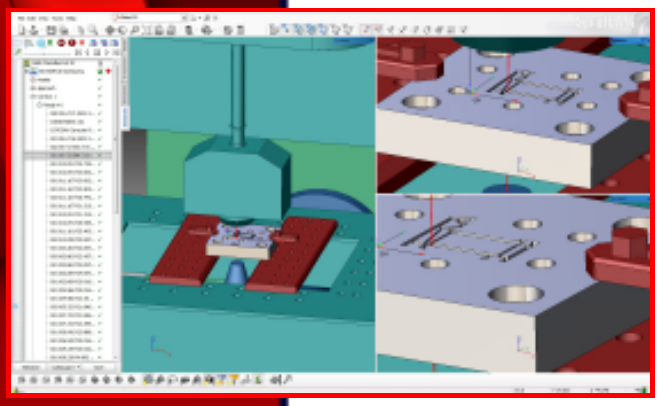


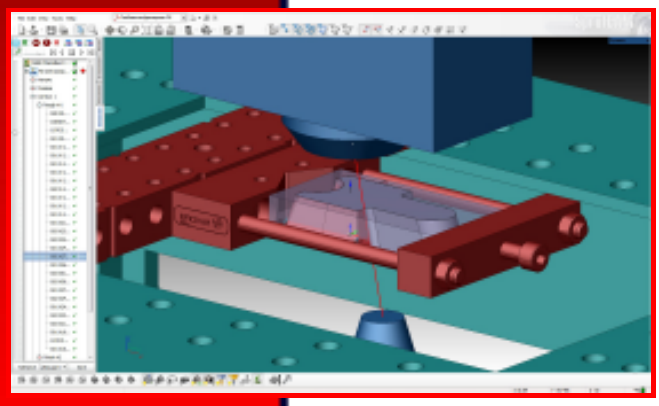




SprutCAM

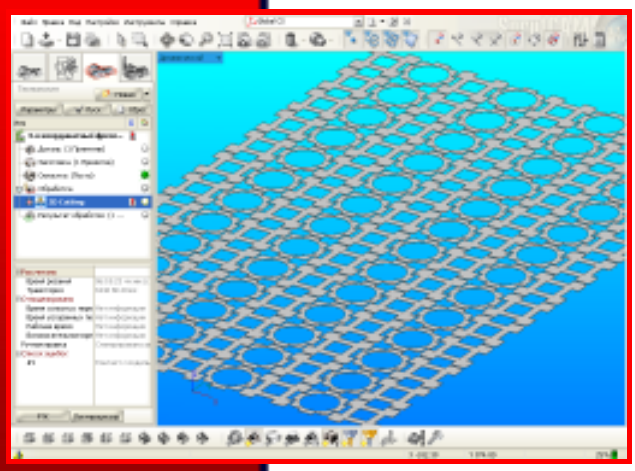
Wire EDM





SprutCAM wire EDM operations enable the creation of 2 axis internal and external vertical contour machining. There are **also 4-axis machining strategies with either automatic or interactive synchronization working with either 2D (curves) or 3D models**. Cutting parameter databases can be defined for each individual machine and the many possibilities for multiple profile machining ensure excellent surface accuracy with minimum user input. Automatic, interactive and precise placement of 'bridges' for connected features prevents parts dropping out of the material. Hole coordinates for wire feed are transferred to the holes machining operation in order to create the NC program for hole drilling.

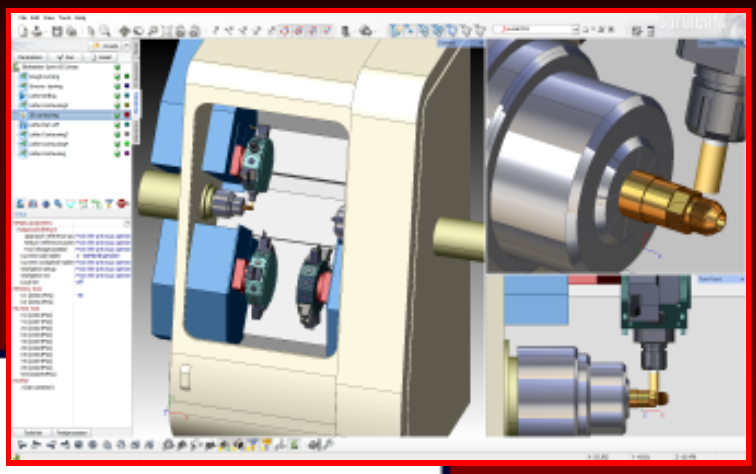
Cutting



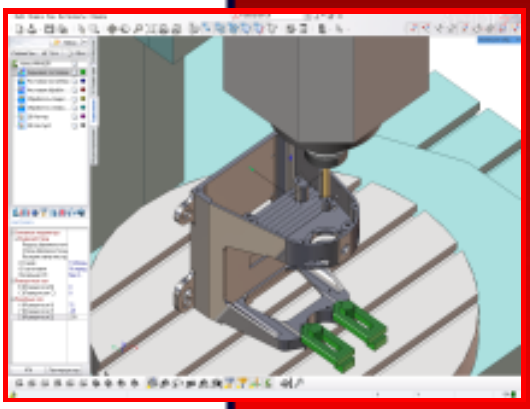
SprutCAM has a module for sheet material cutting (profiling). Users have complete control over the sequence of the machining strategies and operations. Bridges can optionally be placed in order to reduce the risk of deformation of thin parts. Rapid moves of the cutting head can be specified to be only above areas of scrap / waste material. There is full control over corner rounding.

SprutCAM enables the development of NC programs for plasma, laser, OXY-FUEL and WaterJet cutters.

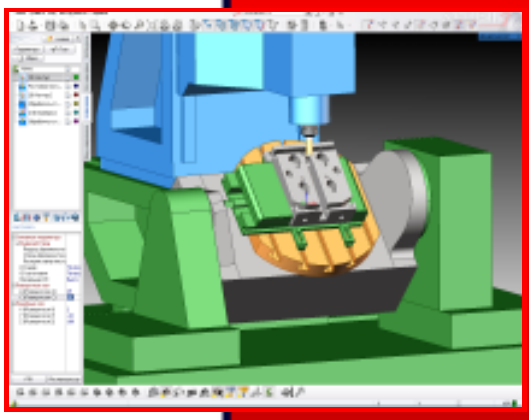
SprutCAM



Machining simulation



SprutCAM includes a powerful machining simulation module, which allows the user to simulate the machining of the part using any machine already included in **SprutCAM** using full machine kinematics and 3D model. The machining simulation enables the machining technology to be optimized for maximum efficiency, tooling and machine life etc. During the simulation the user controls visually all of the machining process taking into account all the travels of the machine's main and auxiliary axes. **The system automatically marks the program area's where it detects collisions or inadmissible cutting methods**.



SprutCAM standard distribution kit includes a set of machines for practically all types of metal-cutting machinery.

Machining simulation module provides the following possibilities:

- Multi-axis machining simulation taking into account the movement of all the axes of the machine according to its kinematics scheme
- Realistic machining simulation
- High authenticity of the machined part model allows visual examination of the machining quality to detect possible problem area's
- Visualization of zones with insufficient machining and penetration (for instance in case of negative stock or low precision machining)
- Comparison of the machined part to the original model
- Visual control of the remaining material
- Examination of the tool radius and length during the simulation

SprutCAM

SprutCAM

DMG

HOMAG

INDEX TRAUB

FANUC Robotics

HURCO
We Make Machines Smarter.®

OKUMA

Mazak
Digital Manufacturing Solutions

MORI SEIKI
THE MACHINE TOOL COMPANY

HEIDENHAIN

Haas Automation, Inc.

POSTPROCESSOR

When calculating the tool path the commands are generated immediately for the appropriate axes of the machine according to its kinematics model. This avoids additional complex coordinate recalculations in the postprocessor while generating the NC program.

The embedded postprocessor generator enables the user **to make adjustments to any NC system**. The language method and template mechanism ensures both complete flexibility and efficiency. Thanks to the simple interface and interactive help, the creation or editing of the postprocessor becomes an easy task.

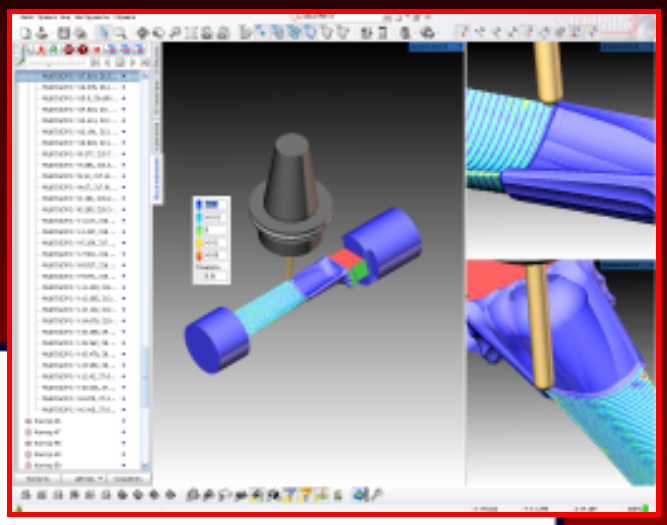
SprutCAM distribution kit contains **a comprehensive library of postprocessors for various types of machinery** and NC systems.

SprutCAM ADVANTAGES

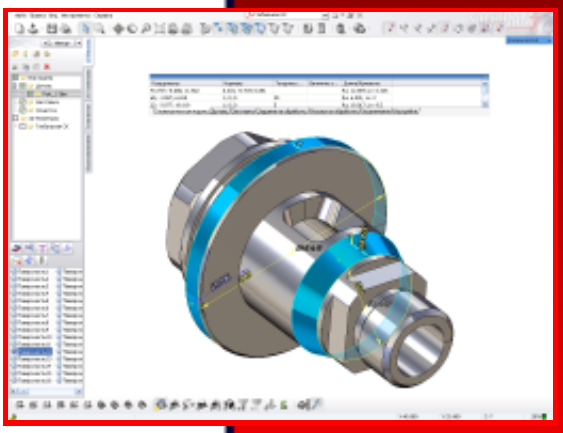
SprutCAM is an up-to-date system with features which even some of the most expensive CAM systems do not include. It is used for production machining, heavy engineering, nuclear power engineering, automotive, aerospace, defense, woodworking and other industries.

SprutCAM

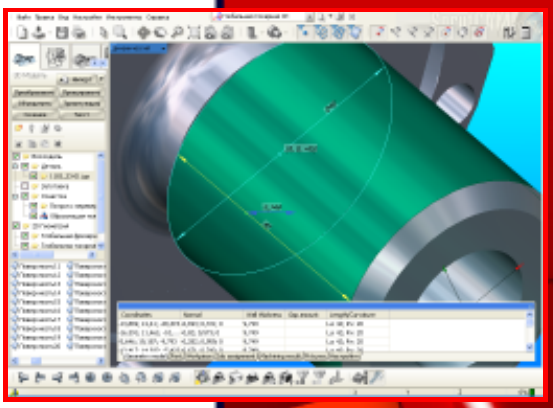
SprutCAM



SprutCAM FACT SHEET:



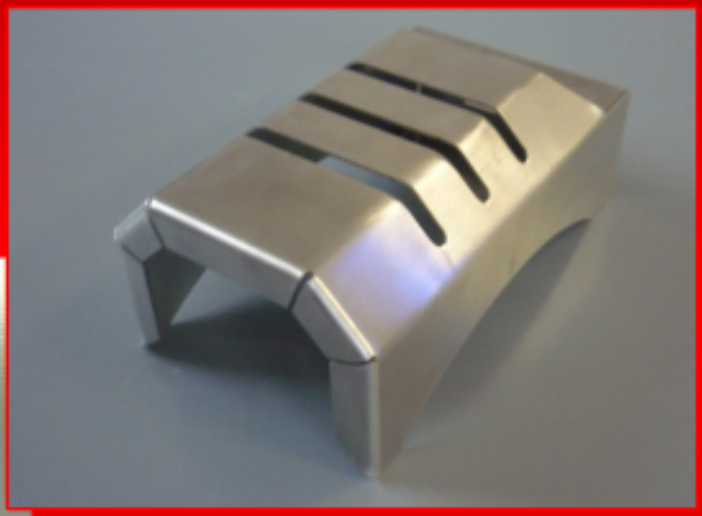
- Multi-axis NC program generation for any machines, even ones with very complex configurations
- Wide range of strategies for a variety of machining types
- Common interface for the creation of milling, turning and turn/mill; optional creation of user specified operations
- The machining result (rest) model is automatically calculated and passed on for use in any subsequent operations
- Easy to make NC programs
- Optimal tool paths
- Compatibility and integration with CAD systems SolidWorks™, KOMPAS™, SolidEdge™, Rhinoceros™, PowerSHAPE™, Autodesk AutoCAD™, Alibre Design™, Cobalt™
- Included postprocessor generator enabling adjustments to be made for any NC system
- Tool path calculation at any required precision level
- Automatic tool with fixture avoidance
- User friendly interface
- Vast library of ready postprocessors
- Realistic machining simulation
- Easy to use
- Results immediately after system installation
- Education, service, documentation, support, hotline
- Free in version updates
- Fast Return On Investment

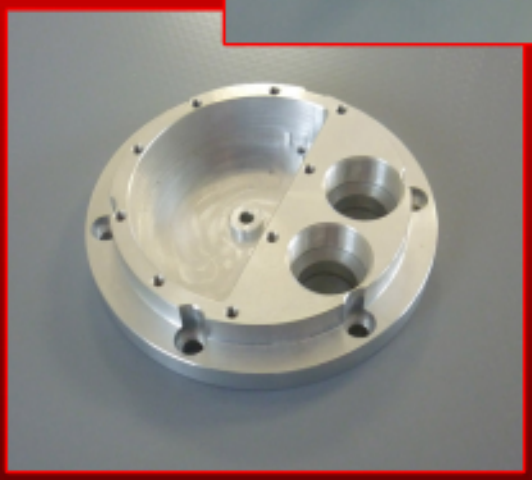


SprutCAM

SprutCAM

Made with SprutCAM





SprutCAM

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