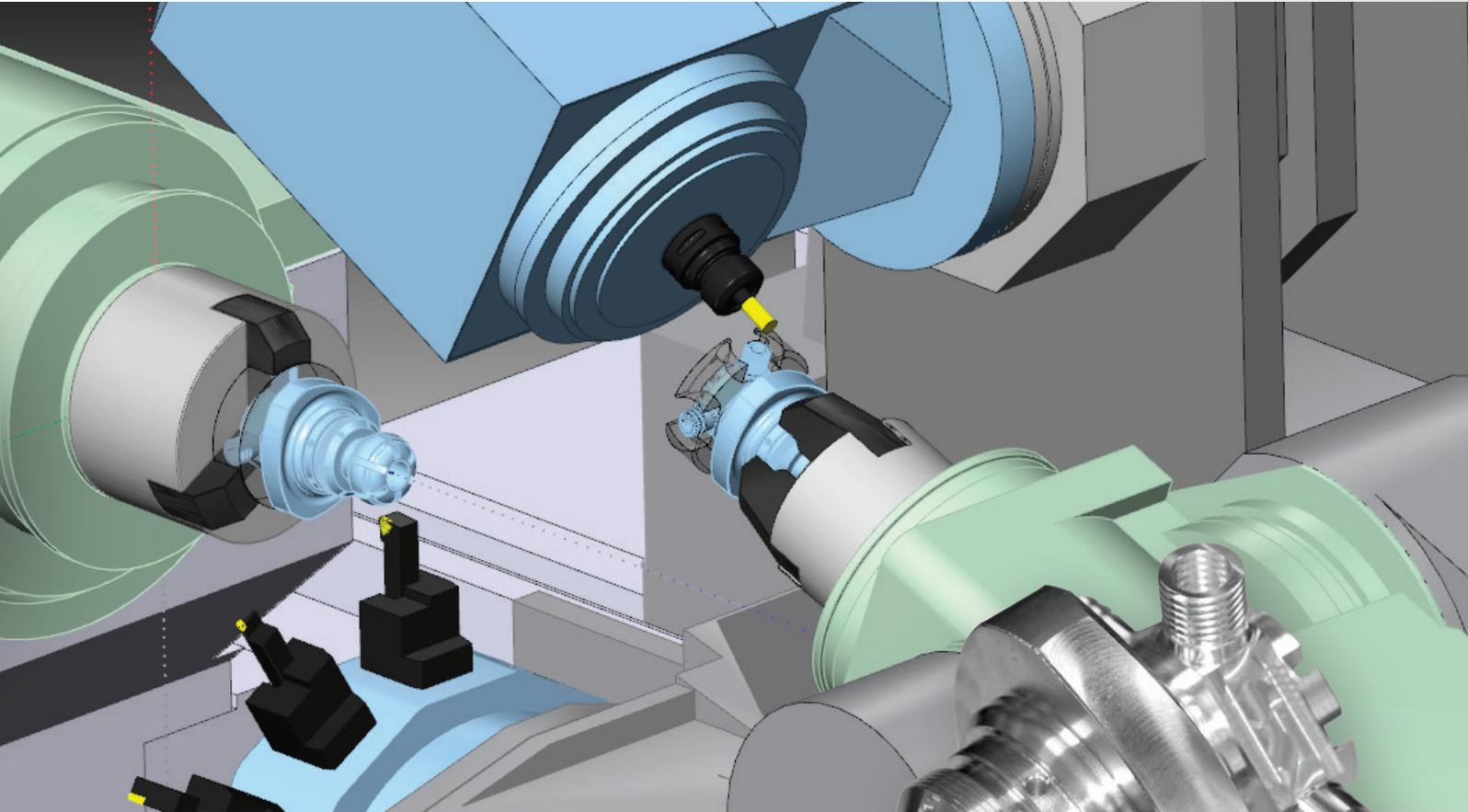


# SolidCAM

## Turning & Mill-Turn



The fastest growing and most demanding class of CNC machines on the market today are multi-task machines, that combine several capabilities into one machine. Multiple spindles, multiple turrets, material being machined in multiple stages, transferring from spindle to spindle without handling, stock inserted at one end, finished parts coming out the other.

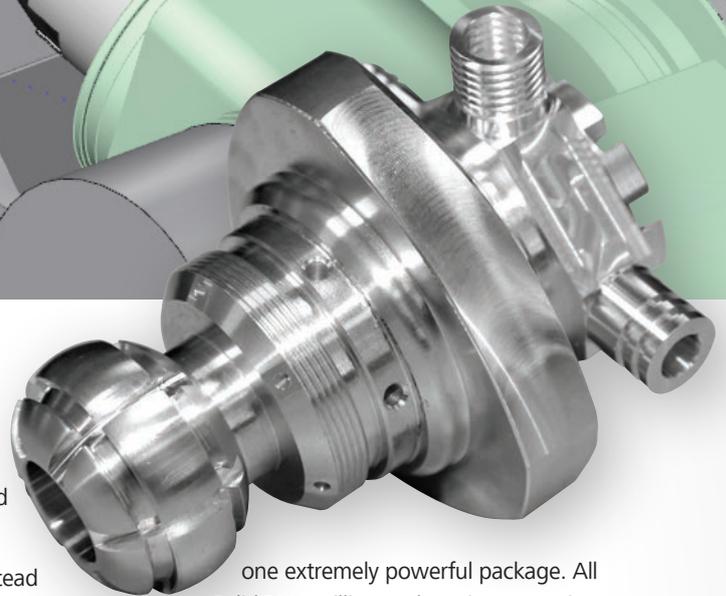
4/5-Axis Simultaneous Mill Turn machines have many uses and allow much more flexibility and capabilities, not offered from other machine configurations. With this in mind many of these have multi-axes, upper turrets, lower turrets, CYB and Sub Spindles.

SolidCAM has the advanced technology to support the programming of all the latest multi-function CNC machines,

providing powerful programming tools that are easy to learn and use, with the ultimate in flexibility and configurability.

The use of tail stocks, steady rest, sub spindles, rotary and linear turrets along with C Axis, CY Axis and B Axis, are regular features on today's Mill-Turn machine tools. In this collision rich environment, the programming of these machines is made simple and safe by utilizing SolidCAM's turning and milling operations in a single environment.

Support for multi-turret and multi-spindle Programming, with turret synchronization and full machine simulation, is seamlessly integrated into



one extremely powerful package. All SolidCAM milling and turning operations are available for the programming of mill-turn machines. All ancillary devices can also be defined and taken into account for simulation and gouge checking.

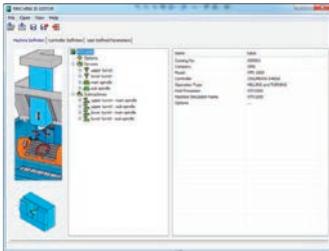
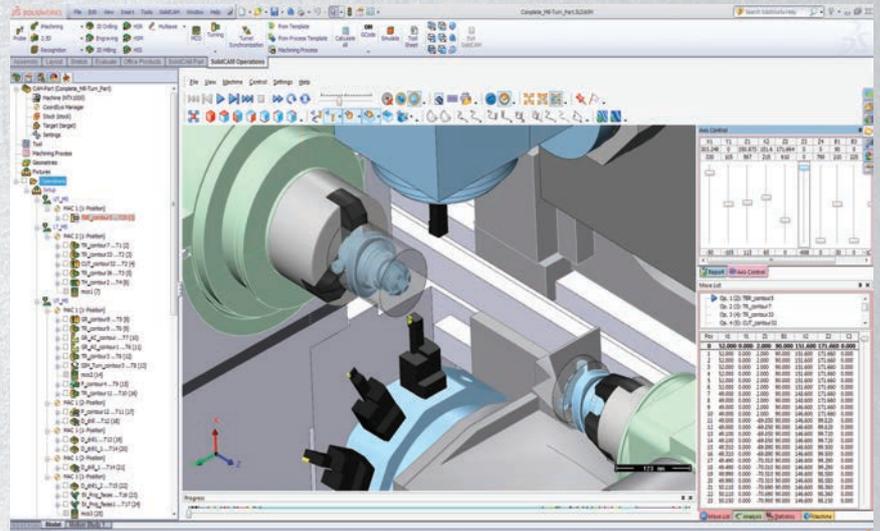
SolidCAM goes beyond just programming these complex machines, with intelligent management of rest material between Milling and Turning operations, for the most efficient toolpaths and reduced cycle times, ensuring the highest possible productivity.

# Mill-Turn



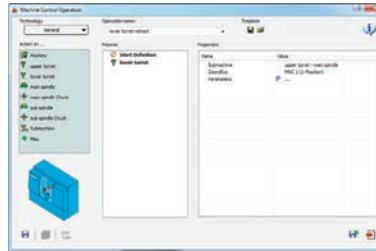
## Mill-Turn Machine Simulation

Mill-Turn machine simulation in SolidCAM offers a full kinematic simulation package, supporting simulation of all turning and milling operations and of all CNC machine components and devices. An option enables taking the feeds into account and showing real time simulation. The simulator offers full collision detection between machine components, workpiece, fixtures and tool holders, including many display options allowing the user full control over every aspect of the simulation. All the cycles and movements are supported along with the full graphics of the machine components and auxiliary devices such as tail stock and steady rest, providing safety as the part is fully tested before reaching the actual machine tool.



## Machine ID

Defines the CNC machine components and their kinematics enabling users to setup and support the most complicated mill-turn machines easily and effectively. Machine axes are defined in machine ID by their direction, rotation speed or linear feed and physical limits.



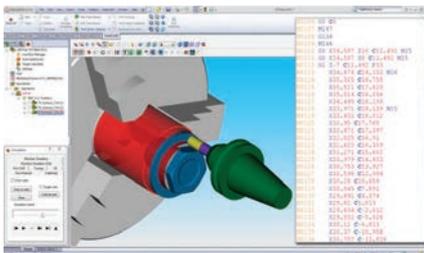
## MCO (Machine Control Operation)

Enables the user to insert various control operations while manufacturing a part - these operations control the CNC machine and activate different options and devices such as: opening or closing fixtures, machine doors, activating coolants, rotating part, moving part from one table to another, synchronizing between axes.



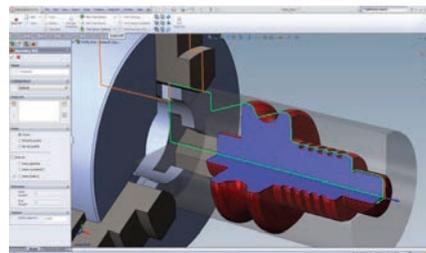
## Machine Setup

Manages how the part is mounted on the CNC machine and creates relations between the Part coordinate system and the machine coordinate system. It also enables you to define multiple fixtures for each table.



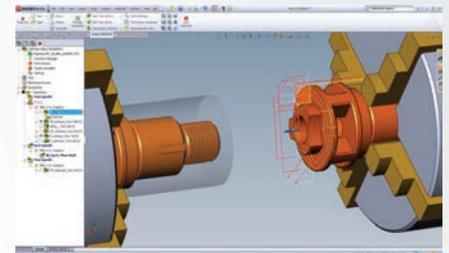
## C-Axis Machining

C-Axis machining is easily defined in SolidCAM. Convert any 2.5D operation to C-Axis motion. Advanced coordinate sets support: Split, Polar and Cartesian. Supports cutter compensation and short G-Code.



## Automatic In-Process Rest Material

SolidCAM automatically updates and calculates the in process rest material after every operation, both milling and turning.



## Transfer Part Between Spindles

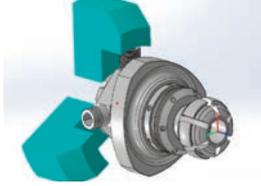
Fully control the transfer of parts between the main and sub spindle, using Machine Control Operations.

# Turning

The following advanced and easy-to-use turning operations are fully supported in Mill-Turn:

## Fixture Definition

Standard fixture libraries are available. Also specialized fixtures can be added. SolidCAM protects the entire turning tool from crashing into the fixture.



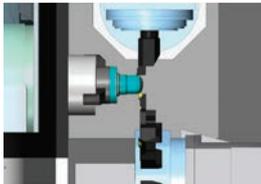
## Solid Envelope

Turning Envelopes of complex parts are automatically generated by SolidCAM. This aids the user in quickly turning the outermost profile of the part.



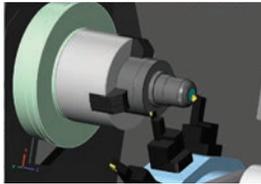
## Balanced Turning

Enables you to work with two tools performing roughing cuts at the same time to turn long and large parts faster. Tools can work simultaneously or in trailing mode, with several advanced working strategies.



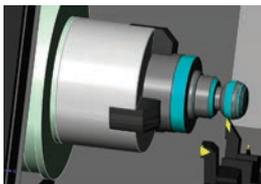
## Face Turning

The Face Turning operation performs turning operations of facial profiles.



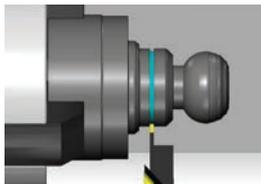
## Profile Turning

Enables you to turn longitudinal or facial profiles resulting in a tool path that can either use the turning cycles of the CNC-machine (if they exist), or can generate all the tool movements, avoiding gouges with the target.



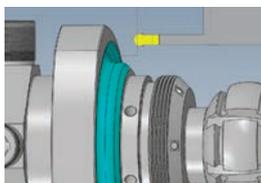
## Cut Off

This operation is used to cut off the part or to perform a groove with the same width of the tool. The cutting can be performed using CNC-machine cycles; chamfers and fillets can also be generated during the cutting.



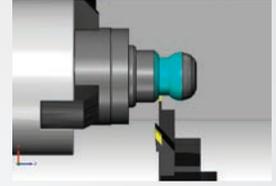
## Manual Turning

Enables you to perform turning according to your own geometry, regardless of a stock model, target model, or envelope.



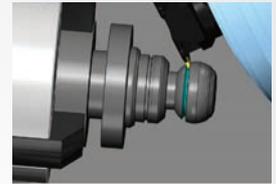
## Grooving

Enables you to perform longitudinal (internal/external) or facial grooves resulting in a tool path that can use single or multiple machine cycles or generate tool movements (G0, G1). Advanced break edge option is used for handling internal and external corners.



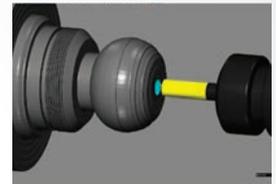
## Angled Groove

Enables you to perform internal or external inclined grooves, at any defined angle.



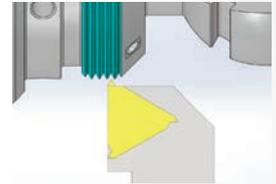
## Drilling

Enables you to perform a drilling action along the rotation axis, without defining any geometries.



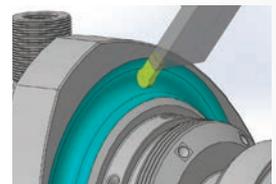
## Threading

Enables you to perform internal, external, longitudinal or facial threads. Different cycles and working strategies are supported, in addition to built-in threading standards.



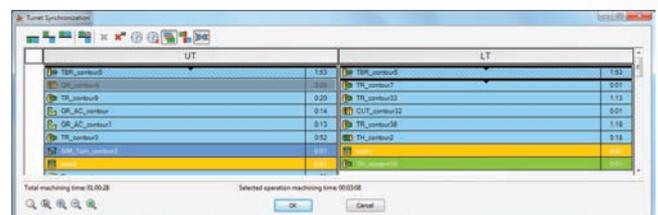
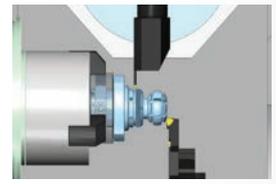
## 4<sup>th</sup> Axis Simultaneous Turning

Enables you to perform machining of curved profile using B-axis tilting capabilities of tool. This operation is useful for machining of undercut areas in a single machining step. This operation supports two types of tools: External Rough tool and External Groove tool.



## Multi-Turret Synchronization

SolidCAM provides powerful tools to synchronize multiple turrets. A machining time line shown with all operations and simple commands enables the user to align operations that will be synchronized. Afterwards the user can visually see in Machine Simulation the result of synchronization.



# Turning & Mill-Turn

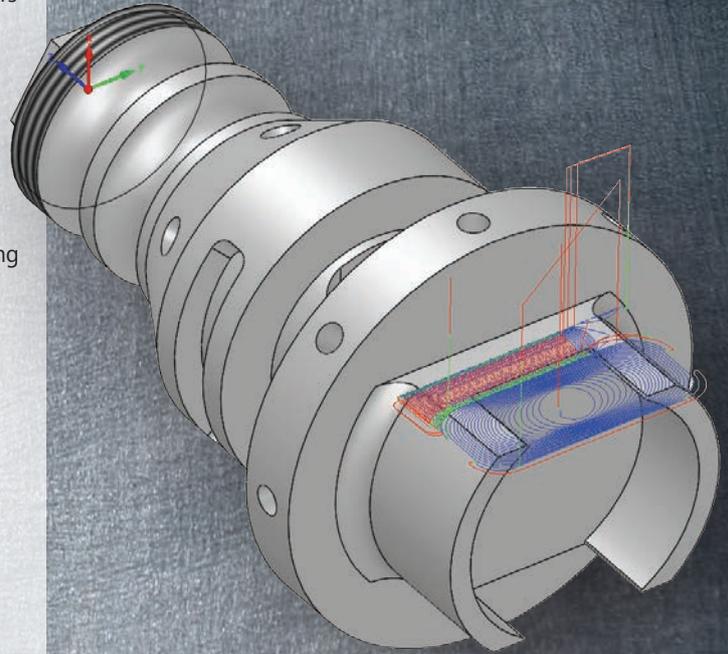
The new, revolutionary Milling technology  
**iMachining**<sup>®</sup>  
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"Truly Amazing!" This is what customers, machine tool manufacturers and tooling companies all say about iMachining. Fully integrated in SolidWorks, this CAM Module from SolidCAM will make your CNCs more profitable than ever.

When creating a mill-turn part, using iMachining for your 2D and 3D Milling operations can save you programming and cycle time. Additionally, iMachining has the very important advantage of exerting smaller cutting forces which can eliminate vibrations and excessive tool wear even in situations of non-rigid workpiece holding.

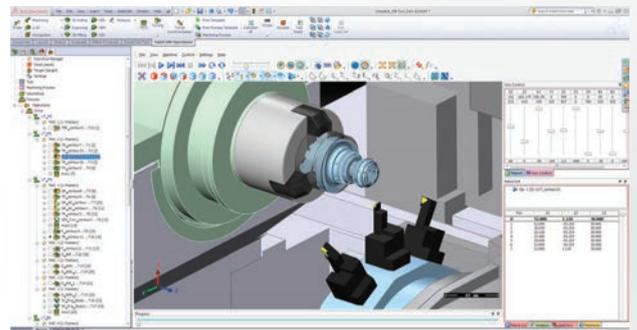
## **iMachining:** **For Maximum CNC Machine Performance!**

- ✓ Reduces Cycle Times 70% and More!
- ✓ Unmatched Hard Material Machining
- ✓ Increases Tool Life Dramatically
- ✓ Outstanding Small Tool Performance
- ✓ 4-Axis and Mill-Turn Machine Ready
- ✓ Easy-to-Use Technology Wizard Automates Speeds, Feeds and Cutting Parameters
- ✓ Fastest Learning Curve in CAM
- ✓ Streamlined Programming Increases Productivity



iMachining is a revolutionary CAM Module in SolidCAM, the Complete Integrated Manufacturing Solution inside SolidWorks, supporting all CNC-Technologies:

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- iMachining 3D
- 2.5D Milling
- 3D High Speed Machining
- High Speed Surface Machining
- Multi-Sided Indexial Milling
- Simultaneous 5-Axis Milling
- Turning
- Advanced Mill-Turn
- Wire EDM
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