

## GibbsCAM Solids-based Options

Solid model-based CAD applications have become the standard for geometry creation, resulting in part files in various solid model formats becoming more widely available. Compared to wireframe models, solid and surface models offer a more complete representation and enable more intuitive modeling and advanced machining capabilities. GibbsCAM's cost-effective suite of solids-based options provide powerful yet easy-to-use programming capabilities for today's solid and surface models. Create ultra-efficient part programs with gouge-free toolpaths using GibbsCAM's integrated advanced machining capabilities, and programming efficiency is significantly enhanced with GibbsCAM's highly automated multi-tool, multi-surface roughing and finishing, and "material only" machining methods.

The GibbsCAM solids-based options include:

- **Solids Import:** Provides initial solids capability, allowing solid and surface models to be read and manipulated. Geometry is extracted from the solid/surface for general machining.
- **2.5D Solids:** Provides a full range of functionality necessary to create and modify solids/surfaces, machine 2.5D solids/surfaces and generate optimized CNC programs. Specialized tools are provided for the import, repair and automatic solidification of surface data. Using the 2.5D Solids option, CNC programs are created faster, easier and more efficiently than from geometric shapes only (Solids Import is required.)
- **SolidSurfacer:** Provides additional capability to handle complex surface modeling, plunge roughing, multi-surface capabilities and advanced 3D capabilities for 3-axis machining – ideal for mold cavities, cores, dies and aerospace, medical and automotive components. (2.5D Solids is required.)



# Solids Import

Solids Import provides entry-level support for machining solids and surfaces. Solid and surface models can be read, viewed and manipulated. Geometry can be selected and extracted for machining. Using this option you can import a model, view it and extract geometry from selected edges, which can then be machined.

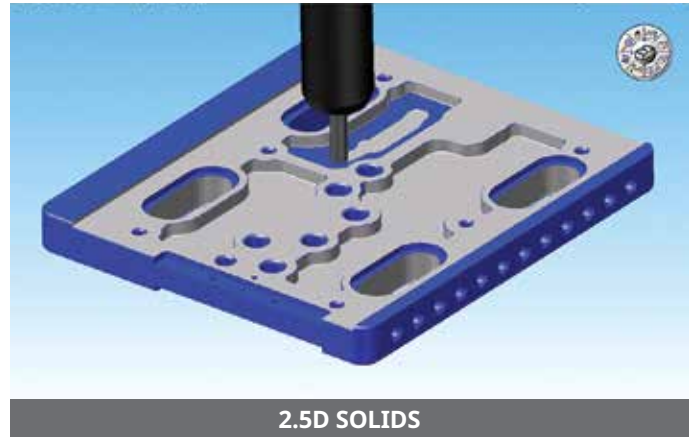
- Directly read in parts from most major CAD systems.
- Solids and surfaces are easily managed using the Body Bag window.
- Geometry can be extracted from solids/surfaces.
- Hole geometry can be extracted from solids/surfaces.
- To machine directly on the imported geometry as well as using surfaces and solids to define toolpaths, the 2.5D Solids option is easily added to your seat of GibbsCAM.



## GibbsCAM 2.5D Solids

GibbsCAM 2.5D Solids introduces a cost-effective capability that provides a full range of functionality necessary to machine 2.5D solids and generate optimized CNC programs.

- CNC programs are created faster, easier and more efficiently using surfaces and solid entities. Create 2.5D solids directly within GibbsCAM using a wide range of solid modeling tools or by solidifying an imported surface model, such as IGES.
- Utilize native geometry for machining which maintains the model's integrity throughout the programming process.

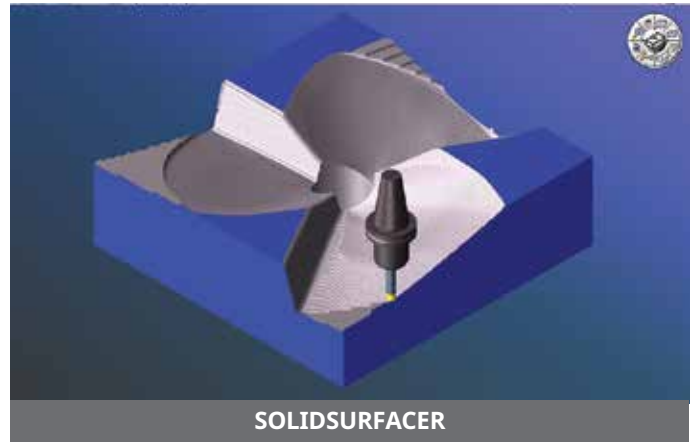


- 2D features can also be defined more easily and quickly using the GibbsCAM Profiler, which allows the user to create a selection plane dynamically oriented in the solid to create cut shape profiles, or to select the faces associated with cut shape profiles.
- Generate the tooling and multiple machining processes necessary to create specific instances of hole types hole programs using AFR (Automatic Feature Recognition) technology and then classify the holes into various hole types along with their parameters.
- 2.5D Solids outputs superior toolpath that contains lines and arcs rather than the usual segmented polylines. This preserves the part's geometric integrity throughout the toolpath, ensuring the highest level of part quality.
- Includes direct support for turning solid model profiles. For full 3-axis machining capabilities, SolidSurfacer can be seamlessly added to 2.5D Solids.

# SolidSurfacer

SolidSurfacer enables you to define parts using solid and surface modeling techniques. Using SolidSurfacer you can create solid models from part blueprints using the many powerful solid modeling functions contained in GibbsCAM. Solid file formats generated by other CAD programs can be opened directly in GibbsCAM SolidSurfacer for easier toolpath definition. SolidSurfacer allows you to utilize GibbsCAM's industry leading 3-axis toolpath programming tools including Plunge Roughing, Constant Stepover finishing and Adaptive Pocketing. Toolpath can be applied to native geometry creating optimal 3D and 2.5D toolpaths.

- Create complex surface and solid models using GibbsCAM's full suite of advanced modeling tools.
- Apply positive or negative draft to a solid model.
- Advanced toolpath strategies including Material Only Cutting, Core Detection and Constant Stepover Cut.
- Adaptive Pocketing can be used to reduce step height after roughing while reducing air cutting by removing only material left by previous toolpaths.



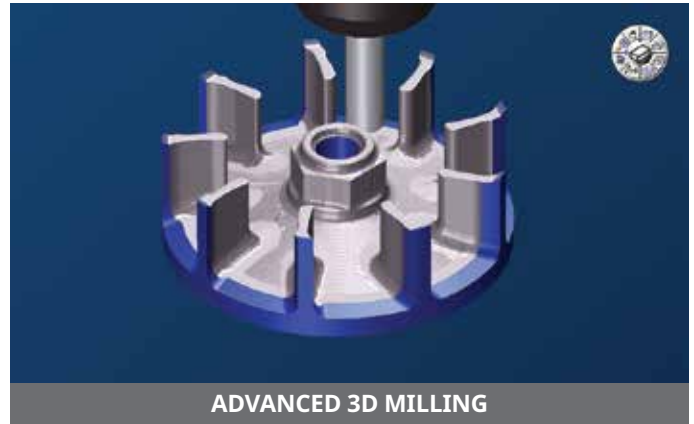
- By defining solids as "part" and "stock", GibbsCAM will automatically generate roughing and finishing toolpaths.
- Automatic gouge-protection ensures fast, safe machining.
- Collision checking for all created tool holder geometry.

| FEATURE                        | SOLIDS IMPORT | 2.5D SOLIDS | SOLIDSURFACER |
|--------------------------------|---------------|-------------|---------------|
| IMPORT SOLID MODELS            | X             | X           | X             |
| EXTRACT GEOMETRY FROM SOLIDS   | X             | X           | X             |
| ADVANCED FACE SELECTIONS       | X             | X           | X             |
| CONTOUR SURFACE PROGRAMMING    |               | X           | X             |
| SOLID MODEL CREATION           |               | X           | X             |
| SOLID STOCK DEFINITION         |               | X           | X             |
| CREATE AND EDIT SURFACES       |               | X           | X             |
| MODIFY IMPORTED SOLID          |               | X           | X             |
| "PROFILER" FEATURE CREATION    |               | X           | X             |
| AUTOMATIC HOLE RECOGNITION     |               | X           | X             |
| PARTING LINE CREATION          |               |             | X             |
| ADVANCED SOLID MODELING        |               |             | X             |
| APPLY DRAFT TO SOLID MODEL     |               |             | X             |
| ADDED SURFACE CREATION OPTIONS |               |             | X             |
| ADVANCED 3D MILLING            |               |             | X             |
| PROJECT 3D TOOLPATH            |               |             | X             |
| CONSTANT STEPOVER TOOLPATH     |               |             | X             |
| ADAPTIVE POCKETING             |               |             | X             |
| PART/STOCK TOOLPATH DEFINITION |               |             | X             |

# Advanced 3D Milling

When the SolidSurfacer option is added, you will have access to the entire suite of 3-axis machining strategies that GibbsCAM has to offer. These industry leading strategies allow you to rough and finish directly from a solid model ensuring optimized and gouge-free operations. The advanced algorithms GibbsCAM utilizes to process its 3-axis toolpaths are created to surpass traditional toolpaths resulting in superior surface finish and reduced cycle times.

- Support for 3D Material Only allows you to generate toolpaths that will only cut material that is left from previous paths.
- Improved toolpath quality by automatically creating fillet surfaces along any concave intersection. This will allow the resulting toolpath to contain curved sections instead of sharp inside corners, which makes for better overall surface finish.
- Directly machine faceted bodies, including imported STL files.
- Pocketing with Core Detection allows you to specify values for roughing and finishing stepover, giving you finer control over offset roughing.
- Adaptive Pocketing reduces material steps while eliminating air cutting. You can use this cut type to clear large quantities of material very quickly, leaving only a minimal amount of remaining material.
- Optimize walls and floor machining with Flats Cut operation. Any selected face or faces that include both a flat and non-flat area will machine the flat area up to the non-flat area, where the tool's contact-point tangency touches the non-flat area.
- Split large toolpaths to allow for extra tool-changes, saving cutter life and improving surface finish.



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