Create a solid by outlining or slicing a surface

Apply a simple roundover or chamfer to an edge

Unsplit a body (useful for removing features, especially to create a single entity)

Perform Boolean operations between two solids: union (add), difference (subtract), intersect (create a shape at the intersection of all the solids) and separate (useful for separating an assembly)

Maintain modeling history allowing modification and rebulding of solids

**Solid Geometry Interaction**

- Specific solid tool path for turning, mill and wire EDM options
- Interactive solid machining window using PickBox
- Automatic Feature Recognition of built features automatically identifies datum, cutters, location and orientation

**Machining**

- Pocket machining with support for protected 2D geometry
- Contour machining with support for projected 2D geometry
- General purpose machining, contouring tools with offset at any angle

**SolidSurfacer**

The SolidSurfacer option provides higher-level surfaces and solid modeling support complementary to machine surfaces and solids is also included. The SolidSurfacer option provides an advanced surface and solid modeling and manufacturing requirements for complex solid tool and the arc tool.

**Surface Modeling**

- Create a curve patch
- Create a swept surface using a variety of methods: douc curve curves, I-beam curves, NURBS curve planes, surface plane, generating curve surfaces using optional parameters, multiple drive curves, blendable drive curves

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**Post Processing**

- PostNAST for GibbsCAM, a template-based post processor allowing us to deliver with over 250 example post processor templates
- GibbsCAM® Library of over 6,000 proven post processors, ensuring what-you-see-is-what-you-get output
- APL output for use with legacy post processing systems

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**GibbsCAM Solids-Based Options**

- Solids Import Options: Provides critical solids enabling allowed methods to be used in the application. Geometry is extracted from the solid to solid modeling.
- 2.5D Solids Options: Provides a full range of functionality necessary to create and modify solids. Machine 2.5D solids and generate optimized CNC programs. Specialized for short tonnage or one-of-a-kind parts. Used in the 2.5D SOLID options, SOLID programs are created faster, easier, and more efficiently than from geometric shapes only (e.g. IGES). Aircraft industry, or robotics is required.

The solidd-based options are completely integrated in GibbsCAM Production Milling, Turning, Mill/Turn and HTM configurations.

**GibbsCAM** is certified under the AutoDesk Inventor Certified Application Program, as a SolidWorks® Certified Product, Pro/Engineer® Certified Product, and in the SolidWorks Certified CAM Product. GibbsCAM supports the latest Microsoft operating systems including Windows XP, Windows 2000 and Windows NT. GibbsCAM has also received the Microsoft Windows Certification (Visio 2000) and Visio 2000 certification from Microsoft.

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**Solid model-based CAD applications are becoming more and more widely used, resulting in part files on various solid models formats becoming more widely available. Compared to traditional sheet metal models, solid models offer a more complete representation. Not only that, but they enable more intricate modeling and advanced machining capabilities.**

In order to fully take advantage of the benefits of solids technology, a cost-effective suite of solid-based options has been created in GibbsCAM. It is specifically structured to add to the base Milling or Turning models. These options allow the user model with basic solids-based functionality and gradually expand to more advanced capability while protecting their investment. Combined with GibbsCAM's attractive graphical user interface, integrated solid-part modeling, and associative between part geometry, process parameters, and tools, these solid-based options provide powerful, yet easy-to-use programming capabilities for today's solid models.

Using GibbsCAM's integrated, advanced machining capabilities, ultra-efficient part programs with grain-free tools can be created. At the same time, programming efficiency is significantly enhanced with GibbsCAM's highly automatic multi-tool, multi-surface roughing and finishing, and "natural only" machining methods.

The GibbsCAM solid-based options include:

- **Solids Import Options**: Provides critical solids enabling allowed methods to be used in the application. Geometry is extracted from the solid to solid modeling.
- **2.5D Solids Options**: Provides a full range of functionality necessary to create and modify solids. Machine 2.5D solids and generate optimized CNC programs. Specialized for short tonnage or one-of-a-kind parts. Used in the 2.5D SOLID options, SOLID programs are created faster, easier, and more efficiently than from geometric shapes only (e.g. IGES). Aircraft industry, or robotics is required.

Additional options include:

- **SolidSurfacer**: Options provide additional capability to handle complex reverse machining, 2.5D solids post, solids importing, solids surface support for solids shells, solids, dies, and die casting development.

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**Customer Support**

- **Ribbon Distribution Channel**: Local support in customer is provided by GibbsCAMBrands worldwide.
- **Training**: Training is available through local GibbsCAMBrands or training at GibbsCAD University.

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**GibbsCAM Support**

- **GibbsCAM Website**: www.GibbsCAM.com provides a full range of functionality necessary to create and modify solids. Machine 2.5D solids and generate optimized CNC programs. Specialized for short tonnage or one-of-a-kind parts. Used in the 2.5D SOLID options, SOLID programs are created faster, easier, and more efficiently than from geometric shapes only (e.g. IGES). Aircraft industry, or robotics is required.

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- **GibbsCAM Maintenance Program**: Annual cost is provided to GibbsCAM users, preventing unauthorized access to GibbsCAM software. GibbsCAM Maintenance Program software is available for download at a GibbsCAM Gateway or by calling the GibbsCAD Support Center.

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- **GibbsCAM Production Milling**

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- **GibbsCAM Production Milling, Turning, Mill/Turn and HTM**: configurations are available for these post processors.

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- **GibbsCAM Software** is certified under the Microsoft Windows® and Waterfall® operating systems.

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GibbsCAM is certified under the AutoDesk Inventor Certified Application Program, as a SolidWorks® Certified Product, Pro/Engineer® Certified Product, and in the SolidWorks Certified CAM Product. GibbsCAM supports the latest Microsoft operating systems including Windows XP, Windows 2000 and Windows NT. GibbsCAM has also received the Microsoft Windows Certification (Visio 2000) and Visio 2000 certification from Microsoft.
Solids-based Options Details

**Solids Import**

The Solids Import options provide entry-level support for machining solid models. Solid models can be read, visualized and manipulated. Geometry can be selected and extracted for machining. Using this option you can import a solid model, view it, extract geometry from selected edges, which can then be machined.

**Solid and Surface Model Interaction**

- **Display of solid can be toggled on**
- **Display style can be set to either wireframe or rendered**
- **Solid display can be toggled off**
- **Indicators can be displayed showing surface sides**
- **Solid can be managed efficently in Body Bag**
- **Wide range of face selections performed from right mouse menu**

**Solid Geometry Manipulation**

- **Geometry can be extracted from solid**
- **Circle geometry can be extracted from solid**
- **Geometry can be created by slicing solid**

**2.5D Solids**

The 2.5D Solid option provides surfacel support and solid machining capabilities. Functionality to directly manipulate surfaces and solids is also included. With this option, you have the ability to create, modify and modify surfaces and solid models and then generate programs to machine them.

**Surface Modeling**

- **Create a planar surface**
- **Create a swept surface**
- **Create a variety of surfacet surfaces: loft curves, loft surface, cone**
- **Create a variety of swept surfaces: drive curve, plane, drive curve, plane, drive curve**
- **Create a variety of swept surfaces:**
  - Drive curve, plane, drive curve, plane
  - Drive curve, plane, drive curve

**Solid Modeling**

- **Create a sphere and cuboid solids using parametric constructors**
- **Create a solid by extruding or revolving a cross-section**
- **Create a solid using a sweeping of machining:**
  - Drive curve, plane, drive curve, plane, drive curve, plane
- **Create a solid by blending between two curves**
- **Create a solid by automatically slicing multiple surfaces together to a tolerance**

### Geometry Creation

**Solid and Surface Modeling**

- **Swept NURBS and solid models**
- **Solid and surface modeling by slicing solids**
- **Swept NURBS and solid models**
- **Solid and surface modeling by slicing solids**

**Surface Creation**

- **Swept NURBS and solid models**
- **Solid and surface modeling by slicing solids**
- **Swept NURBS and solid models**
- **Solid and surface modeling by slicing solids**

**Roughing**

- **Create a solid using a variety of sweeping methods:**
  - Loft surfaces from a solid
  - Loft lines and surfaces from a solid
  - Loft surfaces from a solid
  - Loft surfaces from a solid

**Machining**

- **Fast, game-like toolpaths over multiple surfaces and/or complex bodies**
- **Extract multiple tools to multiple surfaces in a single step**
- **Fast associativity to update changes along the entire part**

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**CAD Model Features Supported**

- **DWF and DWG**
- **IGES, importing all 2D and 3D wire frame geometry elements, surface entities and BRep solids**
- **Parasolid® T-Solid solid model files, generated by Unigraphics, Solid Edge, SolidWorks® and others**
- **Solid Edge™ and Solid Works® native formats**
- **Optional support for ACIS™ and SolidWorks® solid model files, generated by Ashtech Yoyato®,** Autodesk Mechanical Desktop®, Autodesk Inventor®, CAD Exchanger® Solid Designer and others
- **Optional support for native formats including Autodesk Inventor CATIA V4 and V5, and Pro/Engineer®**
- **Optimal support for STEP AP203 and AP214 and VDA FSi standard formats**

**Solids-based Options Capabilities Overview**

- **DXF and DWG**
- **Geometry can be extracted from solid models**
- **Apply multiple tools to multiple surfaces in a single step**
- **Solids can be managed offscreen in Body Bag, and Parasolid® indicators can be shown showing surface sides, capabilities, see the CAD Interoperability data sheet.)

**CAD Import**

(For a fuller description of GibbsCAM data exchange support, see the CAD Interoperability data sheet.)
### CAD Models Supported
- DXF and DWG
- Parasolid
- Circle geometry can be extracted from solids
- Display of solids can be toggled on/off
- Indicators can be displayed showing surface side, normals, and tangent planes
- Edge display can be toggled on/off
- Fast, gouge-free toolpaths over multiple surfaces and/or parts
- Apply multiple tools to multiple surfaces in a single step, and Pro/ENGINEER
- Full associativity to update capabilities, see the CAD Interoperability data sheet.
- For a full description of GibbsCAM's data exchange capabilities, see the CAD Interoperability data sheet.
- Inventor
- Solid and Surface Importing
- Import a solid model, view it, listen to it, and let it spin.
- Geometry Creation – Solid and Surface Modeling
- Extruded shape
- Lofted shape
- Revolved shape
- Trimmed planes
- Stitched/surftich surfaces
- Trim/Extend surface
- Intersection surfaces
- Create surface from selected edge
- Rendered shape
- Contour Roughing
- With constant 2 steps or constant ridge height steps
- Stepper line machining
- Contour Roughing with Zigzag
- Laze Cut Contouring
- Select single direction, back and forth, user specified angle with constant 2 steps, offset 2, variable offset 2, constant number of passes over the entire part and optional automatic periphery cleaning
- Smart drilling of entry holes in multi-level pockets
- Contour/shape cornering of pockets
- 2D/3D geometry utility solid for 3D machining
- Why Is Associativity Important?
- In the native GibbsCAM product line it is built with one primary objective or use. Associativity is an important part of that, as it allows you to make changes to your part and all affected aspects of the part automatically. All have completely incorporated it into our single-source CAD model. Solid tool parts from other extruding parts can make internal paths quickly and easily.
- Solid and Surface Modeling
- Extruded shape
- Lofted shape
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DXF and DWG
Edge display can be toggled on/off
Solids can be managed off-screen in Body Bag
IGES, importing all 2D and 3D wire geometry can be extracted from solid
Full associativity to update
Fast, gouge-free toolpaths over multiple surfaces and/or
(For a full description of GibbsCAM’s data exchange options from an imported Solid model, see the装配 section, or from a file in DXF, DWG, IGES format, or from an imported file in ACIS format, see the装配 section.

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Surface Modeling
Create a planar surface
Create a swept surface
Create a variety of swept surfaces: drive curves plane alignment in a 2D or 3D view, drive curves, and sharp corners.

Solid Geometry Manipulation
Display of solid can be toggled off
Circle geometry can be extracted from solid
Geometry can be created by slicing solid

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

Solid and Surface Model Interaction
Display of solid can be toggled off
Style display can be set to either wireframe or rendered
Edge display can be toggled off
Indicators can be displayed showing surface size
Solid can be managed efficiently in Body Bag
Wide range of face selections performed from right mouse menu

2.5D Solids
The 2.5D Solid option provides intelligent surfacing and solid model capabilities. Functionality to directly machine surfaces and solids is also included. With this option, you have the ability to create, import and modify surface and solid models and then generate programs to machine them.

Surface Modeling
Create a planar surface
Create a swept surface
Create a variety of swept surfaces: drive curves plane alignment in a 2D or 3D view, drive curves, and sharp corners.

Solid Modeling
Create a swept surface and cuboid solids using parametric constructors
Project by extruding or revolving a cross-section
Create a solid using a sweeping or machining drive curve plane or aligned (2D) one drive curve and a cross-section.

Solid Geometry Manipulation
Display of solid can be toggled off
Circle geometry can be extracted from solid
Geometry can be created by slicing solid

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Surface Modeling
Create a planar surface
Create a swept surface
Create a variety of swept surfaces: drive curves plane alignment in a 2D or 3D view, drive curves, and sharp corners.

Solid Modeling
Create a swept surface and cuboid solids using parametric constructors
Project by extruding or revolving a cross-section
Create a solid using a sweeping or machining drive curve plane or aligned (2D) one drive curve and a cross-section.

Solid Geometry Manipulation
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Circle geometry can be extracted from solid
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Surface Modeling
Create a planar surface
Create a swept surface
Create a variety of swept surfaces: drive curves plane alignment in a 2D or 3D view, drive curves, and sharp corners.

Solid Modeling
Create a swept surface and cuboid solids using parametric constructors
Project by extruding or revolving a cross-section
Create a solid using a sweeping or machining drive curve plane or aligned (2D) one drive curve and a cross-section.

Solid Geometry Manipulation
Display of solid can be toggled off
Circle geometry can be extracted from solid
Geometry can be created by slicing solid

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

Solid and Surface Model Interaction
Display of solid can be toggled off
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Edge display can be toggled off
Indicators can be displayed showing surface size
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Wide range of face selections performed from right mouse menu

2.5D Solids
The 2.5D Solid option provides intelligent surfacing and solid model capabilities. Functionality to directly machine surfaces and solids is also included. With this option, you have the ability to create, import and modify surface and solid models and then generate programs to machine them.
Solid Modeling

Create body by tracing across multiple curves
- Create body through a closed loop
- Create a body using a variety of methods: no drive curves planar loops, 3D direct curve curves, planar curve curves, generate curves function (with optional parameter), multiple driven curves, blended driven curves
- Create parting line from solid
- Apply postprocessing draft to solid

Machining
- Line Cut Filling, including single direction, multiple directions, equal segments, with constant 2 step, offset 2, variable 2, constant number of passes over the entire model and optional arbitrary parameters
- Lace Cut Finishing, including single direction, back and forth and your specified angle
- Clean-up large ridges areas left by previous lace cut at different angle
- Finish with constant 2 steps or constant radius height steps steps (use machining)
- Clean-up only contours left by a previous larger radius tool (center contour rejection)

Surface Modeling

- Create a Contour patch
- Create a new surface using a variety of methods: no driven curve curves planar loops, 3D direct curve curves, planar curve curves, generate curves function (with optional parameters), multiple driven curves, blended driven curves

Post Processing

- PostASTE for GibbsCAM, a template-based post processor technology delivered with over 225 example post processor templates
- GibbsCAM Library of over 6,000 proven post processors, ensuring what-you-see-is-what-you-machine graphic output
- API CL output for use with legacy post processing systems

Surface and solid modeling and rebuild of solids

Solids Import
- 2.5D Solids, SolidSurface
- 2.5D Solids, SolidSurfacer
- Solids Import
- 2.5D Solids, SolidSurfacer
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In order to fully take advantage of the benefits of solid technologies, a cost-effective suite of solid-based options has been created for GibbsCAM. Biconstructively structured to add to the base Milling or Turning modules, these options allow the user to work with basic solid-based functionality and gradually expand to more advanced capabilities while protecting their investment. Combined with GibbsCAM’s graphical user interface, integrated CAD-PTM networking, and associativity between part geometry, process parameters, and tools, these solid-based options provide powerful, yet easy-to-use programming capabilities for today's solid models. Using GibbsCAM’s integrated, advanced machining capabilities, ultra-efficient part programs with group-tree based commands are created. At the same time, programming efficiency is significantly enhanced with GibbsCAM’s highly automated multi-tool, multi-surface routing and finishing, and “natural only” machining methods.

The GibbsCAM solids-based options include:

- Solids Import Option: Provides critical solids enabling algorithms that will be helpful to a wide range of users. Geometry is added to the solid to a full set of milling machines.
- 2.5D Solids Option: Provides a full range of functionality necessary to create and modify solids, 2.5D solid and generate optimal CNC programs. Specialized tooling and support is provided for this region, and automatic solidification of surface data. Using the 2.5D Solid option, CNC programs are created faster, easier, and more efficiently than from geometry shapes only (SolidCAM Air operation is required).
- SolidSurfacer Option: Provides additional capability to handle complex surface modeling and milling operations. Surface machining will be for solids, contours, dies, and other machinable, medical, and automotive components. (2.5D Solid option is required)

The solid-based options are completely integrated with all GibbsCAM Production Milling, Turning, Mill/Turn and HTM configurations as well as their post processors.

GibbsCAM is certified under the Autodesk Inventor Certified Application Program, as a Solid Edge CAM Programming Certified Solution Provider, and as a SolidWorks CAM Product Provider. GibbsCAM is also certified under the Microsoft Windows certification from Microsoft.
Solid Modeling

- Create a solid by extruding a 2D sketch
- Apply a simple roundover to a 3D edge
- Unify a body (useful for removing features, especially to create holes)
- Perform Boolean operations between two solids: union, difference (subtract), intersect (create a shape at the intersection of the two solids) and separate (useful for separating an assembly)
- Maintain real-time battery allowing modification and rebuild of solids

Solid Geometry Interaction

- Solid used for both stock for turning, mill- and turn-and-HTM options
- Interactively select machining regions using Flicker
- Automatic Feature Recognition of hole features automatically identifies datum, offsets, location and orientation

Machining

- Pocket machining with support for protected 2D geometry
- Contour machining with support for protected 3D geometry
- Generative precise (analytic) contouring tools with offset at or across surface

SolidSurfacer

The SolidSurfacer option provides higher-level surfaces and solid modeling support downstream on top of stock machining. It's used to machine surfaces and solids is also included. It comes SolidSurfacer allows you to address not only the conventional surface and solid modeling and machining requirements for complete solid modeling and drafting.

Surface Machining

- Create a contour path
- Create a smooth surface using a variety of methods: no drive curve plane, drive curve plane, generating curve function (with optional toolpath), multiple drive curves, blended drive curves

Why Include Modeling Functionality?

- Cut entire selected areas
- Finish top surfaces and clean-up ridge areas left by previous constant Z roughing
- Automatic intersection machining (following from previous tool path blending)
- Multi-Surface Fine Machining
- 2-Cuts Fine Machining

Post Processing

- PostNASTF for GibbsCAM, a template-based post processor that delivers over 225 example post processor templates
- GibbsCAM Library of over 6,000 proven post processors, ensuring what-you-see-is-what-you-get
- APL CL output for use with legacy post processing systems

Customer Support

- Accredited by the ANSI/IEEE Accreditation Program for Microsoft Dynamics solutions
- GibbsCAM is also certified under the Autodesk Incentive Certified Application Program, a Solid Edge Solutions Distribution Program, Elite Product, and in the SolidWorks Certified CAM Product, and in the Inventor Certified CAM Product.

GibbsCAM: Gibbs and Associates in the United States and/or other countries. Microsoft, Windows, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.

If enrolled in the GibbsCAM Maintenance Program, you can download the solids-based options included: Solid Import may be allowed to solids-based models. Geometry is extracted from the solids to be used in machining. Structures are used to make solids-based models. 2.5D Solids Option provides additional capability to handle complex surfaces and add objects. Support is available for solids for solids, wires, lines, and points, as well as additional capabilities.

The solids-based options are completely integrated into GibbsCAM Production Milling, Turning, Mill/Turn and MTM configurations as the default post processor.

GibbsCAM is a certified under the Autodesk Inventor Certified Application Program, in a Solid Edge Solutions Distribution Program, Elite Product, and in a SolidWorks Certified CAM Product.

GibbsCAM is the leading full-featured 2D/3D-CAM software application for Windows-based computer systems including Windows Me, Windows 2000 and Windows XP. GibbsCAM must also conform to both the MS-DOS Compatibility Mode and the Windows 2000/XP standards to receive certification from Microsoft.

GibbsCAM solids-bases options include:

- **Solids Import Option**: Provides solids file-to-2D import capability to solids models.
- **2.5D Solids Option**: Provides additional function for creating 2.5D models.
- **SolidSurfacer Option**: Provides additional capability to handle complex surfaces and add objects. Support is available for solids for solids, wires, lines, and points, as well as additional capabilities.

If you have any questions or need further information, feel free to contact your local GibbsCAM Reseller or see the GibbsCAM Maintenance data sheet.