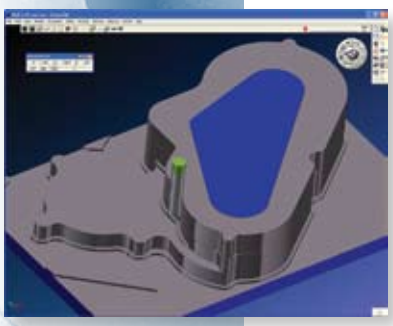
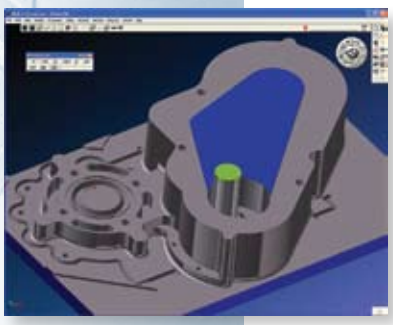
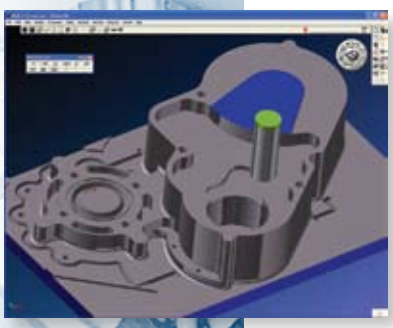
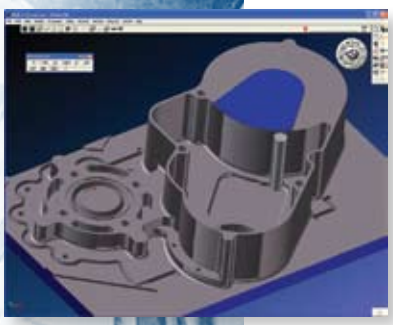








Basic GibbsCAM Overview/Production Modules

CAM/CNC Programming System

GibbsCAM® is a state-of-the-art, PC-based computer-aided manufacturing (CAM) system for programming computer numerically controlled (CNC) machine tools. GibbsCAM's graphical user interface was designed for machinists by machinists, resulting in a user environment that is both familiar and efficient. This manufacturing orientation ensures that GibbsCAM's powerful functionality is also extremely easy to learn and use. GibbsCAM's free-form interaction style allows you to move easily between geometry creation, toolpath creation, process visualization/verification and post processing. GibbsCAM's ease-of-use, programming efficiency, speed and short training time make GibbsCAM the CAM industry's ease-of-use leader and the best tool for programming your parts.

GibbsCAM is organized as a single application. The base package's capabilities can be extended through the addition of seamlessly integrated options. This way the system can be configured for your initial needs and gradually expanded as your needs grow, protecting your investment. Base packages and options include:

Packages

- **Milling Package:** 2-, 2.5- and 3-axis milling with simple 4th-axis positioning
- **Turning Package:** 2-axis turning
- **Mill/Turn Package:** Live tooling, including support of X,Y, Z, C and B-axis

Options

- **Advanced CS Option:** (Coordinate Systems) 4th- and 5th-axis rotary positioning
- **Rotary Milling Option:** Simultaneous rotary milling, supporting flat or radial geometry
- **4-Axis Option:** Simultaneous rotary milling, support radially prismatic solid geometry
- **TMS Option:** (Tombstone Management System) Multi-part layout and programming for tombstone fixtures
- **5-Axis Option:** 5-axis simultaneous milling of surfaces and solids
- **Solids Import Option:** Import a solid model and machine it in wire-frame from extracted edges
- **2.5D Solids Option:** Simple solid modeling and solid-based machining of 2-, 2.5- and simple 3-axis part shapes
- **SolidSurfacer® Option:** Advanced surface and solid modeling and 3-axis surface machining
- **MTM™ Option:** (Multi-Task Machining) Turning with multiple spindles and tool groups and milling (C, Y and B-axes per tool group with Mill option)
- **Machine Simulation Option:** Build a machine and simulate machine tool motion
- **Wire-EDM Option:** 2- through 4-axis Wire-EDM
- **VoluMill™ Wireframe and VoluMill Solids:** Adds powerful high speed roughing functionality and controlled material removal for GibbsCAM milling.

GibbsCAM's data exchange capabilities are able to access the broadest range of native and industry standard CAD data formats allowing you to receive data files from any CAD system. GibbsCAM is certified under the Autodesk Inventor Certified Program, is a Siemens Solution Partner Program-PLM for Solid Edge product, and is a SolidWorks Certified CAM Product.

GibbsCAM is Compatible with Windows® 7 and Certified for Windows Vista.™

Compatible with Windows 7 | Autodesk Inventor 2011 Certified | SolidWorks Certified CAM Product | Solution Partner PLM SIEMENS

Powerfully Simple. Simply Powerful.®

Overall System Capabilities

Environment

Unique Graphical User Interface
GibbsCAM's graphical user interface was designed for machinists by machinists and uses the latest standard Windows pull-down menus, icons and buttons capabilities. The user environment is further extended by representing aspects of the process (tools, operations, toolpath, hidden-line toolpath in ToolSim mode) as tiles which are manipulated through a drag-and-drop style of graphical interaction.

Flexibility
GibbsCAM's modeless interface provides the ability to switch from one dialog to another mid-stream without completing the previous task. This allows you to work in a totally free-form manner with no constraints on the order of how you do different tasks, such as geometry and toolpath creation.

Associativity
Full associativity is maintained between geometry, process and resulting toolpath, allowing any items affected by a change to be automatically updated.

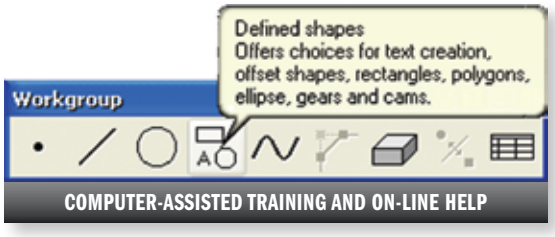
Dynamic Viewing
An on-screen virtual trackball allows you to easily control the part view from any standard orientation (top, front, right, isometric) or any orientation by rotating the trackball. Zoom, unzoom, pan and redraw are also standard tools directly accessed through GibbsCAM's viewing control.

Multiple Viewports
Configure views using the Viewport Configuration Manager.

User-Preference Interface
Multiple interface levels are available, which only present the necessary interface elements, significantly reducing the complexity of the interface and greatly improving your programming efficiency.

Input Devices
Multiple input devices, including mouse, trackball, and 3D mouse, are supported.

Computer-Assisted Training and Online Help
Online training is provided through contextually sensitive help, on-screen reference balloons and action-specific prompting.



Printed Documentation
Easy to read and use manuals, complete with in-depth reference sections, high-quality graphics and tutorials are conveniently available individually from our Lulu.com site.

Inch and Metric
Both inch (imperial) and metric measurement systems are supported with quick and easy conversion between them.

Mathematical Tools
Perform mathematical functions in all text input fields including geometry input fields. Convert inch to metric by pressing keyboard letters I or M or vice-versa; calculate Pi by pressing letter P; calculate sine, cosine or tangent by pressing S, C or T; calculate rotary (wrapped) geometry (A*R*Pi/180) by turning on rotary mode menus to show X, A and R; or enter any mathematical expression (-5/2+1) into any text field.

Direct Measurement Input
Measurements can be captured directly from geometry and solids into text input fields, allowing you to input values into selected fields automatically.

File Open Part Preview
A rendered image preview and file information allow you to quickly identify the desired part in a crowded directory of many parts.

CAD Interoperability
DXF, DWG and IGES import formats are supported with every GibbsCAM system. Support for other industry standard and proprietary formats is available with other modules or data exchange options.

Compatible/Supported Operating Systems
The latest Microsoft operating systems, Windows 7 and Windows Vista, both 32-bit and 64-bit; are supported. 64-bit implementation allows users to address more memory and program larger and more complex parts quicker with a more efficient usage of RAM.

Multiple Sessions
Multiple GibbsCAM sessions can be run concurrently allowing you to switch between jobs or transfer information between jobs using copy and paste.

Multiple Monitors
GibbsCAM can be displayed across multiple monitors allowing you to use your screen real estate to its maximum benefit; dialogs and reports can be displayed off the main screen.

Macros
Create user-defined Macros to perform repetitive functions or custom applications and much more.

Network License
A network license server, which shares available GibbsCAM licenses from a central pool across a single network, allows you to check-out options based on the type of work you want to do.

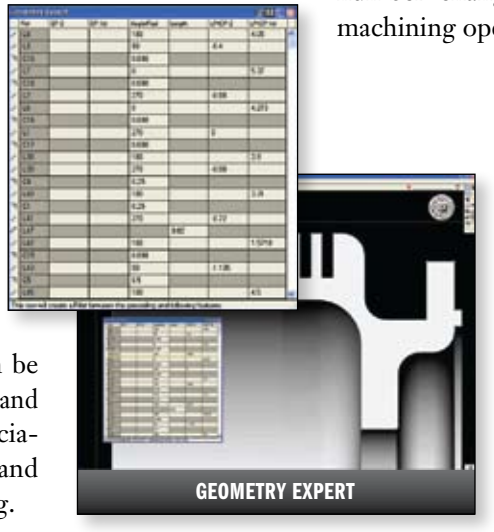
Geometry

Free-Form Geometry Creation
Specialized free-form 3D CAD geometry creation tools are provided to quickly and easily create parts. Points, lines, circles, NURBS splines and offset shapes can be created in any order and are trimmed automatically.

Mouse Position Indicator
Shows you the absolute position of the cursor at all times, including the ability to display the distance between two points, a point and the cursor and the angle between two points.

Modify Geometry
You can modify geometry using a full complement of modification tools using both absolute or incremental values.

Geometry Expert
Geometry expert guides you through the geometry creation process. Shapes can be loaded into Geometry Expert and easily modified with full associativity, perfect for lathe parts and family-of-parts programming.


GEOMETRY EXPERT

User-Definable Stock Shape
Initial stock condition can be specified as a revolved or extruded shape. With solids, starting stock can be defined to represent castings, forgings or previously machined parts.

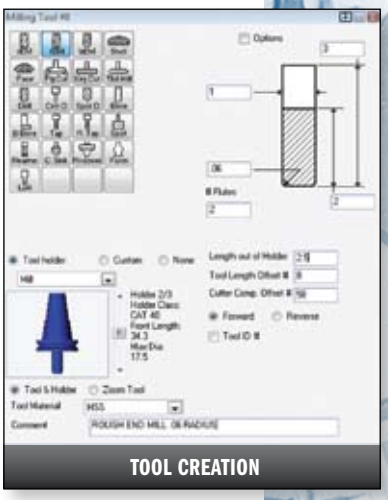
Fillets and Chamfers
Automatically create fillets and chamfers.

Gear and Cam Creation
Automatically create gears and cams, including both involute and spline.

Ellipse Creation
Automatically create elliptical shapes quickly and easily.

Auto Shape
Automatically generate rectangles and polygons.

Additional Shapes
Create D-hole, double D-hole, 2D spiral, 3D spiral, and tapered threads.


TOOL CREATION

Tooling

Tool Creation
Define tools using a graphical interface dialog ensuring the right values are assigned to tool parameters.

Custom Form Tools
Create user-defined, custom mill and lathe form tools using simple geometry identifying cutting/non-cutting areas with full rendering accuracy.

Tool Lists
A graphical, object-oriented interface makes it easy to rearrange the order of tools in the tool list. Tool number changes are automatically updated in all machining operations.

Tool Library
Mill tools include rough, finish, and ball end mills, drill, rigid tap, back bore, thread cutter, keyway cutters, fly cutters, center drill, round over tool, counter sinks, shell and face mills. All types can be defined with draft angles and corner radii.

Tool Holders
Select an accurate tool holder based on the class of holder on the machine and front end holder used for each tool.

Machining

Chain-Free Toolpath Creation
Toolpath start and end points are set graphically, never requiring you to chain or "break" geometry.

Toolpath Start-Point and End-Point Editing
Dynamically adjust the start or end point of toolpath without creating special geometry.

Editable Toolpath
Ability to modify existing toolpath by converting it to geometry, modifying that geometry, and then applying new toolpath with desired machining parameters.

Transform Toolpath
Duplicate and translate, rotate or mirror the toolpath.

Adjustable Feed Rates
Modify the feed rate anywhere on the toolpath. Utility markers provide complete control and accuracy.

Freehand Machining
Create freehand shapes easily with the mouse tool for machining geometry and roughing operations.

Material Library
Calculate speed and feed rates using stored user-defined information on the cutting conditions for various types of materials. Import custom libraries and edit content.

Operation Lists
Easily rearrange the order of machining operations or access individual operations for modification through a graphical, object-oriented interface.

Optimized Operation Order
Automatically sort all machining operations into an optimized order that minimizes tool changes.

Advanced Machining
Advanced machining capabilities, such as zig-zag contour, trochoidal and others, are included.

Material-Only Rest Machining
Face milling, contour and pocket cycles automatically adjust to pre-machined features and odd shaped stock to eliminate cutting air.

Multiple Process Programming
Simultaneously program the same geometry with multiple processes, such as roughing, semi-roughing and finishing or multi-tool hole processes.

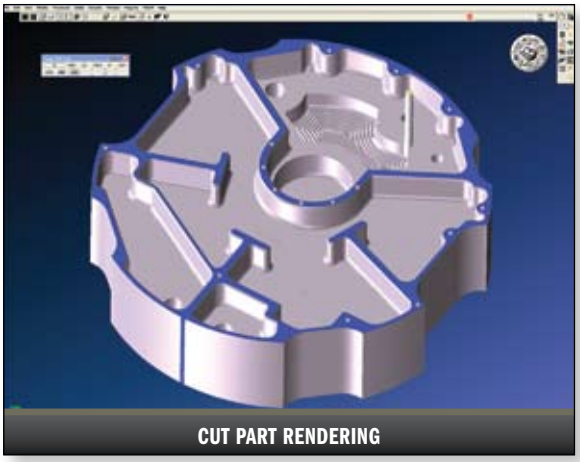
Automatic Reprogramming
Automatically reprocess and update operations with full associativity to reflect changes made to geometry, tools or process information.

Knowledge-Based Programming
Machining processes can be saved for use on any number of other parts reducing programming time and allowing for standardization.

Estimated Run Time
Calculate estimated run times for mill, lathe and mill/turn programs.

Visualization/Verification

Real-Time, 3D Cut Part Rendering
An accurate simulation of the toolpath enables you to see the tool removing material from a solid piece of stock, creating a realistic preview of the machining. Blue represents uncut areas, while red indicates areas of tool interference. Dynamic view orientation (pan, rotate, zoom) allows close examination.


CUT PART RENDERING

Render Control
View the part being machined one feature at a time, one operation at a time and with user-specified operations highlighted. Break points can be set to stop rendering at desired operations. Tool display can be set to solid, transparent or invisible. Lathe and mill tool holders can be optionally displayed. Alternately, part motion can be animated.

Advanced Solids-Based Process Simulation With the addition of any solids-based GibbsCAM module, a number of advanced visualization/verification capabilities are available, such as cut part/finished part compare, transparent stock and work-in-process stock body output.

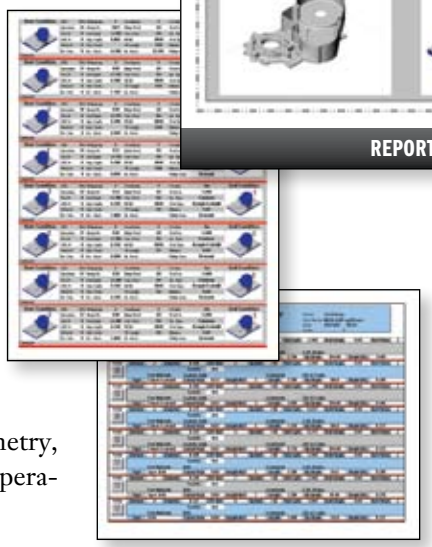
Integrated Rendering
All capabilities of GibbsCAM – milling, turning, mill-turn, rotary milling and MTM – are supported by Cut Part Rendering.

Show Position
View a dynamically updating toolpath position indicator in both mill and lathe environments and inspect position, depth and thickness of cut part rendered work-in-process shape.

REPORTS

Shop Floor Documentation

Dimensioning
Apply dimensions and annotation to geometry to create shop floor documentation.



Summaries
View and/or print summaries of workgroup geometry, tool lists and machining operations for use in part set-up.

Reports
Generate complete reports of set-up and run time of a part, as well as part, tool list and operations reports with embedded graphics with interface to Microsoft Excel (2003, 2007 and 2010). Report templates can be customized by the user.

Post Processing

Utility Data
Allows for additional customization of a completed operation.

Quality Library Post Processors
Allows you the option of leveraging a library of over 10,000 Gibbs post processors already perfected by Gibbs and Associates.

PostHASTE for GibbsCAM
Create your own posts with a template-based, generic post processor sub-system for 3-axis milling and 2-axis turning. A collection of over 225 templates of common machine/control configurations is also included.

Custom Post Processors
Custom Gibbs post processors are optionally available for any machine/control combination. Designed to your specifications, they are guaranteed to run with no editing once properly configured.

Advanced Gibbs Post Processor Capabilities
Optional standard and custom Gibbs post processors include capabilities for sub-programs, canned cycles, multiple parts, absolute or incremental output and user comments. Part files can be post processed for any number of machines. Multiple parts can be automatically programmed.


G-CODE OUTPUT

APT CL
Generates APT CL output for 3rd party post generators.

Editing/Communications
View, edit and print the final G-code program. The included editor can be set to automatically launch after post processing code or you can substitute your own choice of editor. Advanced full user-defined RS-232-C Communication capabilities are available in the communications package.

Production Milling Package

Full 2- and 2.5-Axis Programming
Wireframe machining with full functionality for contouring, pocketing with unlimited bosses/islands, thread milling, face milling, drilling, tapping and boring (bore, fine bore, backbore), 2D/3D spiral creation, and many drill cycles.

Stock Wizard
Automated wizard creation of simple rectangular or round stock shapes with or without pockets.

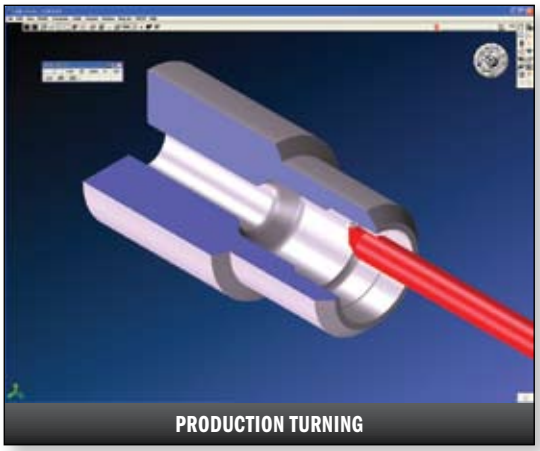

HOLE WIZARD

Hole Wizard
Wizard-style interface guides you through defining tooling and processes for 8 different hole types using encoded user preferences for hole making.

Drill Canned Cycles
Most drill-type canned cycles are supported with user-definable value settings.

Simple 4th-Axis Positioning
Position and mill or multiple position subroutines.

Advanced Pocketing Routines
Pocket any number of shapes simultaneously with unlimited bosses/islands using an optimized toolpath. Machine open-sided pockets and pilot drill and/or auto pocket corner drill. You can also specify breadth first or depth first machining strategies.


PRODUCTION TURNING

Pocket Entry Choices
You can choose how pockets are machined. Entry options include auto plunge, user plunge, ramp, periphery ramp and helix.

2.5-Axis Wall Control
Contours and pockets may be machined with vertical 90° walls, tapered walls with top and bottom fillets or user-defined swept shapes.

Face Milling
Automatic cycles to clean material off the top of a part, including spiral, zig-zag, back and forth and one direction patterns.

Drilling Subroutines and Sorting
Drilling cycles include common drill patterns in subroutines and several sorting options including S-pattern, closest hole next and reverse patterns.

Thread Milling
Create ID and OD threads easily. Just select a point or circle and define the thread; the rest is automatic. Also supports milling of tapered threads such as NOT and others.

Chamfer and Radius Milling
Chamfer or radius tops of parts easily.

Engraving
Machine artwork and all TrueType fonts.

Cutter Radius Compensation
Supports tool edge and tool center compensation techniques with ability to activate compensation per operation with a check-box.

Entry/Exit Radius
Blend on and off a cut shape for a clean finish with easily selectable cutter compensation. Advanced entry/exit provides additional control.

Production Turning Package

Full 2-Axis Programming
Wireframe machining with full functionality for contouring, automatic roughing, multiple hills and valleys, plunge roughing, threading, repetitive shape roughing, drilling, tapping and boring.

Advanced Roughing Routines
Includes turn roughing cycles for plunge roughing with automatic shoulder stroking, and pattern shift roughing with constant path and constant step over choices.

Canned Cycle Support
Includes face, OD/ID and casting canned cycles for roughing and finishing operations as well as most drill-type cycles.

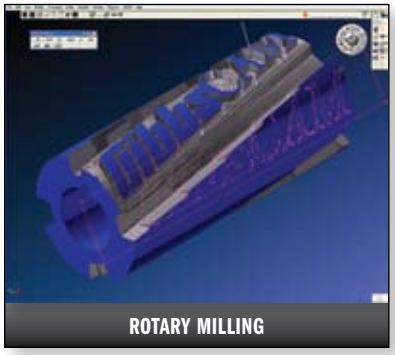
Forward and Reverse Roughing
Toolpaths can be defined so the tool cuts in both directions or in one direction only.

No Tool Dragging
Automatically calculate toolpaths for optimal cutting, so the tool is always cutting in a forward insert direction.

Material Only Roughing and Contouring
Automatically calculates entry/exit and toolpath moves to reduce programming time and eliminate air-cutting.

Automatic Clearance
Keeps track of material left on the part at all times and dynamically calculates clearance moves so tool is kept at an optimal distance as it moves around the part.

Threading
Built-in data library for all pertinent threading information, including the following standards: UN, UNJ, API, ISO, NPT, BSPT, 55 Whitworth, 60° partial, 55° partial, RD(DIN), TR(DIN), ACME, Stub-ACME, Buttress, and others. Supports top-notch, LT, cresting and multi-form inserts. Infeeds include balanced, single-edge, single-edge alternating and user specified and depth of cut control. Also supports multi-start threads and auto spring passes.


ROTARY MILLING

Milling and Turning Packages

(Functionality available when combined together)

C-Axis Programming and Live Tooling

When GibbsCAM's milling and turning modules are combined, C-axis and live tooling capabilities for any number of tools are supported.

Face and Diameter Milling Operations

Perform milling operations on both the face and diameter of the lathe stock including the machining of slots, holes, cross-drilling, pocketing, face milling and face drilling. Also includes the ability to contour on the face of a component as well as the diameter.

Full Cut Part Rendering Support

GibbsCAM's Cut Part Rendering feature completely supports the Mill/Turn capability to provide an accurate representation of the process and the finished part.

Y- and B-Axis Support

Ability to program toolpaths requiring Y-axis and/or B-axis mill work as well as B-axis angular reorientation for turning operations.

Advanced CS Option

Coordinate Systems

Multiple Coordinate Systems

Workplanes can be defined in any 3D orientation on the part to create and machine geometry. Also useful for programming multiple part orientations and vise locations.

Tombstone Machining

Machine multiple sides of a part or fixture using 4th- or 5th-axis rotary table positioning.

5th-Axis Rotary Positioning

Automatically calculate A- and B-axis rotations from user-defined workplanes.

Rotary Milling Option*

Allows you to machine radial or wrapped flat geometry rotating around one axis. Also applicable for face and OD milling for mill/turn and MTM machines.

4-Axis Option*

Allows you to machine radially prismatic solid models by rotating around one axis. Supports off-center Y-axis machining for non-radial parts.

TMS Option*

Tombstone Management System

Simplifies positioning and programming of multiple parts on tombstone fixtures, automatically generating the corresponding work fixture offsets and rotary moves.

TMS IN MACHINE SIMULATION

5-Axis Option*

Specifically developed to provide a powerful way to program 4- and 5-axis CNC machine tools easily.

Solids Import Option*

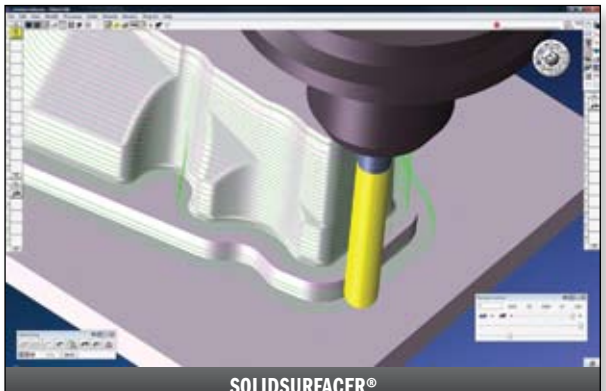
Adds ability to import a solid model and then machine in wire-frame from extracted edges.

2.5D Solids Option*

Adds solid modeling and machining of 2.5D shapes to GibbsCAM. Also includes Automatic Feature Recognition of holes.

SolidSurfacer® Option*

Includes Advanced 3D with High-Speed Machining (HSM) capabilities. Adds 3D surface and solid modeling and multi-surface milling to GibbsCAM.

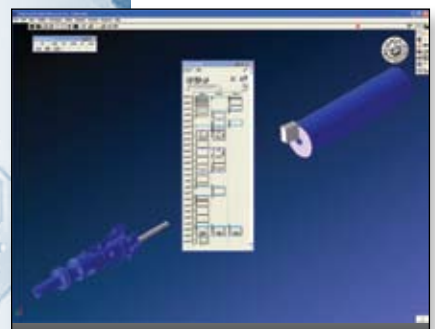


SOLIDSURFACER®

**See GibbsCAM Option datasheet for full details*

MTM Option*
Multi-Task Machining

Multi-Spindle/Turret Support
Adds support for programming multi-spindles and multi-turrets all operating at the same time. The innovative Sync Manager allows complex process timing relationships to be graphically visualized and optimized. Supports a wide variety of utility operations.


MTM™ OPTION

MTM Post Processors
GibbsCAM excels in providing uniquely configured MTM and swiss-style machining post processors regardless of machine configuration.

Machine Simulation Option*

Adds the ability to create machine tool models and perform simulation of machine tool motions to optimize throughput and identify program errors before running program on actual machine tool.

Wire-EDM Option*

2-/4-axis Support
Adds support for 2-/4-axis Wire-EDM devices with taper and lands. EPAK table support allows settings to be stored and reused.

**See GibbsCAM Option datasheet for full details*

VoluMill™ Option

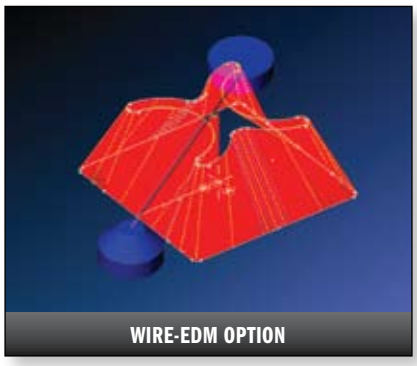
A milling toolpath engine for ultra high-performance 2- and 3-axis roughing which reduces cycle times, extends tool life and reduces stress on machine tools.

CAD Interoperability Options*

GibbsCAM support for the widest range of industry standard and native CAD formats, including: ACIS(SAT), Parasolid, Granite, DXF, DWG, IGES, VDA-FS, STEP AP203 and AP214, Autodesk Inventor, CATIA V4 and V5, KeyCreator, Pro/ENGINEER, Rhinoceros, Solid Edge, SolidWorks and UGS/NX.

Material Library Database

Speeds/Feeds Library
CUTDATA™ provides over 71,000 recommended speeds, feeds, tool material, etc. for integration and access by the Material Library capability of the system.


WIRE-EDM OPTION

Customer Support

Reseller Distribution Channel Local support for customers is provided by a worldwide channel of GibbsCAM Resellers.

Training Training is available through local GibbsCAM Resellers or at training classes held at the Gibbs office in California, USA.

Gibbs Maintenance Program Annual enrollment in the Gibbs Maintenance Program keeps your GibbsCAM software up-to-date, allowing you to take advantage of GibbsCAM's innovative capabilities as they become available. For more details about this program, contact your local GibbsCAM Reseller.

Gibbs Website – www.GibbsCAM.com If enrolled in the GibbsCAM Maintenance Program, you can download the latest versions of GibbsCAM software in-between major upgrades, including interim versions. The site also contains the latest GibbsCAM product information, technical support files, customer success stories, technical articles, training videos and much more.

Cimatron GROUP

MLG54/5M/0510