Precision Cutting

Powerful Part Modeling

Mastercam’s streamlined CAD makes design work easier than ever. Each piece of geometry is “live,” letting you quickly make modifications until it’s exactly what you want. Some of Mastercam’s modeling tools include:

- Easy 2D and 3D geometry creation with complete wireframe and surface modeling.
- Remove trim boundaries and fill trimmed holes.
- Automatic parting line calculation for mold making.
- Fitting tool to help place parts between clamps and fixtures.
- Associative dimensions update as you change your model.
- Advanced analysis tools to help modeling and programming.
- Solid modeling is available as an optional Add-On.
- Built-in data translators for IGES, Parasolid®, SAT (ACIS solids), AutoCAD® (DWF, DWG, and Inventor® files), SolidWorks®, (including history tree), Solid Edge®, STEP, IGES, and more.
- Direct translators for Siemens NX, CATIA®, Pro/E, and more are also available.
- Special free Mastercam Direct Add-Ins put a Mastercam launch button in your SolidWorks, Solid Edge, or AutoCAD Inventor toolbars.

Intelligent Machining

As the world’s most widely-used CAM software,* Mastercam is dedicated to making your entire process easier from start to finish. Here are just a few of the things Mastercam offers to help you make the most of your time.

Capture Your Machining Knowledge

Mastercam’s full associativity gives you the power to capture your work and build on your experience. Once you program a part—no matter how complex—you can modify any element of the job, and immediately get updated toolpaths without starting over. You can also build a library of your favorite machining strategies. Choose any of your saved operations, apply them to a part, and Mastercam helps adapt them to the new model. It’s fast, easy, and productive—the way programming should be.

Automatic Toolpathing

Mastercam includes Automatic Toolpathing (ATP) links to today’s popular cabinet design software. Mastercam’s ATP automatically scans each layer or level and programs them with the toolpath types of your choice. This is especially useful in large projects with many different components. With a modest amount of setup, you can save huge amounts of time by letting the software automatically find, chain, and toolpath all elements of a job.

Machining Stock Model

A precise machining stock model delivers a variety of benefits—viewing and verifying work as it progresses, performing stock model comparisons, and easily choosing existing stock for rest machining.

Confidence at the Router

Dependable Toolpath Verification

Knowing your results before committing tool to material is crucial. Mastercam gives you several ways to ensure that your part will come off the machine exactly as you want it. The Mastercam Simulator offers a single streamlined interface for solid-model verification and toolpath backplotting with a powerful set of analysis tools and information. Mastercam Simulator opens in its own window letting you work and adjust your project as the tool motion display continues.

Machine Simulation

Mastercam’s Machine Simulation shows the entire router and workpiece in action. Easily check and verify the cutter path, axis motion, retracts, table moves, and any other elements that impact how the part will interact with the machine. This vital information gives you the confidence that what you see is what you get.

* Source: CIMdata, Inc.

"I wanted to be on the cutting edge of what I do and I knew that Mastercam would get me there."

Lucien Casartelli, President
Bella Design
Macedon, NY
Aggregate tooling support.

High yields can be crucial to a job’s profitability. Mastercam includes essential nesting capabilities for parts and toolpaths:

- Fast, efficient interlocking part nesting maximizes material use.
- Complete control over part-to-part distance, sheet margins, and more.
- Easily “drag” parts around on your sheet, or from sheet to sheet.
- Directly place CAD models from a variety of sources.
- Group sets of parts and assign part nesting priorities.
- Double-sided and common-edge nesting.
- Custom sheet definition and “filler” parts reduce waste.
- Automatic vertical/horizontal cut-offs preserve rectangular leftovers.
- Save sheet scrap for later use.
- Create custom labels and reports.

Part and Toolpath Nesting

Efficient flat panel cutting relies on easy control over tabs, webs, and cutting specifics.

- Leave an “onion skin” that maintains vacuum and keeps parts from moving.
- Complete tab control including full tabs and partial tabs.
- All tabs are fully editable and moveable, and have adjustable ramp angles.
- Manually place the tabs or allow Mastercam to do it automatically.
- Tab cutoff passes can be run after each part, or after all parts are done.
- Breakthrough control lets you easily define how deep past the part your tool will go.

Tabs, Onion Skinning, and Breakthrough Control

Fully optimized drilling, including block drilling.

Mastercam’s Feature Based Machining automates the programming of 2D solid features.

Aggregate tooling support.

The new Tool Manager delivers a fast, efficient way to organize and create your tooling and tooling assemblies.

2D Toolpaths

Contouring, Drilling, and Pocketing

2D machining ranges from the very simple to the very complex. Mastercam delivers all the tools you need for these operations. Highlights include:

- Feature Based Machining (FBM) automatically programs a solid model’s pockets, contours, and drilling routines, including new slug cutting and hole mapping.
- Dynamic cutting creates a constantly adapting toolpath that delivers more consistent cutting conditions and allows use of the entire tool flute length, while reducing machining time.
- Standard pocketing styles include zigzag, one way, true spiral, constant overlap spiral, “morph” pocketing, and open pocketing.
- Suite of entry methods including plunge, helical, ramp, profile, medial, or custom including trochoidal entries.
- Contour and pocket remachining use smaller tools to automatically clean out material left from previous operations.
- Specialized support for SCAM™ High Efficiency Machining (HEM) tool set.
- Region Chaining delivers a fast and easy way to adjust your 2D high speed machining areas.
- Ability to click and drag a machining start point to anywhere on your model.
- Automated slot, circle, and thread milling.
- Controlled engagement facing removes stock using a consistent tool load.
- Automatic identification and pre-drilling of multiple operations at their plunge points.
- Automatic drilling and countersink depth calculation.

Mastercam gives you complete control over part-to-part distance.

Easily add identification to your nested parts.

Easy-to-use selections for a wide variety of tabs.

Program a part once, and then run that process so that each part is cut with identical motions.
Mastercam offers a variety of fast, efficient roughing techniques for bulk material removal.

Automated leftover machining delivers a clean finish.

Roughing, Finishing, and Cleanup Machining

Operations that quickly deliver a clean and precise finished part are essential to efficient NC programming. Here are just a few of Mastercam’s popular 3D machining techniques:

- Cut multiple surfaces, solid models, or a combination of both.
- Constant-Z rough “remachining” identifies and machines areas and critical depths that need to be roughed with a smaller tool.
- Automatic roughing of critical depths.
- High Speed OptiRest uses Mastercam’s new stock model to identify and efficiently machine areas that need to be roughed with a smaller tool.
- 3D Toolpath Refinement allows unsurpassed control on surface cuts, delivering superior finish and optimized cycle times.
- 3D “projected” machining creates a consistent, smooth finish while following the natural curves of the geometry.
- Constant scallop machining maintains a consistent finish on sloped and flat surfaces alike by using a consistent 3D stepover.
- Flowline machining cuts single or multiple surfaces using their natural shape to define the cutter path and deliver a smoother finish.
- Full check surface support.
- Smart hybrid finishing and hybrid leftover machining create single toolpaths that change cut methods as the slope of the model changes.
- Pencil tracing walks a tool along the intersection of surfaces to clean out hard-to-reach areas. Perform single or multiple passes for precision cleanup.

A Wide Range of Strategies

Multiaxis Machining

Multiaxis machining can dramatically increase a shop’s competitiveness. Mastercam offers a wide range of multiaxis machining strategies. With Mastercam, you have complete control over the three crucial elements of multiaxis machining: cut pattern, tool axis control, and collision avoidance.

- Multisurface 5-axis roughing and finishing including depth cuts, plunge roughing, and flowline machining and drilling.
- Swarf fanning and swarf machining over multisurface floors, plus “rail” swarf cutting for added control.
- Machine 5-axis curves with independent definitions of tool side angle and lead/lag angle.
- Create 5-axis contour toolpaths around surface edges for applications such as trimming vacuum-formed parts.
- Easy 4-axis rotary, rolldie, and 5-axis drill programming.
- 5-axis circle milling.
- Easy 5-axis drilling and routing.
- Create full 5-axis motion from a 3-axis toolpath.
- Advanced gouge checking and a 5-axis “safe zone” around the part.
- Minimum tilt control helps prevent tool motion that would cause tool holder collisions.
- Complete control over the tool axis, lead/lag, entry/exit, and tilt. These simplify even the most difficult multiaxis jobs.

3D Toolpaths

Streamlined 5-axis part trimming.

Efficient rotary axis cutting.

Multisurface swarf cutting keeps the tool edge against the surface for a smooth finish.
**Specialized Options**

Very often, that one additional CAD or CAM tool makes a specific job easier, faster, and more profitable. Mastercam offers a set of specialized Add-On options for these occasions, including:

- Focused 5-axis programming tools tailored to specific projects.
- Complete programming for complex machining robots.
- In-process probing and inspection for easy set-up/validation of parts and cutting tools as well as in-process adjustments.
- Use of point data to create surfaces or STL data for reverse engineering and manufacturing.
- Sophisticated tools for traditional blueprint and CAD-based inspection.
- See a full list at [www.Mastercam.com/Products/AddOns](http://www.Mastercam.com/Products/AddOns)

**System Requirements**

- **Processor**: 64-bit Intel or AMD.
- **Operating System**: 32-bit or 64-bit Windows 7 or Windows 8.
- **System Memory**: 4 GB.
- **Hard Disk Space**: 100GB, 5GB free.
- **Graphics**: Minimum 1280 x 1024 resolution monitor, 256 MB graphics memory, OpenGL driver support.
- **Microsoft Products**: Microsoft IE v6.0 or higher, Excel and Word 2007 or higher.

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**Mastercam Router**

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<th>Router Entry</th>
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<th>Router Pro</th>
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