Mastercam® X7
for SolidWorks®

Cutting Anything. Everywhere.
Confidence at the Machine

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. With Mastercam toolpaths integrated directly within the SolidWorks environment, the toolpaths are applied directly to the part or assembly. Any design change that Mastercam for SolidWorks encounters is handled quickly, with the affected toolpaths identified so the user can simply rebuild them. Configurations are also handled with ease, and copying toolpaths from one configuration to another is just a click away.

Machine Simulation

Mastercam’s machine simulation shows the entire machine tool 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.

Full Machine Simulation delivers a practical view of how your toolpaths interact with your equipment.

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.
- 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 trapezoidal 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.

Toolpath Spotlight: Dynamic Milling

Cycle time and tool wear are shops’ constant concerns. Mastercam’s dynamic milling is designed to improve both of these with a single powerful technique. Dynamic milling creates a constantly adapting toolpath with consistent cutting conditions providing smoother, safer motion. This motion is easier on your machine and can effectively use the full flute length, greatly extending cutter life and often eliminating the need for multiple depth cuts. Optimized cut ordering, specialized motion to keep the tool down, and other elements combine to deliver parts faster than ever before.
Roughing, Finishing, & 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, and mesh entities (STL data).
- Automatic roughing of critical depths.
- 3D Toolpath Refinement provides unsurpassed control on surface cuts, delivering superior finishes and optimized cycle times.
- 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 “projected” machining creates a consistent, smooth finish that follows the natural curves of the geometry. In addition, 3D High Speed Toolpaths (HST) offers toolpath projection based on curves, points, or NC data.
- Constant scallop machining maintains a consistent finish on sloped and flat surfaces alike by using a consistent 3D stepover.
- Full check surface support.
- Smart hybrid finishing creates a single toolpath that changes cut methods as the slope of the mold changes.
- Constant Z rest milling (remachining) identifies and machines areas and critical depths that need to be cut with a smaller tool.
- Pencil tracing walks a tool along the intersection of surfaces to clean out hard-to-reach areas. You can perform single or multiple passes for precision cleanup.

Mastercam’s suite of innovative, fast roughing toolpaths—OptiCore, OptiArea, and OptiRest—are all designed to remove large amounts of material quickly using concepts from our popular dynamic milling motion.

Large, aggressive cuts are followed by fast, smaller up-cuts, safely delivering a fully roughed part in dramatically less time—as much as 60% faster or more. Like our dynamic milling toolpaths, these roughing techniques promote longer tool life.

Streamlined multiaxis programming tools make projects easier than ever before.

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.

Some highlights of Mastercam’s multiaxis machining:

- Multisurface 5-axis roughing and finishing (including depth cuts, plunge roughing, 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 for applications such as trimming vacuum-formed parts.
- Easy 4-axis rotary, roll die, and 5-axis drill programming.
- Minimum tilt control helps prevent tool motion that would cause tool holder collisions.
- Create full 5-axis motion from a 3-axis toolpath.
- Advanced gauge checking and a 5-axis “safe zone” around the part.
- Complete control over the tool axis, lead/lag, entry/exit, and lift. These simplify even the most difficult multiaxis jobs.
- Mastercam Blade Expert delivers specialized tools for efficiently cutting multi-bladed parts and hubs.
- Mastercam Port Expert offers dramatically faster head port programming and smoother toolpath motion.
- Mastercam’s oscillating 5-axis curve and swarf motion promotes even wear, greatly extending tool life.

Multiaxis Machining
Precision Turning

Tools to Make Programming Easier

Efficient turning means more than just programming a toolpath. Mastercam for SolidWorks gives you a set of tools that impact your entire process.

- Fully associative toolpaths are linked with your geometry. Modify any element of the job and immediately get updated toolpaths without starting over.
- Comprehensive insert libraries including ISCAR™, Sandvik®, Kennametal®, and Valentine®.
- See your part as it will come off the machine with solid-model toolpath verification.

"Mastercam for SolidWorks is making my job easier. I’ve been using Dynamic Milling to get better finishes. It works so well that I’m getting work done in half the time."

Nolan Farmer, Owner
Farmer Plastics & Machining Inc.
Jamestown, CO

Fast, Easy, and Precise Turning

Mastercam for SolidWorks delivers a streamlined set of programming tools.

- Intelligent ID and OD roughing, including roughing to a boundary for castings.
- Easy facing including roughing and finishing.
- Optimized finish contouring (profiling).
- Dynamic roughing extends button insert tool life and reduces machining time on hard materials.
- Variable roughing alternates the contact point between the surface and ceramic tool inserts to prevent notching and improve tool life.
- Automatically create a finish pass after a rough operation using the same tool.
- Set feedrates for desired finish quality.
- Grooving with multiple depth cuts and pecking.
- Easily assign groove depth, width, wall angles, corner radius, chamfer, and corner dwell.
- Automatically skip over a groove or cavity when roughing or finishing.
- Complete threading with multiple starts, diameter calculation, and thread tables.
- Full-radius plunge turning.
- Automatic gauge checking watches the front and back of the tool.
- Chuck, part, steady rest, and tailstock detection.
- Open and directly machine a solid model.
- Mastercam’s Tool Inspection option lets you automatically stop machining, allowing you to check the insert during roughing, finishing, and grooving operations.
- Quick-turned profile generation for uniform and non-uniform parts.
- Full milling and turning support available for machines with B-axis tooling arms.
- Live tooling for B, C, and Y axes.

Prototyping • Automotive • Medical • Energy • Consumer
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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<th>Mill 3D Module</th>
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*Milling and turning operations can be combined when bundling Mastercam Mill and Mastercam Lathe modules.

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