CAM Express 6

CAM Express 6 establishes a new high-water mark for CAM capability, with substantial advances in 3-axis machining, feature-based automation and user experience

fact sheet

Siemens PLM Software

▶ **Summary**

CAM Express 6 is a full function, CAD-neutral, NC programming system that is easy to deploy and increases productivity on the machine tools and in the programming shop. CAM Express 6 establishes a new high-water mark for CAM capability, with substantial advances in 3-axis machining, feature-based automation and user experience. Advances include faster roughing provided by new corner rounding approaches and finer finishes achieved with fine-tuned point distribution. CAM Express 6 makes feature-based automation easier to deploy with a powerful new knowledge editor and expands the available feature set with additional feature recognition methods.

Benefits

Advanced cutting strategies lead to excellent finish and reduced tool wear

Programming efficiencies increase with solution flexibility

Configurable automation allows large productivity gains

On-machine measurements lead to quality, consistency and adaptability

Less worry about geometry issues

Key messages

CAM Express 6 includes even more capabilities across the critical 3-axis machining application space, including specific high-speed machining approaches.

Feature-based automation delivers quality and consistency with less effort

Outstanding user experience drives programmer productivity

Advanced 3-axis capabilities

The 3-axis capabilities in CAM Express have been recognized for their excellent coverage of the day-to-day machining approaches that so many machine shops rely on. Now CAM Express 6 includes even more capabilities across the critical 3-axis machining application space, including specific high-speed machining approaches. And the continuing focus on ease of use is evident in the better-than-ever user experience that focuses on the model and reduces distractions.

Curve/edge machining. Updated Curve/Edge Machining extends the benefits of solid selection into the machining of curve and edge geometry types. The Curve/Edge operation types can machine relative to solid edges without any supporting wireframe geometry. Negative stock allowances work with wireframe, edges and even text objects (including 3D text) to make tracing and engraving applications easy. Multiple offsets are provided and the capability works in 3-axis and 5-axis scenarios.

Solids-based 3D profiling. 3D profiling is ideal for cutting die components, where vertical faces are cut along their edge chains in 3 axes. The solids-based approach stays associative should the faces and their edges be modified plus it provides the safe, intelligent toolpath that is the hallmark of all solids-based cutting approaches. Edge chains at the top or bottom of the targeted faces can be traced, with multiple depths and side passes.

Streamline operation. Streamline cutting strategies continue to provide the most natural flow of cutting strokes across the part geometry, regardless of underlying surface definitions. Flow and Cross curves can be determined automatically or fine-tuned by the user to achieve the smoothest, finest finish possible with improved tool life. Streamline operations can be applied to 3-axis or 5-axis cutting scenarios.

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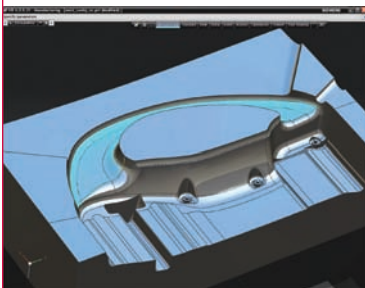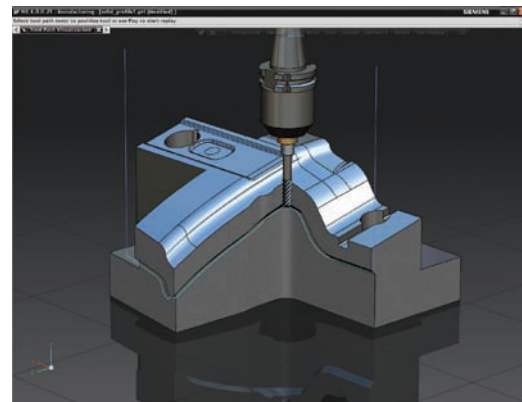
Features

Streamline toolpath

Synchronized point distribution

On-machine probing

Toolpath splitting

Fringe plots of remaining material

New interactive toolpath editor

Advanced corner rounding for roughing cuts

Solids-based 3D profiling

More feature recognition

Machining knowledge editor

More machine tool kits

Model editing toolbar

Ability to open SolidWorks files directly

Sleeker user environment

More informative operation navigator

More tutorials
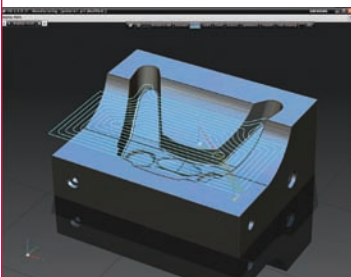
Synchronized point distribution. Streamline operations and other 3-axis area milling operations take smooth interpolation to the next level by maintaining coherence of point distribution from one cutting pass to the next. No matter what interpolation options you employ on your control, maintaining similar point distribution across many passes results in the best possible surface finish. Go beyond thinking of surface finish as a pure function of intol and outtol. Superior surface finish can be achieved with cutting data distributed coherently over many passes.
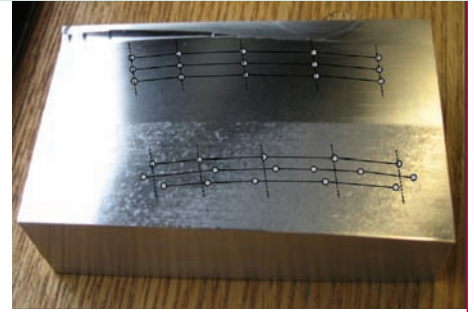
Toolpath splitting. Take shortcuts in your programming process by calculating all the cutting motion for a large or deep area once, then splitting the result across several tools. Toolpath can be split by time or distance or by specific motion events. Most significantly, toolpath can be split at the point that holder collision occurs, leaving remaining motion to be performed by a longer tool. In this way, several tools of increasing length can be applied to a deep cavity with only one quick toolpath calculation. Programming is quick and easy, and the use of the stiffest, fastest tools can be maximized.

Toolpath editing. A revamped toolpath editor provides interactive tools to quickly and easily make minor adjustments to toolpath results. Move, trim or gouge check motion. Reverse cut order or insert additional motion elements.

Corner rounding. Roughing cuts are faster and smoother than ever, with an updated approach to smoothing out any 2½-axis pattern. Corners remain smooth and consistent, whether very tight or relatively open. Smooth climb cutting is always maintained, regardless whether extra loops are required to reach all the material. Smooth, fast stepovers can be invoked as ess-shaped transitions from one pass to the next, or they can be incorporated into the corners themselves for the ultimate in clean, fast area coverage with no wasted motion. Depending on geometry and control options, these optimized corner treatments can result in roughing cuts that complete 10 percent faster or better, compared to conventional offset patterns.

In-process workpiece fringe plots. While displaying the in-process workpiece, or cut material display, get a clear view of the remaining uncut material by invoking the new fringe plot display. Different colors indicate the thickness of remaining material relative to the actual part faces. Use these displays to easily develop targeted semi-finish cuts.

Feature-based automation

CAM Express 6 brings the technology of the Tecnomatix® Machine Line Planner software to the feature recognition and rule development aspects of NC programming automation. The power of feature-based machining driven by configurable rules represents the state-of-the-art in feature machining automation.
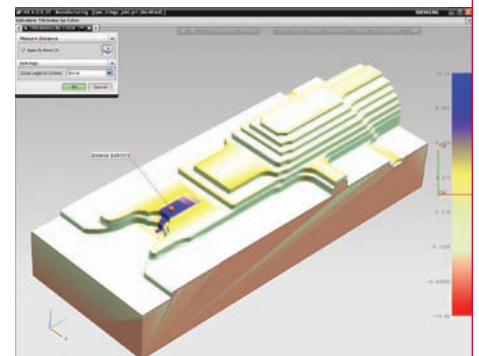
Feature recognition. The power of feature recognition has expanded greatly, with the recognition of more features in more scenarios than ever. Multi-stepped holes, including chamfers and rounds are recognized. Additional flats, slots and pockets are recognized also.

Machining knowledge editor. Knowledge-driven feature machining now enjoys the groundbreaking machining knowledge editor of the Tecnomatix Machine Line Planner product. This proven modular approach eliminates duplication of process definition across the complete feature set, while maximizing the feature set that can be machined automatically. Better still, these incremental process steps are defined and organized in the Machining Knowledge Editor, without writing code or editing scripts, so it is easier than ever to tune your automation solution to match your shop's best practices.

New probing capability

CAM Express 6 introduces new capabilities for bringing measurement and quality assurance process steps forward into the machining environment. Tracking measurement data leads to higher quality and better consistency over the production run of a component.

On-machine probing. Probing tools can be defined, programmed and simulated with the new capabilities. More machine tools are capable of driving measurement probes than ever, and a CAM system that can easily program probing cycles takes full advantage of this capability. Probes can be fully defined as a solid and maintained in the tooling library. Standard Renishaw motion cycles can be directly programmed, and the results are simulated for the utmost in confidence.

Production-ready output

Production ready output is the ultimate goal of any CAM system. CAM Express 6 provides additional sample machines, library posts and machine tool kits for quick simulation and output verification.

Machine samples. Several new machine samples are included, complete with machine tool drivers for simulation. These cover an even wider variety of machine configurations, making it easier than ever to simulate the latest models from the machine builders.

Post builder updates. The interactive Post Builder application is one of the most powerful post processor development tools available, and gets new capabilities for handling user defined events (UDE) with more granularity. Drag and drop specific parameters relative to UDEs for maximum control over subtle program options.

CAD-neutral application

CAM Express 6 is the CAD-neutral configuration of Siemens PLM Software's proven CAM software. But no matter which CAD solution you use, the benefits of an integrated solution are evident.
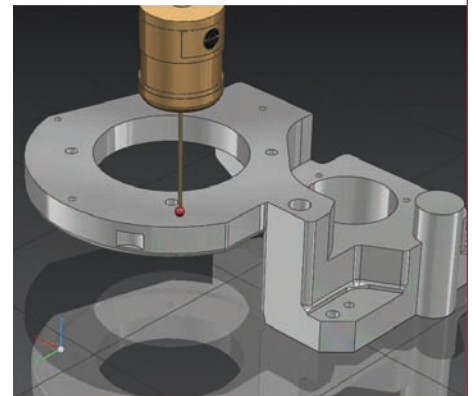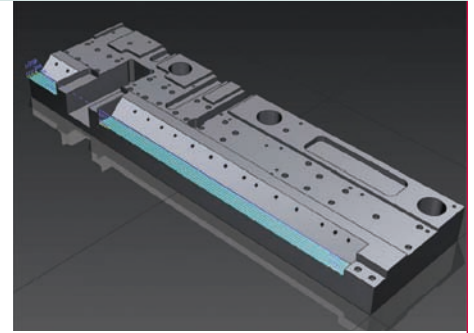
Direct open of SolidWorks files. Open Solidworks files directly into the CAM system for the utmost in cross-product convenience. The Parasolid® software-based file will read right in, eliminating translation issues.

Model editing. NC programmers often have to make edits to models in order to program just the motion they want. A full set of model editing tools are available to the NC programmer, including assembly tools and surface patching tools.
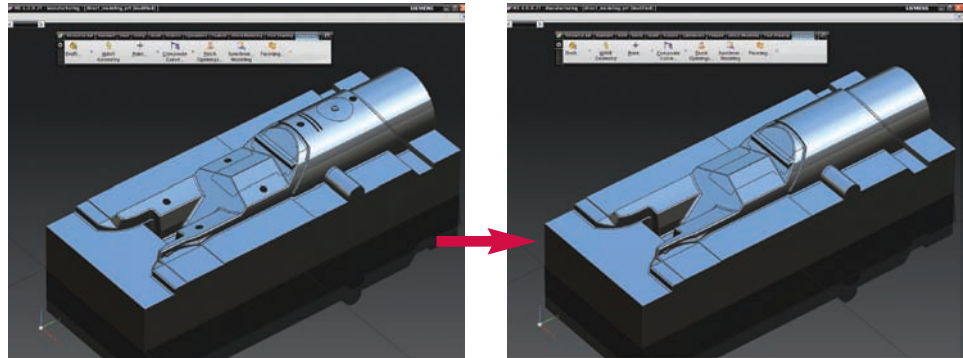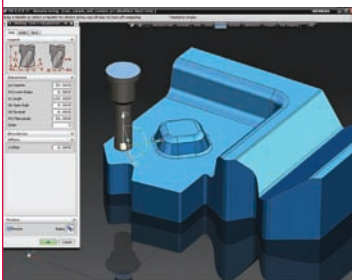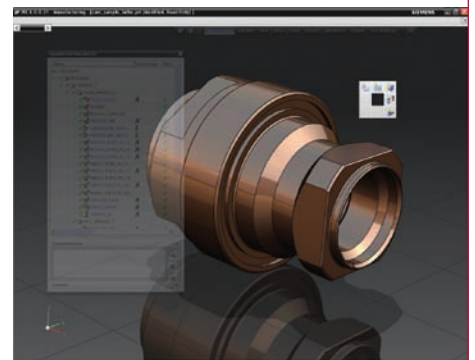

User experience

The user experience is critical to realizing the full potential of software tools. CAM Express 6 literally pushes the envelope of usability with maximum graphics options, minimized mouse travel and more informative displays.

Full-screen mode. Max out the graphics visibility by minimizing toolbars onto the toolbar manager and using transparent navigators. The dialogs and navigators are there as soon as you need them, but the impact of full-screen graphics displays is significant. Focus on the job, not the software.

Dynamic tool preview display. Instantly see if the selected tool fits the geometry situation by quickly dragging the tool display around your NC environment. No toolpath is required, and the suitability of the tool for the job is instantly seen.

Customized radial strokes. Commands are available with tiny right-mouse-button strokes (gestures). Customize these to meet the need for power-user speed.

More informative operation navigator. The Operation Navigator is the information hub of the NC program. Now it is more informative than ever, with the inclusion of machining time and user defined event displays. Also handy is its ability to cut and paste operations from a different NC file.

New operation status. Operations can be marked "approved" to avoid them going "out of date" due to minor changes in previous operations or minor, well-understood geometry updates.

New toolpath status. Toolpath can be marked as "locked", preventing it from being re-calculated accidentally. This helps keep certified programs from unexpected updates, and maintains strict user control over any new calculations.

New tutorials. Getting started is easier than ever with additional built-in tutorials for the new user. These tutorials now include special options for:

- Airframe parts
- Mold rework
- High-speed milling
- Post processor installation

CAM Express 6 provides substantial new capabilities across the NC programming landscape. Core machining functions are enhanced, programming automation is more powerful than ever and users will enjoy the most productive working environment yet. Start unlocking the potential of your machine tools and programming staff today!
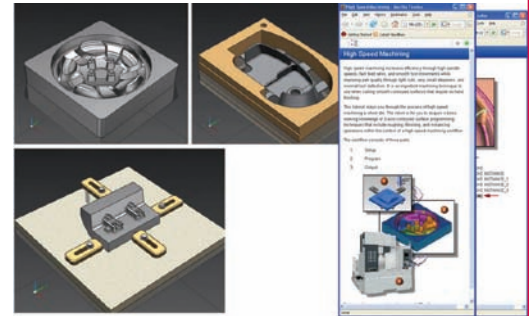
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