FEATURES AND BENEFITS

Ultra High-Performance Toolpath Engine

Version 3.0

VoluMill™ is a plug-in toolpath engine for ultra high-performance 2- and 3-axis roughing. The program features a novel approach to toolpath design and unique engineering trademarked as FastPath™, CoolCut™, SmartRamp™, and InLine RestMill™. The powerful VoluMill algorithm allows the programmer to establish and maintain ideal machining conditions and use high speeds and feedrates. The intelligent algorithm analyzes the part and then develops a native toolpath with the shortest possible cycle time.

The intuitive user interface handles cavities, cores, and rest milling in hard and soft materials. The Managed Material Removal Rate (MMRR) toolpath strategy allows the programmer to determine the optimum material removal rate. The powerful algorithm designs a native, tangent-continuous ultra high-performance toolpath and then dynamically adjusts the path, feedrate, and depth of cut so the programmed material removal rate is never exceeded.

VoluMill works on all solid, surface, and wireframe models including mesh or triangle-based models and any combination of part and stock boundaries. It supports an unlimited number of islands, tapered walls, variable pocket depths, and variable island heights. The single algorithm is effective with all cutting styles, materials, and cutting tools so the programmer can always implement the optimum cutting parameters. Intelligent algorithm design allows parallel processing to minimize computation time.

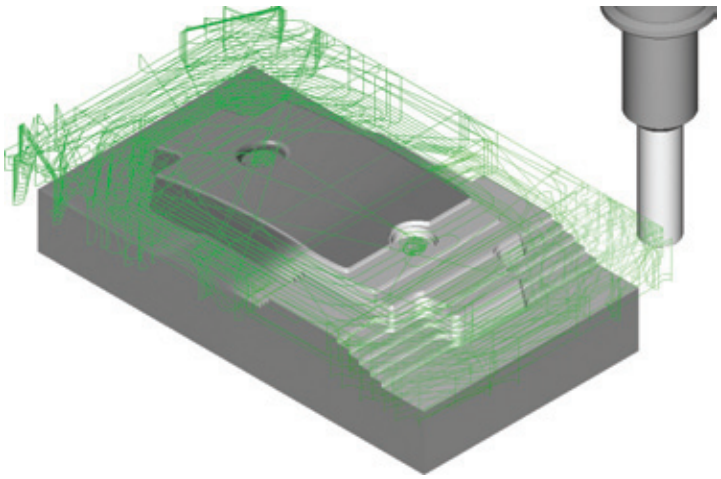
Unique Engineered Features

FASTPATH™

VoluMill's novel engineering generates native toolpaths with optimum machining conditions to allow for the highest feeds and speeds possible. VoluMill toolpaths produce smooth and fluid machine motions. Curves and arcs are designed to maintain cut width and to prevent tool overloading. Efficient special tool motions and contour ramping are used to maximize the rate of material removal along boundaries and tight spaces. The program repositions the cutting tool at a maximum feedrate, while the intelligent algorithm selects slot milling or side milling based on cycle time considerations. True stepover allows up to 100 percent cut width.

COOLCUT™

VoluMill dynamically adjusts feedrates and axial depths of cut to keep the cutting tool, machine parts, and the material being machined at a consistent temperature to assure heat is dissipated with the chip and to minimize force and wear on the cutting surfaces.



VoluMill™ substantially reduces cycle times and tool wear on your customers' complex mold and die applications. Intuitive interface handles cavities, cores, and rest milling in hard and soft materials.

Feedrates are adjusted in curves and concave arcs. The axial depth of cut and feedrate are adjusted during slot milling to maintain the programmed material removal rate. All cuts start and end out of the material. Cuts start at a reduced speed to prevent chipping and cracking of the cutting edge.

INLINE RESTMILL™

VoluMill™ uses a clever roughing strategy that allows the programmer to rough as deep as possible to make big steps. Then, working from the bottom back to the top, the same tool is used to reduce the size of the steps to prepare the part for finishing. This unique strategy minimizes finish and overall cycle times and allows for the use of fewer tools.

SMARTRAMP™

VoluMill intelligently locates the entry to provide an area to start and end cuts out of the material and reposition the tool at high speeds.

SINGLE ALGORITHM

The dynamically controlled material removal rate strategy allows the programmer to generate the optimum toolpath program for every geometry, so only one algorithm is needed for programming any roughing toolpath. Offers complete programming flexibility. Includes user overrides for side milling only, adjusting slot depth, feedrate, and smoothing radius, and the option to cut depth first.

HIGH-SPEED SLICER

Converts polygons into smooth chains of arcs and lines. Processes toolpaths quickly and generates better finishes.

PARALLEL PROCESSING

Designed for parallel processing, allowing you to utilize the multi-core capabilities of your computer's processing power.

REGIONALIZATION

Cutting sequence is localized to minimize tool repositioning.

UNDERCUT PROTECTION

Prevents the shaft from colliding with the part during machining.

FLOOR CLEARANCE

Lifts the tool when repositioning over an already machined area.

STEPOVER TO 100 PERCENT

True stepover to full cut width.

CONTOUR RAMPING

Ramps along the boundary in tight areas.

REST MILLING

Automatically cleans up material left behind by larger tools.

INTELLIGENT SORTING

Provides options to machine each pocket to final depth or by depth of cut.

FEATURE	BENEFITS
Single algorithm	• Simplifies and reduces programming time • Provides an optimum solution 100 percent of the time with no manipulation or optimizing required
Parallel processing	• Leverages processor multi-core capabilities for faster computation
Programmed rate of material removal	• Maintains a consistent material removal rate when cutting • Keeps parts and cutting tool temperature consistent • Allows for a wide selection of fastening equipment • Assures heat is dissipated with chips
Automatic feedrate adjustment	• Minimizes tool wear, heat build-up, fastening requirements, and vibration • Maintains programmed material removal rate • Keeps parts and cutting tool temperature consistent • Assures heat is dissipated with chips • Eliminates excessive material conditions
High-speed slicer	• Intelligently offsets to support different tools • Allows the use of flat, ball, or bull nose end mills
Automatic depth of cut adjustment	• Minimizes tool wear, heat build-up, fastening requirements, and vibration • Maintains programmed material removal rate • Keeps parts and cutting tool temperature consistent • Assures heat is dissipated with chips
High-speed repositioning	• Maximizes machine capability utilization • Minimizes cycle time
Repositioning clearance	• Minimizes tool wear • Maintains part quality
Stepover up to 100 percent	• Maximizes tool selection • Minimizes machine time • Reduces tool inventory requirements • Expands programming flexibility
Smoothing radius	• Maximizes tool utilization • Minimizes cycle time • Expands programming flexibility
Contour ramping	• Maximizes material removal rate in tight areas • Provides safe access into tight areas • Minimizes cycle time
Localization	• Minimizes tool repositioning and overall cycle time
Intelligent slicer	• Produces smooth toolpaths • Minimizes memory requirements and computation times • Improves machine efficiency
Undercut protection	• Minimizes waste, machine, and tool costs

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Gibbs and Associates has partnered with Celeritive Technologies to offer VoluMill Wire (2-axis) and VoluMill Solids (3-axis) options for GibbsCAM. GibbsCAM, designed by machinists for machinists, has combined power with simplicity for more than 25 years to become the CAM industry's ease-of-use leader.

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