

Experience the revolution in machining

Solve your critical business issues

Even before the introduction of CAM software, machinists have struggled with controlling the cutting environment. Over the years, various methods were developed -- traditionally slowing down the feedrate wherever engagement increases along the toolpath -- but improvements were only incremental. The scientists and innovators at Surfware took a different approach. They discovered a way to manage tool engagement angles to create superior toolpaths.

The result of their research is the award-winning, patented TrueMill® technology, which delivers significant decreases in cycle time, greatly increased tool life and a better quality cut. TrueMill is available with SURFCAM 2-Axis, 3-Axis and 4/5-Axis products, making SURFCAM a surprisingly effective choice for any shop's CAM requirements.

SURFCAM Velocity Powered by TrueMill is used worldwide for mechanical design, surface modeling, reverse engineering, prototyping, mold-making, pattern-making and production machining. Surfware's extensive user base includes leading manufacturers in the aerospace, defense, automotive, consumer electronics, industrial equipment and medical products industries.

SURFCAM Velocity Powered by TrueMill offers SolidWorks® PD&A as an add-on. It also includes a variety of plug-ins to enhance functionality. Surfware offers a superior SURFCAM maintenance program that includes updates and enhancements, tutorials, tech tips, training sessions and tech support.

With SURFCAM Velocity Powered by TrueMill, machining shops and departments achieve continuous, world-class gains in productivity. These gains open the door to greater profitability and an increased ability to compete in a global marketplace.

For more information, please contact sales@surfware.com or find a local Sales Partner at www.surfware.com.

SURFCAM

Leading the revolution

in CAD/CAM technology

> TRUeMill®

TrueMill® is an important and significant step in the long history of machining. By controlling the tool's engagement with the material, TrueMill has repeatedly proven to greatly increase material removal rates (MRR), decrease cycle times and extend tool life.

One of the most important aspects of TrueMill is its complete independence from the machine hardware, including the cutting tools, tool holders, the controller and the machine tool.

While other machining methods generate toolpaths based on a given stepover, value and the geometry being machined, this technology increases the MRR by creating engagement-controlled toolpaths that eliminate all sharp directional changes. The tool never plows into a corner, and it works on all part shapes. Not having to slow the machine down for corners allows far more aggressive cutting parameters, resulting in dramatically reduced cycle times.

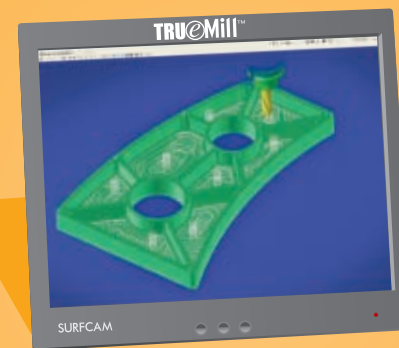


With TrueMill, the more difficult to machine the material, the greater the competitive advantage. Significantly faster cycle times (in some cases over 100%) have been proven for materials such as aluminum, steel, titanium, Inconel and other exotics.

SURFCAM Velocity Powered by TrueMill includes TrueMill machining parameters such as spindle speed, feed rate, depth-of-cut and tool engagement angle. When experienced machinists see and hear SURFCAM Velocity Powered by TrueMill for the first time, the reaction is spontaneous: "Amazing"!

> How Was TrueMill® Invented?

In early 2002, Surfware R&D was presented with the question, why can't we create a toolpath where the tool engagement angle (TEA) or true stepover does not change? Surfware co-founder Alan Diehl and mathematician Pat Patterson set to work on this problem and within one year had developed two different versions of TrueMill, both covered in patent applications.



Over the next several years, the pair went on to supervise the project based on their core ideas, with some assistance from the SURFCAM product manager. In 2005, the initial patent application for Engagement Milling was filed, with the co-inventors listed in alphabetical order, without regard to their actual contribution. In August 2008, Surfware, Inc. received a U.S. Patent Notice of Allowance for all key elements in its application.

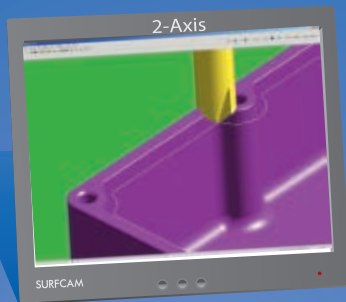
TrueMill is the winner of *Industry Week's* Technology and Innovation Award.

"TrueMill is quite possibly the biggest advancement in milling since the personal computer was introduced to CNC programming..."

-Charlie Vetter, PS Stix, Inc.

> SURFCAM 2-Axis

SURFCAM's 2-Axis system is a robust, high performance, cost effective CAM product made even more powerful by TrueMill.



TrueMill:

TrueMill is the only toolpath engine that manages tool engagement to significantly increase productivity (in some cases over 100%) and extend tool life for all materials.

2-Axis product highlights:

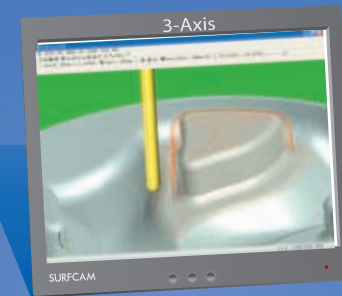
- Pocket and finish cavities with multiple island heights and tapered sidewalls
- Advanced strategies for face milling, groove, corner round, and chamfering
- Support for 4- and 5- Axis rotary indexing and high speed machining
- Rest machining detects and machines areas left by previous cutting tool
- Advanced multi-tool hole processing with intelligent pattern sorting
- Tapered thread milling with helical entry/exit
- Associative toolpath to model geometry

"Yesterday, I cut 28 corners using SURFCAM - something that would have taken us three weeks to do by hand. We are still able to get the look and feel of something that is hand-shaped using NC software and a router."

-Randy Cockrell, Tiffany Yachts

> SURFCAM 3-Axis

SURFCAM's 3-Axis system delivers efficient, reliable toolpaths on the most complex surface geometry. 3-Axis high-speed machining strategies feature fast processing, minimal rapid motions, tapered tool support and excellent surface finish.



TrueMill:

TrueMill is the only toolpath engine that manages tool engagement to significantly increase productivity (in some cases over 100%) and extend tool life for all materials.

3-Axis product highlights:

- High-speed optimized finish strategies feature smooth, fluid toolpaths
- 3D Offset finishing provides superior surface finish regardless of the part shape
- Fast processing using powerful algorithms and multiple processors provides short calculation times
- Rest machining automatically detects uncut areas and machines them using the optimal strategy
- Associative toolpath to model geometry tracks changes to the model and adjusts toolpath
- Steep/Shallow intelligently adjusts the toolpath style based upon the slope of the part
- Full gouge protection along with powerful toolpath containment provides precise tool control
- Unbeatable surface finish increases productivity and makes hard-die milling more efficient

> SURFCAM 4/5-Axis

SURFCAM's 4/5 Axis system offers true, simultaneous multi-axis machining. The NC programmer gains precise control over every aspect of multi-axis machining, ensuring safe tool motion in the most challenging applications.



TrueMill:

TrueMill is the only toolpath engine that manages tool engagement to significantly increase productivity (in some cases over 100%) and extend tool life for all materials.

4/5-Axis product highlights:

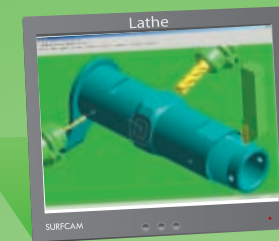
- Multi-surface 4- and 5-axis machining that supports all standard tools
- Full tool and shank gouge protection ensures safe tool moves
- Full support for multiple gouge check strategies -- up to four separate groups of check surfaces
- Control of surface gap and stepover handling, including lead in and lead out options
- Powerful tool axis control during swarf cutting
- 5-axis drilling capabilities
- Tool plane locking and limiting for enhanced control
- Advanced vector control for full control of tool motion
- Full visualization and verification

"SURFCAM software has really provided a seamless transition into a whole new world of capabilities that we are eager to explore."

-Rick Ward, Owner, WARD Performance

SURFCAM Lathe

SURFCAM Lathe features strong turning, facing, grooving, boring, threading and cut-off capability. The turning module also delivers front and back angle checking on the tool for gouge-free toolpaths.



Product highlights:

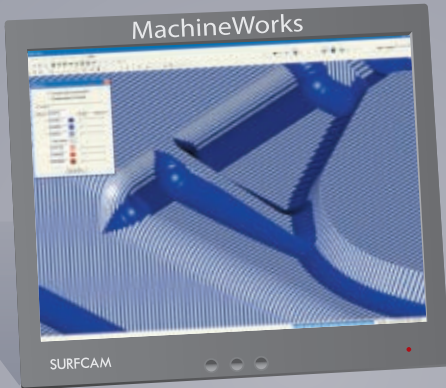
- Sub-spindle programming and automatic retract logic for complex inner diameter machining
- Complete visualization and gouge protection provide error-free toolpaths
- One-step ID/OD roughing and finishing for an automated turning process
- Support for canned cycles
- Front and back angle checking on the tool for gouge-free toolpaths
- Polar interpolation support and Y-axis cutting increase range of production capabilities
- Seamless integration of live tooling and off-center operations for mill/turn programming

"SURFCAM is powerful yet easy to learn and very user friendly."

-Michael Schuffert, RKS Designs, Inc.

Toolpath Verification

SURFCAM uses MachineWorks™ technology to provide unsurpassed validation, speed and accuracy.



Highlights:

- Dynamically sections the part to reveal hidden details
- Displays tool coordinates at user-specific positions
- Fully integrated verification
- Provides collision detection with the stock or fixtures automatically
- Dynamically inspects the part to determine finished dimensions
- Provides confidence that your part program is accurate and efficient

“What used to take two and a half hours with our previous, non-SURFCAM verification product, now takes under five minutes. The images are sharp and clean. The speed and accuracy enable us to have an increased sense of confidence when cutting.”

—Ian Adie, Western Industrial Tooling

Solid Modeling & Design

SURFCAM offers two options for part design:

1. SURFCAM contains a true 3D database for complete part design, dimensioning and editing. Design your 2D and 3D parts by using SURFCAM's robust surface and wireframe commands. Freeform design and surface manipulation have been native to SURFCAM's kernel for over 20 years.
2. SURFCAM offers SolidWorks® products to accelerate the design-to-manufacturing process



- The world's most widely used CAD system, SolidWorks PD&A™ (Parts Design & Assemblies) allows design of 3D solid parts and assemblies that may contain tens of thousands of parts. This high-performance system offers excellent ease of use .
- Along with SolidWorks, SURFCAM users receive COSMOSXpress for FEA, MoldflowXpress for mold flow analysis, and more

SolidWorks Associativity

Powerful associativity enables users to open native SolidWorks files directly into SURFCAM, completely eliminating the translation process. SURFCAM automatically recognizes any design revisions in the solid model and regenerates only affected toolpaths. With this seamless interoperability, SURFCAM users can quickly adapt to myriad design changes.

SURFCAM®



TrueMill®

Velocity 2-Axis

Velocity 3-Axis

Velocity 4/5-Axis

SURFCAM Velocity Powered by TrueMill is the only CAM product that controls tool engagement to create a nearly constant, optimal cutting environment. The result – significantly reduced cycle times (in some cases over 100%) and extended tool life for all materials, including aluminum, steel, titanium, Inconel and other exotics. With TrueMill, the more difficult to machine the material, the greater the competitive advantage.





SURFWARE®

www.surfware.com