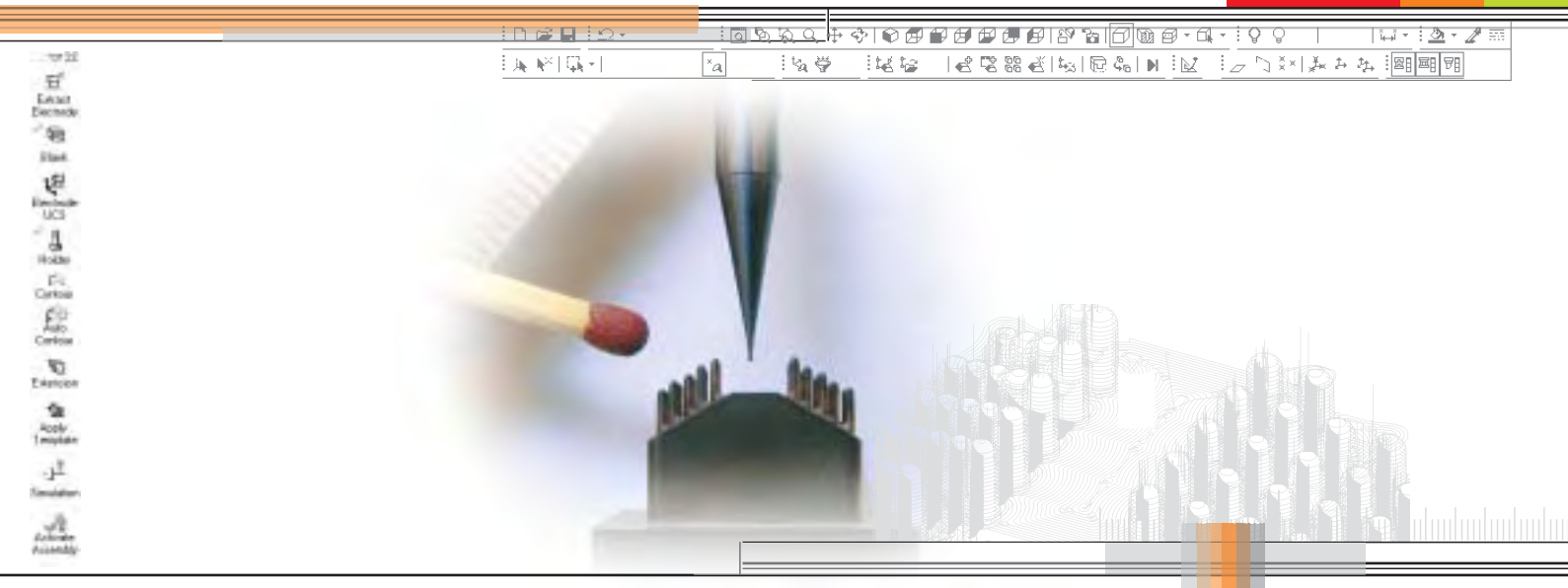


CimatronE Micro Milling

Pioneering Solutions for Micro-Milling and Manufacturing



The first commercial NC application for milling micro-components

Cost-effective, efficient design and manufacture of miniature high-precision parts and molds

Superb surface quality within tolerance as tight as 0.0001 mm using cutting tools with diameters down to 0.1 mm

High geometric accuracy with built-in CAD tools

Shrinking Dimensions, Growing Expectations

More and more of your clients — medical, optics, computer components, and others — depend on your ability to cost-effectively manufacture very small, high-precision parts and molds.

Today, you're expected to work on a scale, and with a level of accuracy that you couldn't have dreamed of a year ago. That's why today, you're either facing the challenges of micro-milling — or watching as the competition does so.

To meet this challenge, Cimatron leveraged two decades of NC expertise, cooperation with international academic institutions, leading machine and tool vendors, to pioneer the first solution that enables effective scaling of jobs to the micro environment.

The Micro Milling Programming Environment

Micro-systems machining demands:

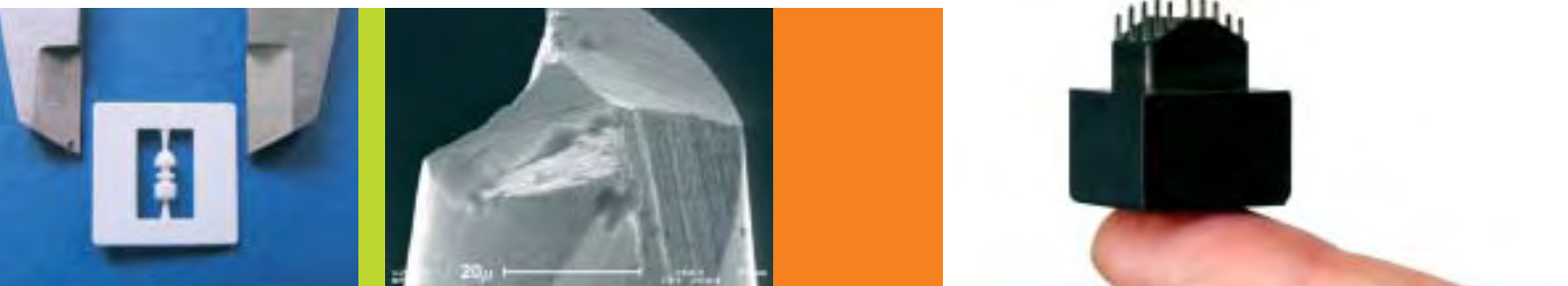
- High precision: 5 microns (μm) or less
- High surface quality (Ra): 0.2 microns or less
- Narrow ribs: 0.5 mm or less
- Hardened steel: 45 HRC or more

Cimatron micro-milling technology supports:

- Small tool diameter: 100 micron or less
- High tool aspect ratio (L/D): 10 and up to 100
- High spindle speed: 150,000 RPM or more
- Tight machining tolerance: 0.1 micron or less

Cimatron Micro Milling Advantages

- Quick, safe and high-quality machining of miniature parts and molds
- Superior surface quality and tight machining tolerance
- Reduce the use of high-overhead EDM by 5-axis micro-milling of tiny details
- Shorter machining time and lower tool wear-and-tear using high-speed milling and dedicated machining strategies
- Flawless handling of imperfect geometry with built-in CAD tools



High Speed Milling for Polishless Machining

In micro-milling, hand polishing is not an option — and polishless surfaces quality is a necessity. That's why CimatronE Micro Milling supports:

- All rounded motions toolpaths, including true-spiral milling
- Large rounding radius (0.3) with small step-over (0.03)
- Adaptive Z-layer finishing
- Zero-overlap trochoidal finishing of ridges

Safe and Highly-Efficient Toolpaths

To eliminate the risk of tool breakage, reduce air-cutting motions, maintain tool load and lengthen tool life, CimatronE Micro Milling constantly and automatically records remaining stock details, even at the micro-component level. CimatronE Micro Milling features:

- Recognition of actual remaining "micro stock"
- Special function to Rough and Finish in the same operation
- Adaptive tool-load control
- Trochoidal milling for roughing

Flowline and 5-Axis Milling

- Best surface quality by following the natural geometric flow
- 5-axis tilting to machine deep areas with conic tapered tools
- Production of miniature parts with complex formed surfaces
- Automatic identification of tool orientation according to the cutter, holder, and part

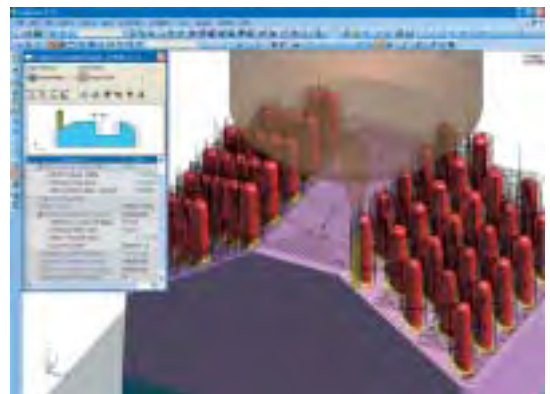
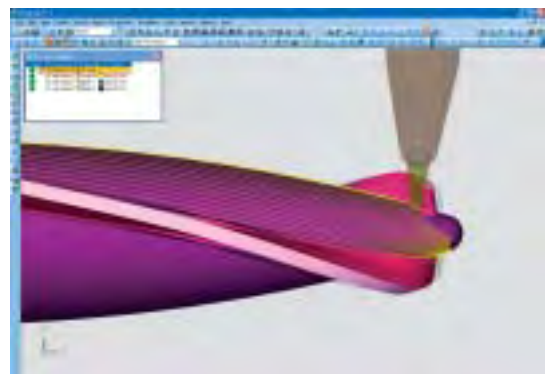
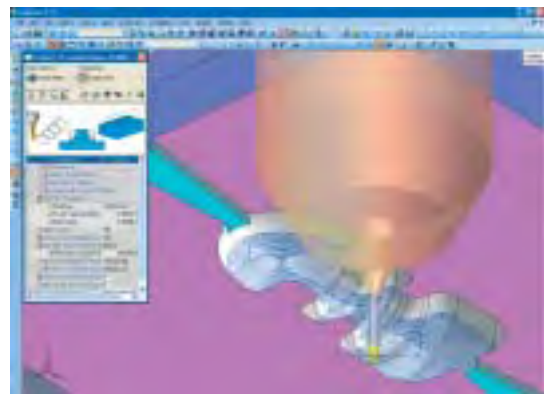
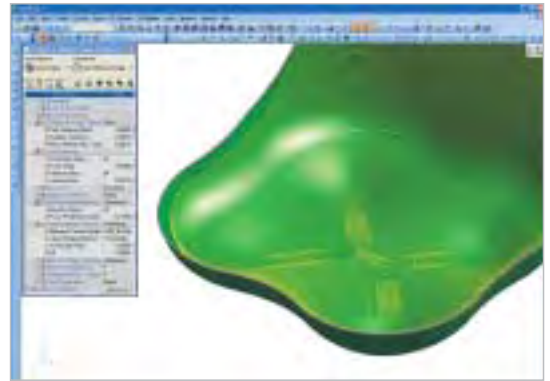
Optimized Milling Strategy

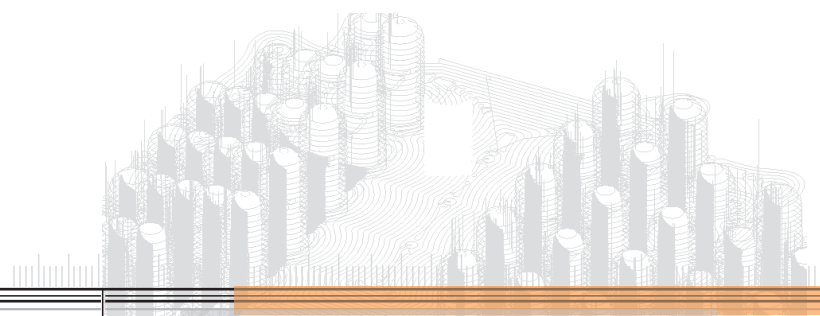
The smaller the component to be milled — the more quality results depend on an optimal automated machining strategy. CimatronE Micro Milling features:

- Dedicated functions to machine micro components such as rough and finish in a single operation, and round toolpath with very small step over
- Adaptive machining strategies like:
 - Automatic definition of optimal approach and retract motions
 - Automatic identification of roughing strategy
 - Smart usage of tools of differing lengths, without fragmenting the toolpath
 - Automatic implementation of rerough during cleanup
 - Adaptive feed control to maintain constant tool load

High Accuracy Integral CAD

In the micro-milling arena, accuracy and quality of geometry is mission critical. Even small gaps, overlaps, or geometrical discontinuities can significantly affect surface quality. CimatronE Micro Milling includes built-in, highly-accurate (0.001 microns) surface creation and mending tools, reducing programming time and ensuring that machined geometry meets tough quality requirements.





"Micro-Milling technology has now made the step from the science lab to the shop floor. We are happy to see that as a result of the European Micro-Milling Research Project, Cimatron has already implemented special Micro Milling functions in their new software release."

Thomas Bergs, Chief Engineer, Fraunhofer Institute for Production Technology (IPT), Aachen, Germany

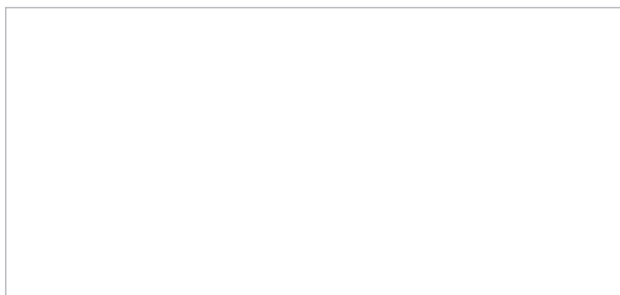


About Cimatron

Cimatron is the leading provider of integrated, quoting-to-delivery CAD/CAM solutions for the tooling and manufacturing industry. Cimatron is committed to providing tool makers and NC users with comprehensive, cost-effective solutions that streamline manufacturing cycles, enable collaboration with outside vendors, and ultimately shorten product delivery time. Over 8500 customers worldwide in the automotive, consumer plastics, and electronics industries

employ Cimatron's cutting-edge CAD/CAM solutions for manufacturing.

Founded in 1982, Cimatron is publicly traded on the NASDAQ exchange under the symbol CIMT. Cimatron's subsidiaries and extensive distributor network are located in over 35 countries to serve customers worldwide with complete pre- and post-sales support.



For more information, please visit our web site at:
www.cimatron.com

