CAD/CAM Solution for Mold Making
From Quoting to Delivery

Use a single CAD/CAM solution dedicated to mold making

Deliver high quality molds in record time

Produce molds of any complexity and size
Produce high quality molds in record time; increase your business competitiveness and profitability.

Findings from the Aberdeen Group’s Mold and Die Shop Benchmark study show that CimatronE customers are able to provide significantly faster delivery times than those offered by the rest of the industry.
The Benefits of Using CimatronE

Designed to meet the unique challenges faced by mold makers today, CimatronE’s mold making solution enables you to:

- Win more jobs and increase profitability with faster, more accurate and professional-looking quotations.
- Undertake any project with the confidence to handle even the most complex parts.
- Dramatically reduce design time with powerful mold design functions and concurrent design capabilities.
- Automate repetitive and time consuming tasks and utilize commonly-used part catalogs and user-defined libraries to reduce delivery time and cost.
- Streamline processes and easily manage changes by using a single integrated solution from design to manufacturing.
What makes CimatronE ideal for mold makers?

A single integrated solution from quoting to delivery
CimatronE’s CAD/CAM solutions address the entire mold making process—from quoting to design, applying engineering changes, NC and EDM programming. Nothing is lost in translation, so you can deliver higher quality tools at lower cost and shorter cycle times.

One-stop dedicated mold design solution—complete any job in record time
Mold makers no longer need to spend valuable time attempting to construct the unique features of a mold using general-purpose CAD applications or switching between multiple systems. With built-in data converters, highly flexible mold base configuration options, powerful mold-specific design functions, and automated BOM creation, you can get the entire design done in a single environment, allowing you to complete even the most complex job at unprecedented speed.

Flexible automation—the ideal mix of automation and user control
CimatronE’s CAD/CAM solutions save mold makers time with a high level of automation, while empowering the experienced user with full flexibility to control the entire process. CimatronE’s Intelligent Toolbox puts the right tool at your disposal at the right time—supporting and speeding up your natural workflow.

Design in 2D or 3D, using surface or solid operations—it’s your call
2D or 3D, surface or solids are no longer a dilemma; CimatronE supports you whichever way you prefer to do your design work. Perform surfacing operations on solids and solid operations on surfaces using a complete hybrid environment to fit your preferences and the task at hand.

Machine any part—from simple to complex, and everything in between
From simple 2.5 axis milling and drilling to complex 5-axis machining and micro milling, CimatronE provides the full range of NC technologies needed to get the job done.
Tooling is your business. It is also ours. With 30 years of experience in the tooling industry, we understand that success requires not only the best products, but also the know-how, process, and resources to help you make the most out of them.

Implement at your own pace with a modular or fully integrated solution

While CimatronE provides a complete integrated solution that covers the entire mold making cycle, you can implement individual modules of the system at your own pace to address your most urgent needs and match your available resources.

Upgrade to CimatronE without losing productivity

The tooling experts at your local Cimatron office provide extensive training and implementation support to guarantee successful deployment and complete customer satisfaction. A proven implementation methodology includes a step-by-step integrated training and migration plan to ensure quick productivity ramp-up with minimum disruption to your business.

Tooling expertise and world-class customer support

With more than 40,000 installations worldwide, Cimatron is focused on serving the needs of the tooling industry. Cimatron’s subsidiaries and extensive distributor network are located in over 40 countries to serve customers worldwide with complete pre- and post-sales support. Ongoing support is provided by your local office to ensure the highest level of responsiveness. Employees and representatives worldwide are tooling experts that utilize their industry knowledge to assist customers with unparalleled dedication and expertise.
Cimatron has a complete solution that helps you streamline the entire mold making process from quoting to design and manufacturing.

Choice of a fully integrated or modular solution

CimatronE’s CAD/CAM functionality covers the entire mold making cycle—from quoting to design, applying engineering changes, NC and EDM programming—streamlining the entire mold making process. The system is available as separate modules or as a complete integrated solution.
Cimatron allows us to design and build molds more efficiently so we can maintain our industry leadership. We have completely turned off any other software we were using.

PTA Corporation, USA
Import your customer data and start working within seconds

- Start working as soon as you get your customer’s part data. Heal and stitch data or work with non-stitched models and poor-quality imported data.

- Quickly and reliably import your customer’s part data with automatic data validation and highly accurate conversion from all standard formats, including DXF, IGES, STEP, VDA, Parasolid, SAT (ACIS) and STL.

- Take advantage of native read/write options for popular CAD systems, including AutoCAD, Autodesk Inventor, CATIA, Pro/Engineer, Siemens NX and Solidworks.

- Import relevant Product Manufacturing Information (PMI) from CATIA, Pro/Engineer and Siemens NX.
Win more business with quick and accurate cost estimates

- Spot undercuts—immediately locating lifters, sliders and areas where mending is required—using QuickSplit.
- Get a quick and accurate estimate of the mold base cost with preliminary designs that include the placement of primary mechanisms such as sliders and runners.
- Clearly visualize and analyze engineering changes for accurate and efficient cost estimates using ECO tools.
- Produce accurate cost estimates based on a mold base layout with the MoldQuote Generator, which utilizes information you define to automatically calculate a price for quoting.
- Print out ready-to-send, professional-looking quotes, which include embedded screenshots of preliminary designs.

Get quick and accurate cost estimation with preliminary designs

The ECO tool identifies a change: old, removed geometry is shown in red, while new, added geometry is shown in blue
Use QuickSplit - the industry’s fastest and most accurate parting and cavity design tool

- Start mold design immediately on any model, no matter what the quality of the part.
- Ensure flawless parting with dedicated analysis tools to identify undercuts, check geometry and verify parting surfaces.
- Define multiple opening directions—automatically assigning faces to the correct directions and supporting any number of sliders and lifters.
- Quickly generate geometry for cores, cavities, sliders, lifters and other active components for even the most complex molds.
- Apply engineering changes to parting methodically, and in an organized way, at any point in the project.
- Quickly perform mending and surfacing work using powerful hybrid solid/surface modeling capabilities that cater specifically to the tooling industry.
- Shorten delivery times by using applicative tools to send components to NC programming, milling and wire EDM on the first day of design.
Designing with Cimatron 3D has taken 2-3 days of modeling out of the process.

Vaupell, USA

Preliminary Design

Create quick preliminary 3D designs to evaluate strategies and gain customer approval

- Design any size mold with thousands of surfaces and components—handling any mold layout including multi-cavity and family molds.
- Easily place all the components of your mold—including plates, sliders, lifters, inserts and other catalog parts as well as cooling, ejection, and runner systems.
- A preliminary Bill of Material (BOM) is generated so material can be ordered and initial machining may get started in parallel to final design approval.
Mold Base

Load an entire mold base plate set in just minutes utilizing standard and user-defined catalog parts

- Easily load a standard mold base from commercial catalogs.
- Work efficiently with non-standard mold bases using a dynamic mold base template that includes all components (plates, sliders, etc.).
- Instantly modify dimensions of components and replace parts in the mold base at any point in the mold design process.

Core, Cavity and Sliders

Leverage automation to complete design of the mold’s main components at high speed

- Quickly and easily design the core, cavity and sliders.
- Easily implement engineering changes to mold components by maintaining associativity with initial parting work throughout the process.

Catalog Parts

Work with a library of over 20 vendor catalogs, customize them and create your own catalogs for reuse

- Browse through catalog parts that include complete and up-to-date details of dimensions.
- Automatically adapt the catalog part or sub-assembly to the main assembly’s dimensions and components, with parametric catalog capabilities.
- Integrate catalog parts into assemblies by automatically creating pockets in every plate the part goes through and threading the pocket where necessary.
- Associate catalog parts with their drilling procedures to streamline NC programming.
- Access additional catalog parts using the Cadenas portal.
Lifters
- Place lifters from commercial or user-defined catalogs in one operation.
- Cut even the most complex lifters automatically.
- Create cavity and core pockets to enable wire EDM and milling to begin on the first day of design.

Inserts
- Simultaneously add several inserts from commercial or user-defined catalogs with automatic cutting, so no modeling work is necessary.
- Cut cavity and core pockets to enable wire EDM and drilling/milling to begin on the first day of design.

Ejection Systems
- Add hundreds of ejectors from commercial or user-defined catalogs in a single step - the system will automatically find the right spot, analyze the plates they go through, and take care of the trimming.
- Create pockets that are tight around the upper end of the ejector and loose along the body.
- Associate ejectors with their drilling procedures to streamline NC programming.

Cooling Systems
- Simplify the creation of complex cooling systems and all required cooling elements (channels, plugs, connectors, baffles, nipples, etc.) with dedicated design tools.
- Detect any interference and receive alerts if cooling channels are positioned too close to other key components.
- Associate cooling channels with their drilling and gun drilling procedures to streamline NC programming.

Runners
- Sketch runners in 2D to automatically convert them into 3D runners, with easy addition of sprue bushing.
- Design non-planar runners in 3D with a mechanism that helps avoid undercuts.

Motion Analysis and Collision Detection
- Validate your design with built-in measurement, analysis, and collision detection capabilities.
- Simulate tool kinematics to locate and identify collisions, and eliminate design errors.
Create and reuse drawing templates incorporating customer specifications

- Use powerful drafting options for mold drawings, including the ability to create sections on open objects.
- Easily add a Bill of Material and Table of Holes to your drawings.
- Eliminate repetitive manual steps with automated placements of center lines, coordinate labels, and other drawing elements.
- Generate drawings with all the information needed for ordering components, shop floor operators, quality assurance, and customer documentation.
- Define drafting views on-the-fly during the modeling process; then quickly convert them into drawings.
- Create and reuse templates incorporating customer standard drawing specifications.

Integration and Concurrent Engineering

CimatronE’s end-to-end integrated solution—which offers design, drawing, electrode and NC capabilities—is the natural choice for mold makers. Throughout the entire mold making process, CimatronE’s integrated solution allows you to:

- Ensure all users work on fully up-to-date projects in all environments (design, drawing, electrode or NC), saving time and eliminating errors.
- Easily manage engineering changes with built-in associativity—changes you make in the tool design flow directly to the drawing environment, the affected NC procedures, and appropriate individual electrodes.
- Compress delivery cycles with concurrent engineering capabilities that allow multiple designers to work simultaneously on the same project, and enable electrode design and NC programming to begin while design is still in progress.
Electrode Design

Reduce design time by 80%
- Work your way quickly and efficiently through the entire design process using advanced tools for easy selection of burning surfaces, automated creation of holder and blank geometry, and versatile surface creation tools.
- Create and reuse templates that complete the design of new electrodes with similar topologies in seconds. The system will even repeat surface extensions in relevant areas, based on the template.
- Check for possible collisions of the complete electrode and its holder with the part or the fixtures.

Electrode Burning Process

Ensure an error free burning process
- Quickly define the complete burning process (including spark gaps, 2D or 3D orbiting, and rough offsets) for each electrode and burning path.
- Automatically create inspection drawings for each of the electrodes and allow shop floor staff to verify electrode dimensions prior to burning.
- Easily generate a setup and burning sheet for each of the electrodes, with corresponding locations and rotations, as well as a drawing of the complete EDM process.

Electrode Manufacturing

Create complete 2.5 to 5-axis machining procedures at the click of a button
- Consider the burning parameters (including spark gaps, 2D or 3D orbiting, and rough offsets) to machine accurate electrodes, eliminating errors.
- Easily create and reuse process templates, allowing user-defined milling strategies to be automatically selected based on electrode geometry.
- Support machining of very thin elements—with optimization for manufacturing of fine ribs.
- Verify dimensions of manufactured electrodes by sending a CMM measuring path straight to your machine, considering the burning parameters.
NC Programming

Use CimatronE’s NC module to turn your mold design into a prototype or fully functioning production mold tool with unprecedented accuracy and speed.

Fast, Efficient Programming

**Complete NC projects in record time**
- Enjoy background toolpath calculations; continue normal work on a project while the computer calculates procedures in the background.
- Speed up calculations with multi-core capabilities as standard, and the SuperBox toolpath calculation accelerator device as an optional add-on.
- Preview procedure results and parameters before they are calculated, with visualization of the remaining stock compared with the part, and optimize parameters accordingly.
- Reuse templates or sequences in the same project or in a totally different project. Templates and sequences can also help you standardize machining in your tool shop.

Built-in CAD Functionality

**All the CAD you need for the best machining results**
- Take advantage of a full hybrid system, which allows you to combine wireframe, surfaces, local open solid and solid functions as part of the NC environment.
- Optimize machining by adding surfaces and contours, capping holes and slots, and extending surfaces as well as applying drafts and rounds, using dedicated features.

Efficient Roughing

**Maximize material removal rate while prolonging tool life**
- Ensure short machining times for any selected machining strategy with continuously updated multi-axis stock.
- Check for tool shank and holder collisions against the auto-updated stock automatically at all stages of Roughing and ReRoughing operations.
- Generate a High Speed Milling (HSM) all-rounded toolpath with constant tool load, trochoidal milling, advanced clean between passes, efficient rough between layers, and state-of-the-art ridge removal.
High Quality Finishing

Achieve a superior surface quality

- Choose from a rich set of 3 to 5-axis optimized machining strategies, for any model, including:
  - Adaptive Z layers
  - True spiral motions
  - All rounded motions
  - Flow-line machining
  - Cleanup (rest machining) and pencil
  - Slope controlled finishing
  - Optimized CBP (Clean between passes)
  - Unique Ridges handling by Zero Overlap trochoidal

- Automatically adapt machining strategies to achieve a high, polish-free surface quality using built-in analysis of local slopes.

Full 5-Axis Capabilities for Mold Making

Reduce setup time, shorten machining time, and improve surface quality

- Reduce the need for electrodes with direct milling of narrow slots and tiny corner radiuses.
- Utilize a single setup for multi-side operations.
- Choose from a rich selection of machining strategies and support a complete range of cutters including tapered cutters, lollipop tools, and slot mill cutters.
- Support positioning and continuous milling, providing full control over the tilt and lead angles as well as gouge and collision check of the tool shank and holder against the part.
- Generate touch-of-a-button 5-axis tilting toolpaths especially suitable for rapid machining of parts with deep cavities, narrow ribs and tiny corner radiuses, using shorter and more rigid tools for best surface quality and reduced machine time.
- Verify all toolpaths and eliminate unnecessary tryouts with advanced post-processor based simulation capabilities—including material removal, remaining stock, and complete machine kinematics.
Plate Machining and Drilling

Generate efficient toolpaths for plate machining

- Achieve efficient and accurate machining of plates with powerful pocket or profile milling options, and full drilling capabilities.
- Save 90% of drill programming time by allowing the system to automatically assign appropriate drilling sequences for hundreds of holes in seconds.
- Produce cooling channels effectively with gun drilling machines, with an automatic mechanism to handle crossing.
- Enjoy automatic transfer of hole properties assigned during the tool design phase, such as thread, accuracy and surface quality, saving a huge amount of time and eliminating errors.
- Program wire EDM machining in 2 or 4 axis wire modes, ensuring optimal CNC performance with a built-in database of EDM machines.

Advanced Micro Milling

For miniature, high precision milling

Cimatron is a pioneer in the field of micro milling, offering dedicated micro-machining strategies for cost-effective manufacturing of molds for very small, high precision parts.

- Generate superb surface quality with tolerances as tight as 0.0001mm, using cutting tools with diameters as small as 0.1 mm.
- Use CimatronE’s micro milling capabilities to support cutting-edge Direct Milling.
**The Right Balance of Automation and Manual Control**

**Enjoy the speed of automation without losing flexibility**
- CimatronE offers automation options to create programs in minutes, while still enabling operators to use a rich set of advanced parameters to control every aspect of toolpath strategy and machining conditions.
- Initial steps can be quickly accomplished with user-friendly guides and reusable templates while control remains firmly in the hands of the experienced programmer.
- Advanced template functionality further automates programming, allowing the reuse of specific procedures and even complete machining processes.
- The system is set up to enable a fast ramp up for new users by helping to retain crucial company knowledge and capturing expertise and know-how for future use.

**Simulation and Post-Processor Support**

**Machine with confidence and predict results**
- View the cutting process and its results prior to machining, with a color-coded display to help you analyze the remaining material around the part.
- Simulate the real machine kinematics and toolpath motion, checking tool shanks and holders against the part with advanced simulation generated with the G-code. The ability to predict machine behavior enables errors to be corrected and eliminated ahead of time.
- A rich library of post-processors is offered for practically all 3-axis and 5-axis machines as well as all leading controllers.
- A state-of-the-art post-processor generator can be easily customized to any specific needs.

**NC Setup and Tool Table Reports**

**Facilitate information flow between NC programmers and the shop floor**
- Generate NC Setup and Tool Table reports automatically as you post-process a program.
- Customize reports for the shop floor to include company logo, machine time, machine limits, and other user-specific data and parameters.
- Generate reports in Html, Excel and Pdf.
About Cimatron

With 30 years of experience and more than 40,000 installations worldwide, Cimatron is a leading provider of integrated, CAD/CAM software solutions for mold, tool and die makers as well as manufacturers of discrete parts. Cimatron is committed to providing comprehensive, cost-effective solutions that streamline manufacturing cycles, enable collaboration with outside vendors, and ultimately shorten product delivery time.

The Cimatron product line includes the CimatronE and GibbsCAM brands with solutions for mold design, die design, electrodes design, 2.5 to 5 axis milling, wire EDM, turn, mill-turn, rotary milling, multi-task machining, and tombstone machining. Cimatron’s subsidiaries and extensive distribution network serve and support customers in the automotive, aerospace, medical, consumer plastics, electronics, and other industries in over 40 countries worldwide.

Cimatron is publicly traded on the NASDAQ exchange and the Tel Aviv Stock Exchange under the the symbol CIMT.

For more information, please visit our web site at:

www.cimatron.com

Images are courtesy of: Mahle Group, Germany; Ghilardi Stampi Srl., Italy; Kern Precision, Inc., USA and Inglass Srl., Italy