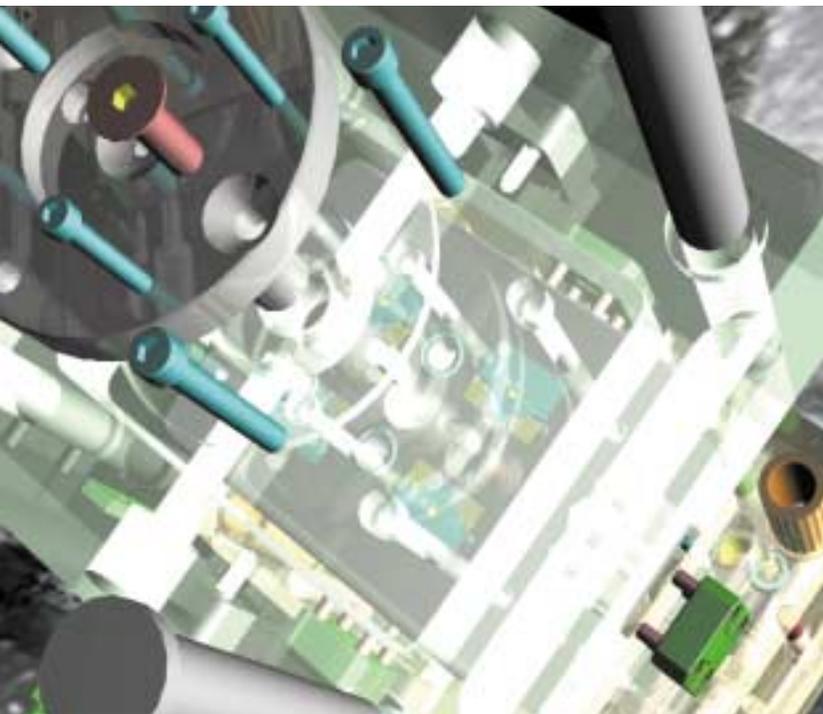


Unigraphics® Total Product Engineering for Mold Makers

The knowledge-centric mold development solution

eds.com/plm



The need to deliver faster

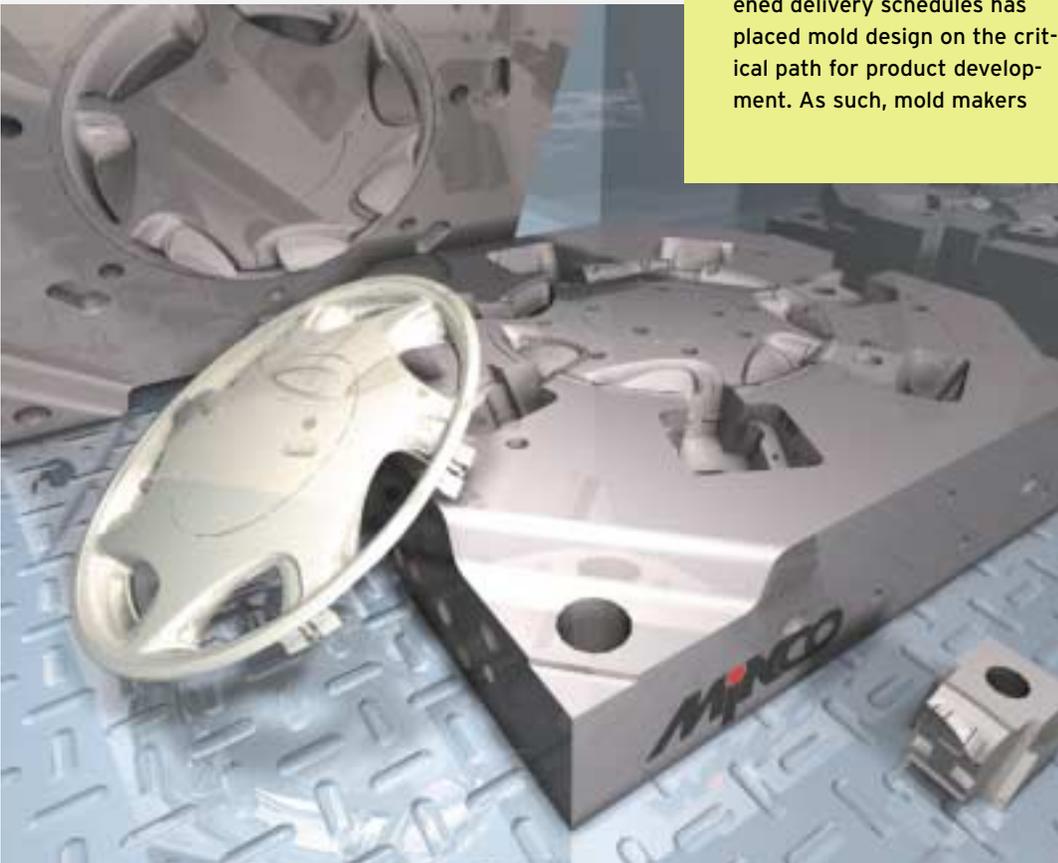


Molded parts have become vital components to the automotive, consumer product, electronics and medical industries. Injection mold design involves some of the most difficult challenges in CAD modeling. These challenges are becoming even more intense due to market demand for more innovative designs and higher quality products. Above all else, molds must be made cheaper and faster than ever before.

Being able to provide differentiated products within shortened delivery schedules has placed mold design on the critical path for product development. As such, mold makers

are constantly looking for better ways to use computer technology to automate their product development process. Doing “business as usual” and employing mediocre technology will seldom win. However, companies that master their processes and have joined their best practices with advanced technology will consistently excel.

Mold makers have a selection of mold development software, but the most productive, knowledge-centric mold development solution – with industry best processes built in – is available only from Unigraphics®.



Unigraphics: total product engineering for mold makers



EDS Unigraphics uniquely supports all capabilities needed for an optimum mold making system. By integrating our customers' best practices in mold making with advanced CAD/CAM technology, Unigraphics provides mold makers with a solution that helps them deliver unmatched innovation and productivity. Process-based wizards, knowledge-embedded models, alternative modeling methodologies, open architecture and collaborative engineering tools are just a few of the unique technologies that Unigraphics leverages to bring higher levels of quality, productivity and innovation to the mold making industry.

Unigraphics Mold Wizard is the industry's most powerful tool for streamlining and automating the mold design process. Unigraphics Mold Wizard provides expert, highly efficient mold design tools that guide you step-by-step through the mold design process. Mold Wizard captures the process-specific knowledge of mold making, delivering levels of productivity that dramatically outperform traditional mold making software. Productivity gain is already proven, with most mold makers expected to deliver a fully detailed mold design at least twice as fast as traditional software applications.

Unigraphics complements Mold Wizard design aids with proven manufacturing technologies that dramatically reduce mold delivery schedules. Through its process-knowledge approach to machining, Unigraphics brings a new dimension in capabilities and productivity, including high-speed machining, to the mold making industry.

Unigraphics Total Product Engineering brings you a strategic advantage that will help you develop and manufacture higher-quality molds faster and at lower cost. With industry-leading technologies in an integrated, associative, digital environment, Unigraphics improves individual and departmental productivity throughout the entire mold development cycle.

GETTING RESULTS

“By using Mold Wizard with the Unigraphics master model concept, we are able to assign multiple personnel on one job (detailing, programming, electrode design) at the same time, thereby compressing delivery time. While we experience a 50% to 75% gain in quality and accuracy of the completed mold design, our overall productivity gain has been about 20% to 25%.”

Len Graham
Director Tooling Engineering
The Tech Group

The Unigraphics Mold Wizard difference



Unigraphics Mold Wizard applies Process Wizard technology to optimize the mold design process, delivering levels of productivity that dramatically outperform traditional CAD software. Providing a structured workflow based on expert best practices, automation of mold-specific design tasks, and libraries of standard mold components, Unigraphics Mold Wizard provides a step-by-step process that promotes the most efficient work flow, while integrating complex elements of design technology into automated sequences.

Productivity Gains

Process automation:

Unigraphics Mold Wizard replaces labor-intensive steps with process-specific functions that require only minimal input to execute. The result is remarkably faster turnaround compared to traditional software systems. In addition, with Unigraphics Mold Wizard, you can capture and leverage your own mold design expertise to further advance productivity.

Advanced tools for parting:

Several functions are included in Unigraphics Mold Wizard to not only address the complex problems of parting surface definition, but to automate the process. For example, you can automatically search the parting lines, patch up holes, and create parting surfaces and core and cavity. The combination of such functions allows for associative parting surfaces, the ability to maintain associativity even when product models are greatly modified,

and the ability to completely replace product models. These capabilities are universally applicable to Unigraphics part models as well as imported models.

Library for molds and standard components:

Unigraphics Mold Wizard's mold base and standard parts library provides access to a wide variety of mold bases and standard components. Customization and modification of mold bases and standard parts is possible for temporary or permanent use. You can also include your own mold base or standard part designs through simple use of spreadsheets providing you with all the flexibility and automation you need.



GETTING RESULTS

“By using Mold Wizard from EDS we achieve up to 40% to 70% time reduction creating core and cavity work pieces for our molds.”

Mr. Udo Holve
CAD Coordinator
Moeller, GmbH

Improved time to market

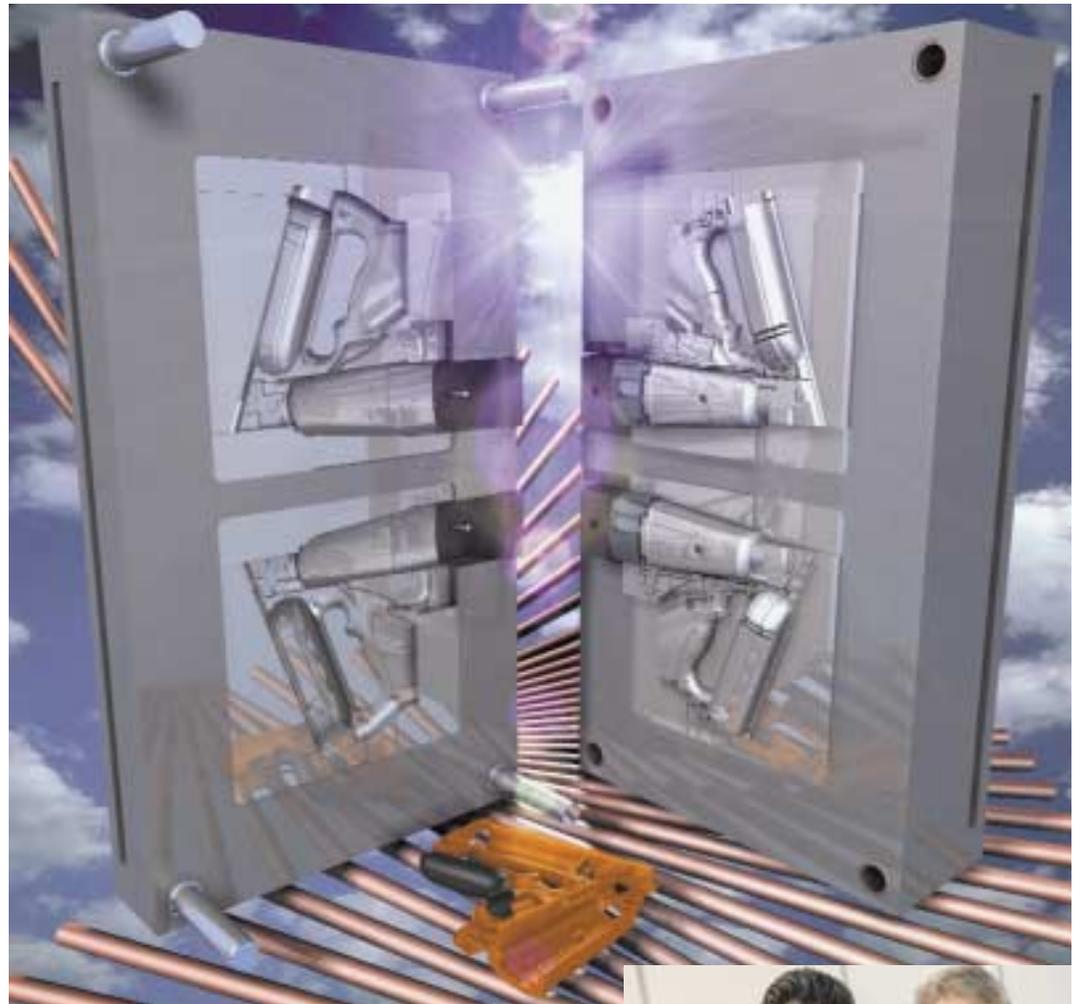
Immediate start of mold design

With Unigraphics Mold Wizard, you don't have to wait until the part design is complete – you can start the mold design while the part is still being altered. Unigraphics Mold Wizard is fully integrated with Unigraphics, providing complete associativity between the part model and the tooling – allowing you to change mold designs at will. Changes made to the nominal part model are automatically propagated to the core and cavity, and any downstream changes, for example sub-inserts, standard components or electrodes, are automatically reflected in the mold design.

Model swapping: When a new model is introduced, it is not necessary to create a new mold. With compare and swap functionality, you can easily change the existing model with a new version, regardless of its CAD format.

A total solution

With Unigraphics Mold Wizard, inconsistent design processes are a thing of the past. Combined with the high level of customizability and the flexibility of Unigraphics to create a correct product model from an imported part, Unigraphics Mold Wizard is the most complete mold package in the industry.



Major features at a glance



Data import and part creation:

Part geometry may be created from Unigraphics or imported from other CAD sources. The Load Product function automatically links the part to the mold design project and builds an initial mold assembly. Unigraphics Mold Wizard can support solid models as well as sheet models in both millimeter and inch units.

Family molds:

Unigraphics Mold Wizard is fully capable of managing family molds. You can toggle between multiple loaded part files to complete the modeling operation for each core and cavity set.

Shrinkage:

This function enables a shrink part to be created with uniform and non-uniform scales. The associative relationship between the product model and the shrink part enables work on the model to continue with updates to the shrink part.

Insert box (core and cavity):

The insert box includes automated functions that rough in an insert using a boundary zone method. Unigraphics Mold Wizard also includes further dimensioning fields that enable refinement of the insert to exact sizes. Predefined inserts may be used as well to include captured designs. Additionally, Unigraphics Mold Wizard provides standard parts as inserts for maximum flexibility and automation.

Tools:

An advanced toolset is included in Mold Wizard to enable the creation of complex mold inserts and parting geometry. The product design advisor provides part information such as parting lines, undercut areas, small angle faces, vertical faces, and cross-over faces. The product design adviser can be accessed before the start of a project to investigate the product model, or during parting line creation.

Parting functions:

Several functions are included in Unigraphics Mold Wizard to address the complex problems of parting surface definition. The combination of such functions allows for associative parting surfaces, the ability to maintain associativity even when product models are greatly modified, and the ability to completely replace product models. These capabilities are universally applicable to Unigraphics part models as well as imported models.

Bill of Materials (BOM):

Mold Wizard includes a fully associative BOM with catalog ordering information. The BOM capability can be customized to include, add or remove listed information. Automatic measurement and listing of stock sizes for inserts is also available. Field and record editing is supported as well as exportability to Excel spreadsheets. All the tools are available to make the BOM look exactly the way you want.

-  **Mold base library:**

Unigraphics Mold Wizard's mold base library provides access to a wide variety of standard mold bases. The mold base dialog box allows selection of catalog sizes. Mold base libraries can be modified at any time during the mold design. You can include your own mold base designs without having programming knowledge. By using the Interchangeable mold base you can build a custom mold base through creation of a simple spreadsheet. The CAD model is driven by the spreadsheet, therefore avoiding the need to do any modeling yourself.

-  **Standard part library:**

Mold design components are incorporated into a standard parts function within Unigraphics Mold Wizard. The graphical standard part dialog enables easy selection of existing parts. Customization and modification of individual standard parts is possible for temporary or permanent availability. You can easily include your own standard parts without programming. By using the interchangeable components you can build standard parts through creation of a simple spreadsheet. The CAD model is driven by the spreadsheet, therefore avoiding the need to do any modeling yourself.

-  **Cooling components:**

Provides you with a cooling catalog based on the standard part approach with flexible and customizable cooling holes and components. Cooling components are dependent on cooling holes and angled cooling holes are provided with unlimited flexibility.

-  **Electrode design:**

Provides a process for designing electrodes through a number of steps to create envelope, head, coordinate system, foot and drawing.

-  **Assembly drawings:**

Helps you to create a mold drawing quickly and easily by automating a number of tasks, identifying holes or pocketing features and creating drafting symbols and dimensions automatically.

-  **Compare and swap product model function:**

Unigraphics Mold Wizard's product comparison function automatically finds the differences between the original model and the new model. Swap model functionality keeps unchanged areas, removes non-used areas, creates parting for new areas and updates core and cavity automatically. The entire swap process is automatic and requires minimal input.

-  **And much more functionality and automation:**

Unigraphics Mold Wizard also addresses mold coordinate systems, layout, ejector pin post processing, slider and lifter design, sub-insert, gates, runners, moldtrim and pocket creation.





A closer look at conventional mold making versus Unigraphics Mold Wizard

Unigraphics has taken the complex process of mold design and simplified it. Expert knowledge and the conventional wisdom of the industry have been captured in an automated process, delivering levels of productivity that dramatically outperform conventional mold making software.



Process phase

Data import

Design completion and molding modification

Core and cavity parting

Standard mold base and components

Custom components

Drafting

New part model

Integration with CAD

Conventional mold making

Multiple data imports are required, including:

2D system (if possible)

3D system

3D to 2D after modification

Difficulties in working with 2D CAD and midrange CAD/CAM systems that are not intended for styled surfaces used in modern product design.

Non-associative (as well as often inaccurate) 2D applications and 3D surface models can be difficult to import or model in the CAM systems without errors.

Only 2D standard part libraries of non-associative shapes are available. Independent views are difficult to create and maintain. Detection of design errors such as intersections is difficult.

You must create and maintain libraries of 2D views with limited automation.

Only enables non-associative modeling, detached from design.

A new mold design is necessary for every new part due to lack of associativity or imported geometry.

Provides only a special kit for mold making without flexibility of a robust CAD system to support it.

Unigraphics Mold Wizard

Unigraphics Mold Wizard requires only one-step data importing.

Advanced hybrid modeling capabilities of Unigraphics enable modification of parts for molding, and completion of features that other product design software may be unable to create.

Unigraphics Mold Wizard includes specialized mold design applications for associative solid base as well as sheet base parting methods. This advanced parting automation provides you with all the tools and flexibility to easily create parting lines and surfaces for complex parts.

Unigraphics Mold Wizard comes with a built-in 3D database of standard mold bases and components, which are parametrically adjustable to any configuration. The interchangeable mold base and standard parts allow you to create your custom components simply by entering your data into a spreadsheet. The CAD model is driven by the spreadsheet, therefore avoiding the need to do any modeling yourself.

Specialized component library and installation functions are included with Unigraphics Mold Wizard and allow you to create custom parametric components with associative mounting features.

Unigraphics Mold Wizard leverages the associativity of Unigraphics' master model, which is done in parallel with design and provides automated drafting functionality to further speed up the design process.

Model comparison finds feature differences in original model versus new model. With model swap you can easily change the existing model with a new version, regardless of CAD format (IGES, STEP). The entire swap process is automatic and requires minimal input.

Mold Wizard is fully integrated with Unigraphics, giving you all the flexibility you need to complete the most complicated and customized molds you can imagine. You can work back and forth with Mold Wizard and Unigraphics core functionality at the same time.

From mold design through manufacturing



Knowledge-driven manufacturing

Unigraphics manufacturing solutions enable you to define and plan your manufacturing sequence up front, and then store this information for subsequent access and re-use using process intelligent manufacturing templates. Once defined and stored, this information can be leveraged through the use of several available process assistants for manufacturing. These process assistants quickly guide you through the steps involved in creating an NC tool path and with remarkably little interaction.

The mold machining process assistant contains specific sequences for cutting various types of molds and for machining cores, cavities and removing faces with standard or high-speed machining techniques. In addition, easy-to-use organizational tools allow you to quickly view and manage manufacturing process relationships within the setup, including operation sequence, geometry groups, machining methods and cutting tools. The software graphically illustrates these hierarchical relationships and their status in a familiar tree-like interface consistent with Windows and other Unigraphics applications, enabling fluid user interaction with all key aspects of the process.



GETTING RESULTS

“With Mold Wizard, we reduced overall project time for a detailed, associative mold design with an extremely complicated part by 40 percent. In the 12 months before using Mold Wizard, Millennium Mold did 58 jobs, and in the nine months since, has completed 108 jobs in far greater detail.”

Mr. David Quinn
President
Millennium Mold Design, Inc.

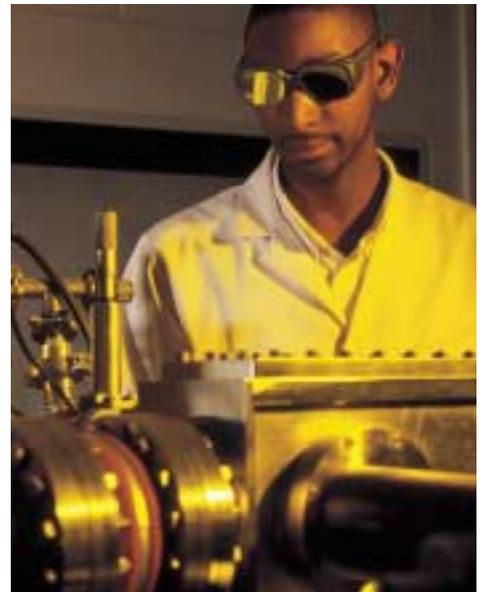
High speed machining

High-speed machining technology has been pioneered in Unigraphics manufacturing and is becoming crucial technology for dramatically reducing mold lead time. It offers predefined machining sequences, special cut patterns and Nurbs-based tool paths for maximum efficiency and dramatic lead-time improvements. With high speed machining, cavity milling addresses large-volume material removal for both cores and cavities. Finish quality is also enhanced through the use of the spline-based Nurbs tool path output that machines directly to the desired net shape, eliminating additional processing steps.

A solution that fits

With Unigraphics Total Product Engineering, we can tailor a solution to the way you do business, delivering the combination of design, manufacturing, and interoperability tools that best helps get the job done. Mold Wizard can be purchased as a standalone module or as different packages with supporting software, including translators needed to import models from other systems or with a full package of complementary manufacturing software.

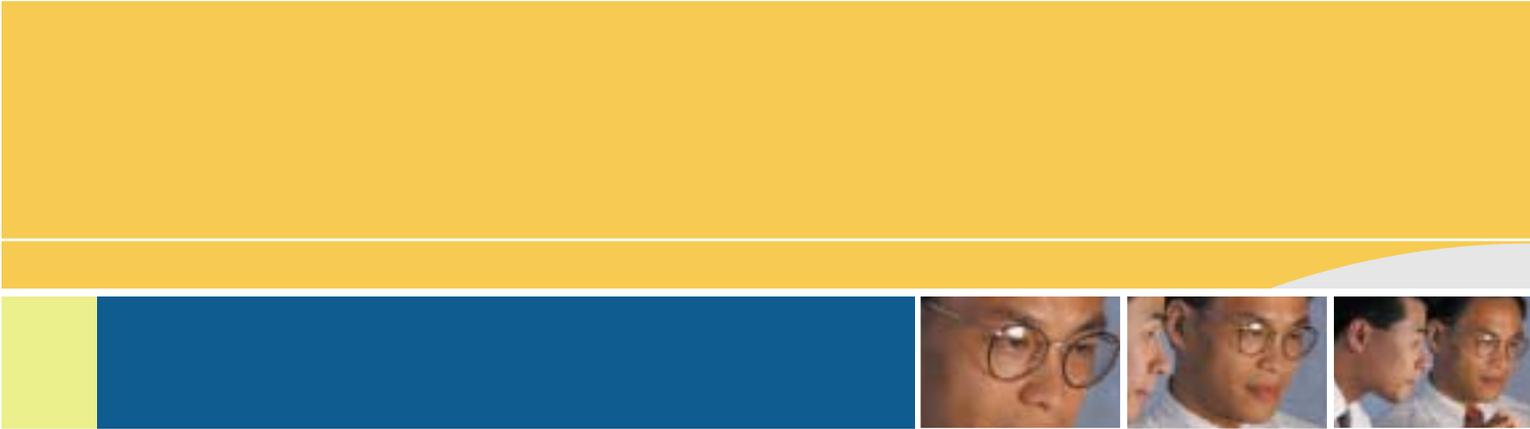
Contact your EDS sales representative today to learn more about these solutions and for information regarding the dramatic productivity gains your company can immediately realize with Unigraphics mold design and manufacturing solutions.



GETTING RESULTS

"I had forgotten how difficult it is to do mold design without Mold Wizard. With Mold Wizard we were able to create fully associative core and cavity blocks for one of our most complex parts, as well as build the mold base with a slide and a lifter in less than 4 hours. Without Mold Wizard this would have taken us over 40 hours."

Tom Hecht
Senior Tool Designer
Phillips Plastics



About product lifecycle management solutions

EDS is the market leader in product lifecycle management (PLM), providing solutions to the global 1000. Product lifecycle management enables all the people who participate in a manufacturer's product lifecycle to work in concert to develop, deliver and support best-in-class products. As the only single-source provider of PLM software and services, EDS can transform the product lifecycle process into true competitive advantage, delivering leadership improvements in product innovation, quality, time to market and end-customer value.

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About EDS

EDS, the leading global services company, provides strategy, implementation, and hosting for clients managing the business and technology complexities of the digital economy. EDS brings together the world's best technologies to address critical client business imperatives. It helps clients eliminate boundaries, collaborate in new ways, establish their customers' trust, and continuously seek improvement. EDS, with its management consulting subsidiary, A.T. Kearney, services the world's leading companies and governments in 58 countries. EDS reported revenues of \$19 billion in 2000. The company's stock is traded on the New York Stock Exchange (NYSE: EDS) and the London Stock Exchange. Learn more at www.eds.com.

