

# Leadership In True 3D CAE Technology



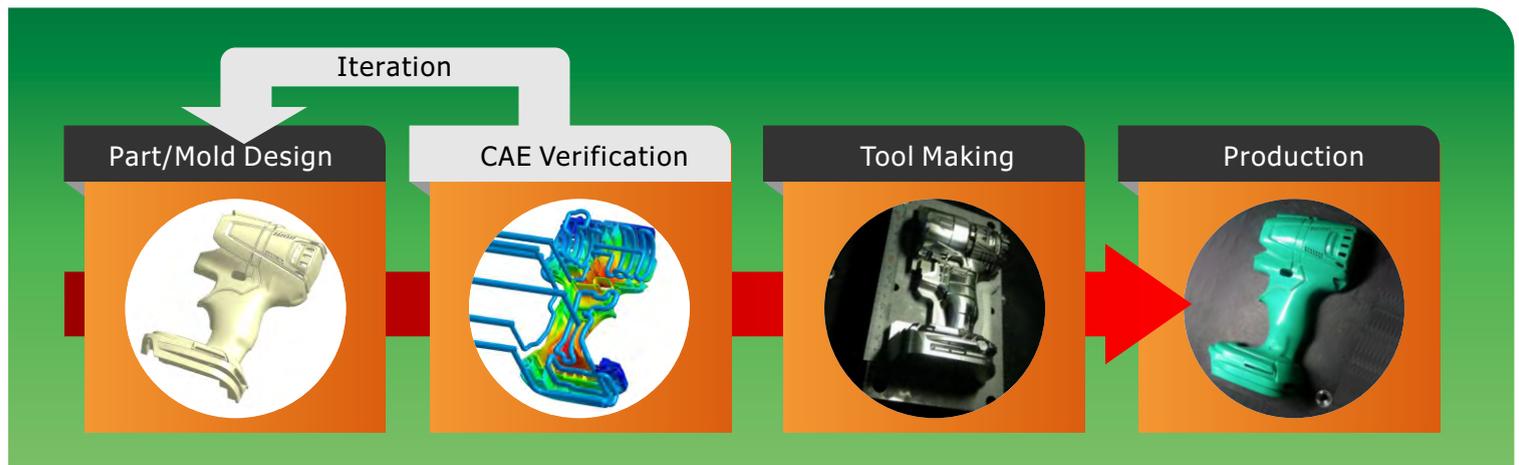
## Your Core Competitiveness

Moldex3D helps you simulate and visualize versatile injection molding processes to validate and optimize your plastic designs, increase manufacturability, shorten time-to-market, and maximize Return on Investment (ROI).

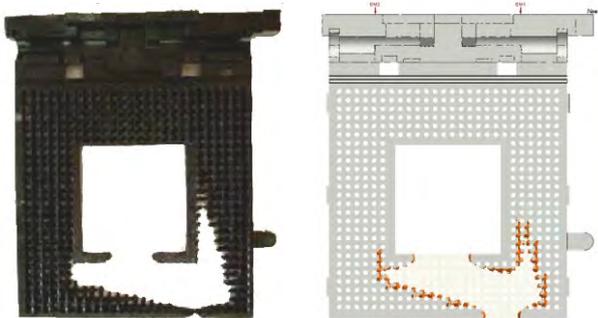
Moldex3D CAE software provides the true 3D simulation and visualization technology you need if you are fed up with countless trial-and-errors and want to save time, energy, and money more efficiently during the mold-making process.

A typical scenario continues to occur in part and mold designs: a part designer has an initial idea on product. However, a mold maker has to modify the design again and again because the optimal result is too difficult to reach when using the traditional trial-and-error approach, in which case the mold verification can be done only when the mold is fully finished. We all agree that this production process is very costly and inefficient.

## Mold Design Process



Now, it's time to advance from such inefficiency. Moldex3D solutions help users simulate and validate their part and mold designs before putting mold trials and fixes into practice. Major manufacturing defects can be predicted upfront; design revision and optimization also can be done much more quickly and more easily in the earliest design phase. Moldex3D not only saves your precious money and labor but also reduces time-wasting mold trials and fixes.

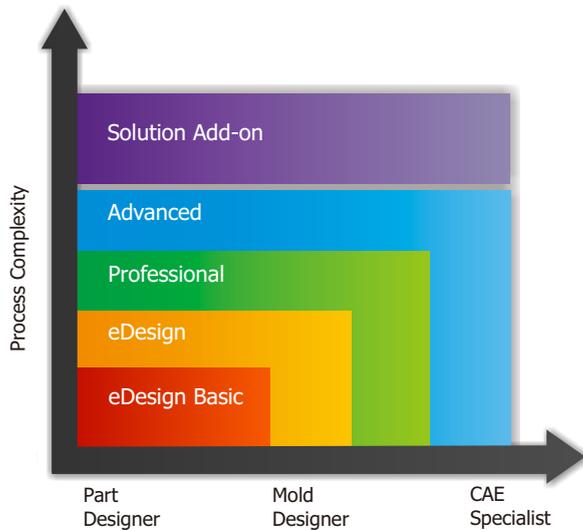


Moldex3D provides accurate simulations of filling patterns for plastic parts even with complicated geometry.

## Professional Industrial Solutions

- Precision Molding, Micromolding
- Hot Runner Optimization
- Conformal Cooling
- Rapid Heating Cooling Molding (RHCM)
- Multi-shot, Insert, Overmolding (MCM)
- In-Mold Decoration (IMD)
- Injection Compression Molding (ICM)
- Optical Molding
- Fluid-Assisted Injection Molding (GAIM/WAIM)
- Metal/Ceramic Powder Injection Molding (MIM/CIM)
- Microcellular Injection Molding (MuCell®)
- Thermoset and Rubber Molding

## Pioneering True 3D CAE Solutions



### eDesign Basic:

Quick filling simulation with automatic meshing capability

### eDesign:

Complete molding simulation with automatic meshing capability

### Professional:

Efficient support for shell-like plastics in addition to eDesign

### Advanced:

Flexible extension for high-precision or special process simulation

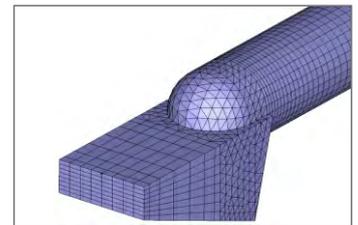
### Solution Add-on:

Series of add-ons for specific industrial process simulation

## Boost Work Efficiency in Pre-processing

### Superior Automatic 3D Meshing Engine (eDesign)

Moldex3D eDesign enables users to automatically generate meshes for a CAD model, saving working hours in mesh preparation. Its intelligent wizards lead users to easily build gates, feeding systems, cooling channels, and moldbase. Users can decide the meshing density to speed up calculation time or to enhance analysis accuracy.



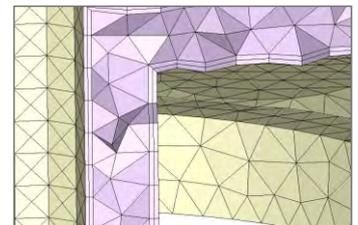
### CAD-Embedded Pre-processing (eDesignSYNC)

Moldex3D eDesignSYNC, fully integrated with Creo, NX, and SOLIDWORKS®, enables CAD users to quickly validate their part designs directly in familiar CAD/CAM environments. Its auto meshing engine and intelligent wizards bring better user experience, highly decreasing the difficulties in learning and training.



### High Resolution 3D Mesh Technology (BLM)

Aimed to delicate CAD models with specific features, the proprietary Boundary Layer Mesh (BLM) enables users to generate high-quality meshes for complicated 3D geometry. BLM supports advanced industrial molding processes, enhances solver accuracy for viscous heating and pressure simulation, and highly improves warpage prediction.



## Integrated Geometry Healing Tool

Moldex3D CADdoctor, developed under the partnership between Moldex3D and Elysium, is an interactive geometry healing tool that enables multi-CAD data exchange, geometry simplification and verification, quality check for CAE, etc. When you generate BLM, you can use this tool to automatically check and fix poor-quality geometry.

## High-Performance Parallel Processing

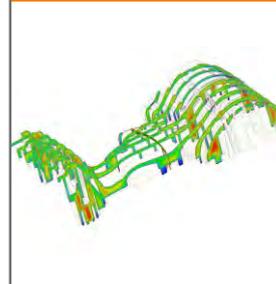
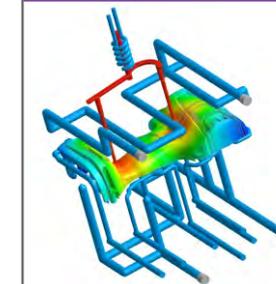
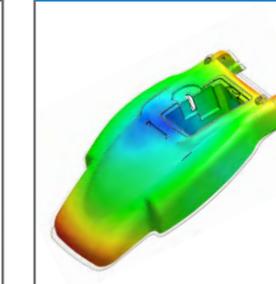
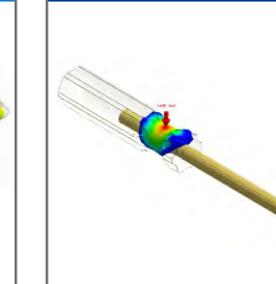
By utilizing the strength of multi-Core, multi-CPU, and multi-PC cluster, Moldex3D's unique parallel processing capability enables users to highly shorten the time required for injection molding simulations and enhances the computing efficiency by 10 times or more. Moldex3D parallel processing lowers your time costs and contributes to outstanding performance.

## Unique and Surpassing

Moldex3D offers easy-to-use interfaces and accurate simulations, helping you validate complex part and mold designs more efficiently. Optimization can be achieved by improving the quality of your designs depending on comprehensive analysis results.

## Standard Injection Molding Solutions

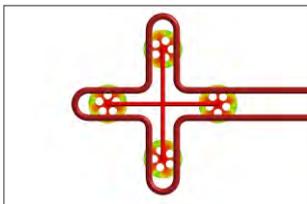
Moldex3D visualizes how the plastic flow is injected into a cavity from one or multiple gates, affected by material properties and process conditions, including injection speed, mold temperature, etc. More than 85% of common manufacturing problems can be predicted upfront, such as short shot, flow imbalance, air trap, or sink mark. Preventing these problems will highly improve part quality, structure, and appearance.

Flow	Pack	Cool	Warp	Multi-Component Molding
<ul style="list-style-type: none"> <li>- Visualize melt front</li> <li>- Predict locations of welding line or air trap</li> <li>- Optimize gate size and locations</li> </ul>	<ul style="list-style-type: none"> <li>- Evaluate gate seal time</li> <li>- Avoid sink mark, flash or bleeding</li> <li>- Optimize packing profile</li> </ul>	<ul style="list-style-type: none"> <li>- Improve cooling efficiency</li> <li>- Reduce cycle time</li> <li>- Predict hot areas</li> </ul>	<ul style="list-style-type: none"> <li>- Predict final part shape</li> <li>- Identify warpage causes</li> <li>- Calculate residual stress</li> </ul>	<ul style="list-style-type: none"> <li>- Predict warpage of different materials</li> <li>- Detect thermal degradation problem</li> </ul>
				

## Extension for Advanced Injection Molding Solutions

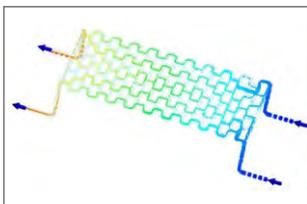
### Heat and Cool Management

Heating and cooling are two of the most significant factors in the plastic injection molding process. Moldex3D simulates the thermal variation of various Rapid Heating and Cooling Molding processes.



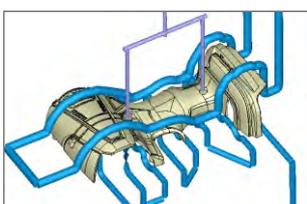
#### Advanced Hot Runner

- Visualize temperature distributions over time in hot runners and moldbase
- Validate hot runner system and sub-components, including heating coils, manifolds, etc.
- Predict potential problems, such as non-uniform melt temperature, unbalanced filling, etc.



#### 3D Coolant CFD

- Simulate water flow in 3D cooling channels to guarantee cooling efficiency
- Visualize the streamline direction and predict hot areas
- Optimize cooling system design and achieve cycle time reduction

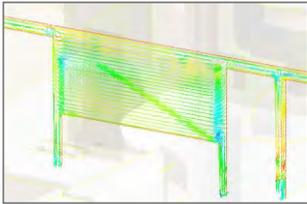


#### Cooling Channel Designer (CCD)

- Automatically create conformal cooling channels based on the contour of product
- Provide a fast and intuitive workflow to build complex cooling system in Designer

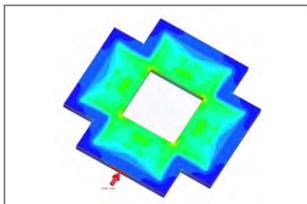
## Fiber Reinforced Plastics

Fiber-reinforced materials are widely used to enhance the structural strength of plastics in automotive, electronics, and consumer products. Moldex3D visualizes fiber orientation influenced by melt flow, wall thickness, and fiber characteristics.



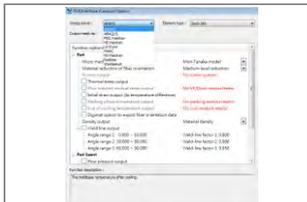
### Fiber

- Visualize 3D fiber orientation for short and long fiber-reinforced plastics
- Calculate thermo-mechanical properties and optimize process conditions to enhance the strength of plastics



### Stress

- Predict stress and displacement distributions of parts and part inserts
- Evaluate displacements of plastics under certain external loadings

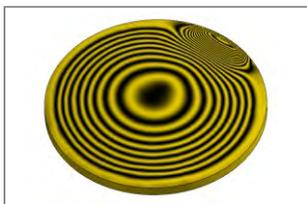


### FEA / Micromechanics Interface

- Export fiber orientation, material anisotropy, residual stresses, and molding pressure to structural software
- Validate the structural performance of products and mold sustainability

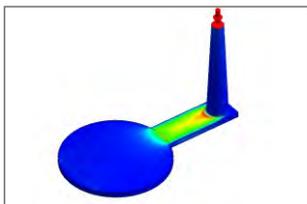
## Injection Molded Plastic Optics

Optical plastics have been applied in many industries, including touch panel, camera lens, LCD panel, contact lens, projector, etc. Moldex3D precisely visualizes the optical performance of parts and helps you optimize critical process factors.



### Optics

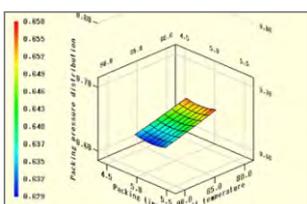
- Predict flow- or thermally-induced birefringence, retardation, fringed orders, and fringed patterns
- Integrated with CODE V by providing non-uniform refractive index prediction



### Viscoelasticity (VE)

- Analyze the viscous and elastic properties of polymeric materials
- Calculate flow-induced residual stress, warpage, and optical properties (with Optics module)

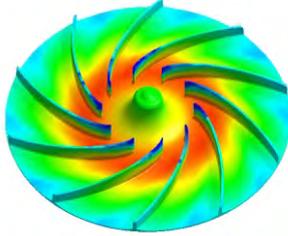
## DOE & Optimization



### Expert

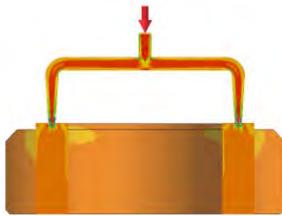
- Evaluate the optimal process conditions, such as packing time, cooling time, or mold temperature
- Create analysis variations and provide graphical summaries automatically

## Special Molding Processes



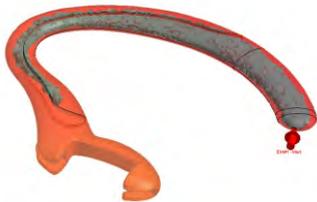
### Compression Molding (CM)

Moldex3D CM simulates the compression molding process helping users check potential defects resulted from heat and pressure, decide appropriate materials, and optimize process conditions.



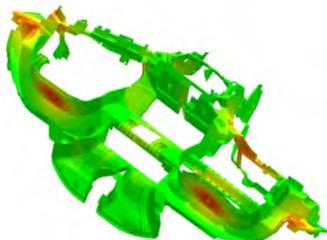
### Powder Injection Molding (PIM)

Moldex3D PIM visualizes fluid flow behaviors of the feedstock, predicts potential molding defects, and evaluates shear rate effect to ensure the consistent quality of parts.



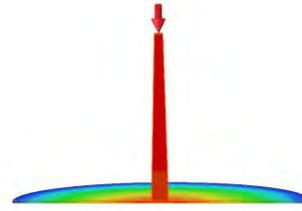
### Co-Injection Molding

Moldex3D Co-Injection helps users decide plastic material pair to optimize the combination of two material properties. Users can examine areas under high temperature or stress and predict potential breakthrough on part surface.



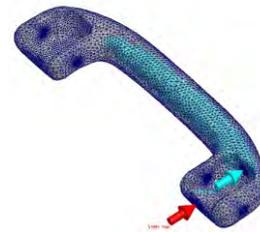
### Microcellular Injection Molding (MuCell®)

Moldex3D MuCell® provides the results of microcellular bubble size and number, density distribution, volumetric shrinkage, etc. Users can observe shrinkage compensation during packing and further acquire warpage prediction.



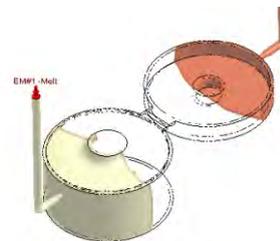
### Injection Compression Molding (ICM)

Moldex3D ICM visualizes property changes in the compression molding process over time, calculates residual stress, and evaluates process designs.



### Gas/Water-Assisted Injection Molding

Moldex3D GAIM/WAIM visualizes gas or fluid penetration behaviors inside the mold cavity, and users can evaluate poor core-out, sink mark, and warpage problems.



### Bi-Injection Molding

Moldex3D Bi-Injection visualizes the molding process of two materials being injected independently into a cavity, which can be applied to automotive or digital mobile products to save mold costs.

## Product Features

Mesh Technology	Product Package	eDesign Basic	eDesign	Professional	Advanced
<b>eDesign</b>		<b>Enabled</b>	<b>Enabled</b>	<b>Enabled</b>	<b>Enabled</b>
<b>Shell</b>				<b>Enabled</b>	<b>Enabled</b>
<b>Solid</b>					<b>Enabled</b>

Standard Injection Molding	Meshing	Designer*	Yes	Yes	Yes	Yes
		Mesh*			Yes	Yes
	Solver	Flow*	Yes	Yes	Yes	Yes
Pack*			Yes	Yes	Yes	
Cool*			Yes	Yes	Yes	
Warp*			Yes	Yes	Yes	
Multi-Component Molding (MCM)*			Yes	Yes	Yes	
Post	Project*	Yes	Yes	Yes	Yes	
	Parallel Processing (PP)*	Yes (x4)	Yes (x4)	Yes (x4)	Yes (x10)	

Solution Add-on	CAD Interoperability	Designer Advanced				Optional
		eDesignSYNC	Optional	Optional	Optional	Optional
		CADdoctor*	Optional	Optional	Optional	Optional
		Cooling Channel Designer (CCD)		Optional	Optional	Optional
	Fiber Reinforced Plastics	Fiber*	Optional	Optional	Optional	Optional
		Stress*		Optional	Optional	Optional
		FEA Interface*		Optional	Optional	Optional
		Micromechanics Interface		Optional	Optional	Optional
	DOE	Expert*		Optional	Optional	Optional
		Thermal	Advanced Hot Runner		Optional	Optional
	3D Coolant CFD			Optional	Optional	Optional
	Optical	Optics				Optional
		Viscoelasticity (VE)		Optional	Optional	Optional
Special Molding Process	Compression Molding (CM)*				Optional	
	Injection Compression Molding (ICM)				Optional	
	Powder Injection Molding (PIM)	Optional	Optional	Optional	Optional	
	Gas-Assisted Injection Molding (GAIM)			Optional	Optional	
	Water-Assisted Injection Molding (WAIM)				Optional	
	Co-Injection				Optional	
	Bi-Injection				Optional	
MuCell®		Optional	Optional	Optional		

1. A module marked with an asterisk (\*) is also available for thermoset analysis.
2. Moldex3D eDesignSYNC supports Creo, NX, and SOLIDWORKS®.
3. Moldex3D FEA Interface supports Abaqus, ANSYS, MSC.Nastran, Nastran, NENastran, NXNastran, LS-DYNA, Marc, and Radioss.
4. Moldex3D Micromechanics Interface supports Digimat and Converse.
5. MuCell® is a registered trademark of Trexel, Inc.

## System Requirements:

Platform	Windows	Microsoft Windows 8.1, 8, 7, Server 2012, 2008
Hardware	Minimum	Intel® Core i7 processor, 8 GB RAM, and at least 100 GB of free space
	Recommended	Intel® Xeon® E5 processor, 32 GB RAM, and at least 500 GB of free space



# Moldex3D

M O L D I N G   I N N O V A T I O N

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