

Leadership in True 3D CAE Technology



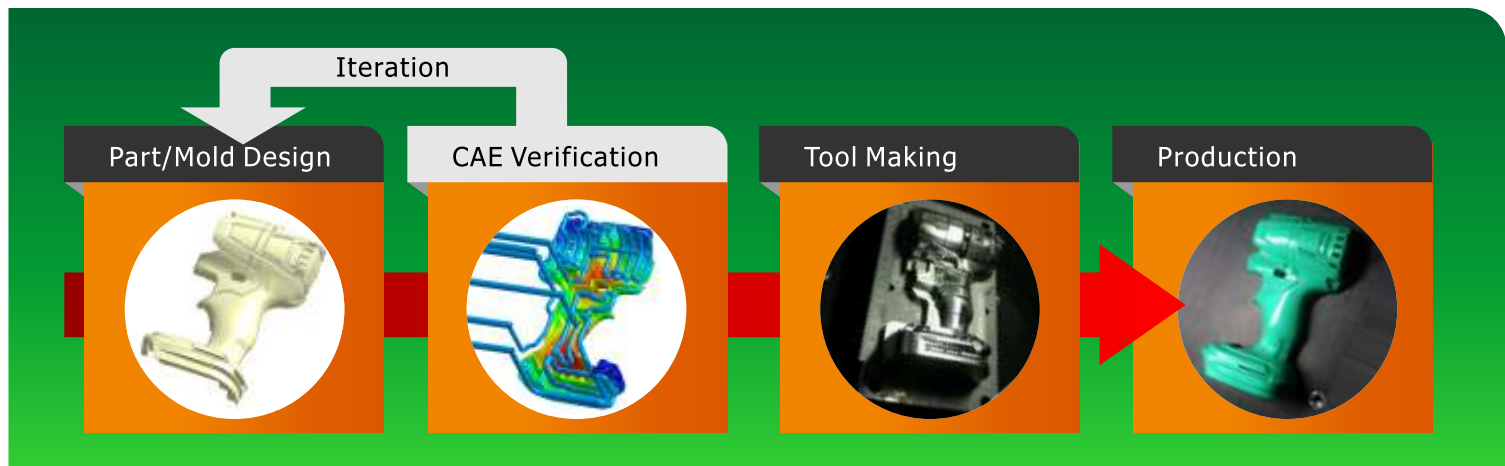
Your Core Competitiveness

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).

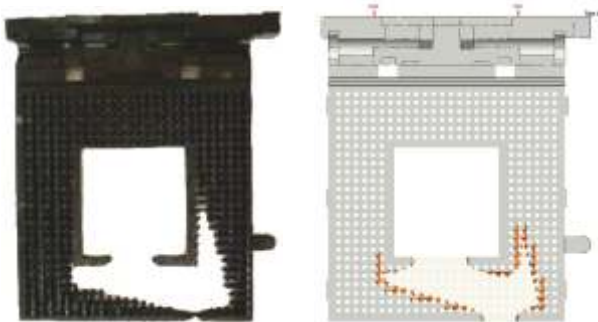
Moldex3D CAE software provides the true 3D simulation and visualization technology you need if you are fed up with countless trial-and-errors and want to save time, energy, and money more efficiently during the mold-making process.

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.



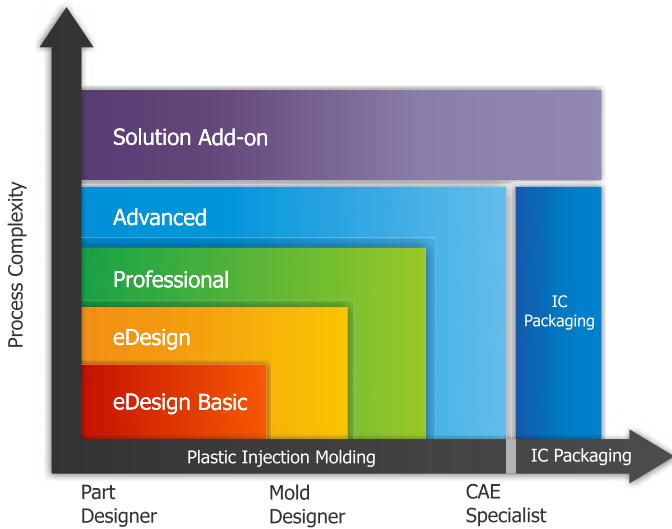
Moldex3D provides accurate simulations of filling patterns for plastic parts even with complicated geometry.

Professional Industrial Solutions

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

Pioneering True 3D CAE Solutions

With the technology based on solid hybrid meshes and High-Performance Finite Volume Method (HPFVM), Moldex3D brings a complete suite of professional simulation tools for plastic injection molded products.



eDesign Basic:

Quick filling simulation tool with automatic meshing capability

eDesign:

Complete molding simulation tool 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

IC Packaging:

Design verification and optimization for the encapsulation process

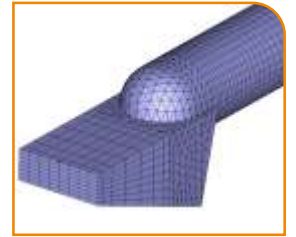
Solution Add-on:

Series of add-ons for specific industrial process simulation

Boost Work Efficiency in Pre-processing

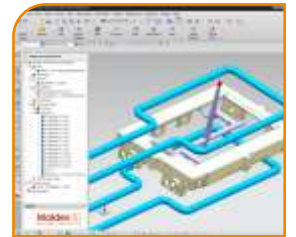
Superior Automatic 3D Meshing Engine (eDesign)

Moldex3D eDesign enables users to automatically generate meshes for a CAD model, saving working hours in mesh preparation. Its intelligent wizards will 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.



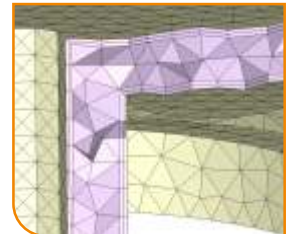
CAD-Embedded Pre-processing (eDesignSYNC)

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. Moldex3D CADdoctor helps you enhance mesh quality to acquire more accurate analysis results.

High-Performance Parallel Processing

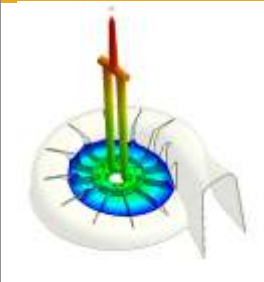
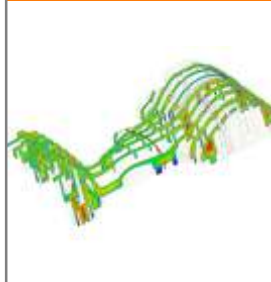
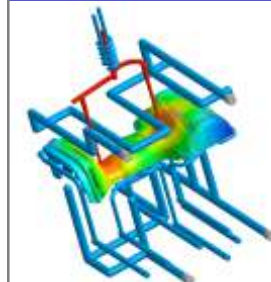
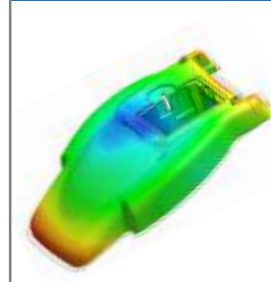
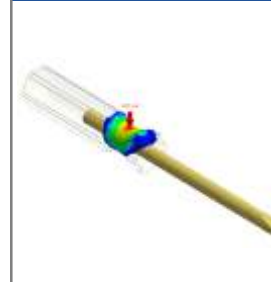
By utilizing the strength of multi-Core, multi-CPU, and multi-PC cluster, Moldex3D's unique parallel processing capability enables users to highly shorten the time required for injection molding simulations and enhances the computing efficiency by 10 times or more. Moldex3D parallel processing lowers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

Unique and Surpassing

Moldex3D offers the easy-to-use interface with accurate simulations which help 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. It also enables the simulation of insert molding, overmolding, and multi-shot sequential molding. 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. Based on the filling and packing results, you can evaluate the efficiency of cooling system design. A well-designed cooling system results in better plastic melt solidification and reduces cycle time. Moreover, Moldex3D provides accurate warpage prediction during each phase of the injection molding process.

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

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. Moldex3D also helps visualize the filling pattern inside a hot runner system, which enables you to evaluate its heating efficiency and uniformity. Additionally, Moldex3D supports the simulation of complicated 3D cooling channels design inside the mold to improve the heat transfer, enhance part quality, and shorten cycle time.

Advanced Hot Runner

- Visualize temperature distributions over time in hot runners and moldbase
- Validate hot runner system and sub-components, including heating coils, manifolds, and hot nozzles
- 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

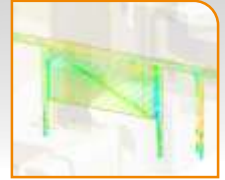


Fiber Reinforced Plastics

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. Moreover, the results of fiber orientation and displacement can be exported for advanced structural analysis through the integrated FEA interface with leading structural software, including ANSYS, ABAQUS, LS-DYNA, MSC, Radioss, etc.

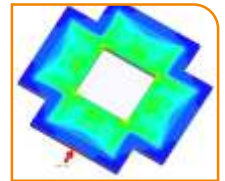
Fiber

- 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



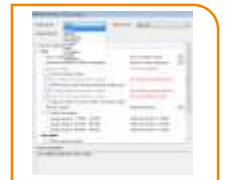
Stress

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



FEA 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. Combined with the prediction of flow-induced residual stress from Viscoelasticity Analysis, Moldex3D precisely visualizes the optical performance of parts, such as birefringence, retardation, or polarization, and helps you optimize critical process factors like gate and runner design, filling speed, packing pressure, or cooling system.

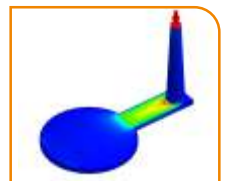
Optics

- 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)

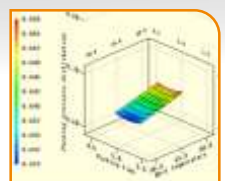
- Analyze the viscous and elastic properties of polymeric materials
- Calculate flow-induced residual stress, warpage, and optical properties (with Optics module)



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



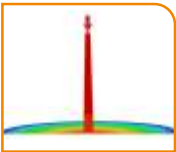
Special Molding Processes

Compression Molding (CM)



Moldex3D CM simulates the compression molding process in which the polymer is squeezed into a preheated mold cavity. Moldex3D helps users check potential defects resulted from heat and pressure, decide appropriate materials, and optimize process conditions. You can define initial charges, compression zone, and conditions to enhance part quality and improve warpage.

Injection Compression Molding (ICM)



Moldex3D ICM simulates the plastic injection compression molding process, generally applied to thin and flat products, such as light guide plates or compact discs. Users can observe the compression process over time in cavity and capture property changes in any cross section to identify potential problems. You also can evaluate material properties and process conditions, including compression time control, force and speed, etc.

Powder Injection Molding (PIM)



Moldex3D PIM visualizes the molding process of metal or ceramic parts with high-precision dimensions or complex geometry. Users can observe the fluid flow behavior of the feedstock consisted of powder and binder and predict potential molding defects. To ensure the consistent quality of parts, Moldex3D helps evaluate the effects of shear rate and optimize process conditions, such as temperature or filling speed.

Gas/Water-Assisted Injection Molding (GAIM/WAIM)



Moldex3D GAIM/WAIM simulates the dynamics of gas or water assisted injection molding process for hollow plastic parts, such as large TV cabinets, handles, or splitting pipes. With the visualization of 3D gas/fluid penetration behaviors inside the mold cavity, users can evaluate poor core-out, sink mark, and warpage problems. You also can define the overflow region and optimize mold designs and process conditions.

Co-Injection Molding



Moldex3D Co-Injection visualizes the sequential injection molding process of skin and core plastic materials, by which users can decide plastic material pair to optimize the combination of two material properties. Moldex3D also helps users examine potential defective areas with high temperature or stress and predicts potential breakthrough on part surface.

Bi-Injection Molding



Moldex3D Bi-Injection visualizes the molding process of two materials being injected independently into a cavity, which could be applied to automotive or digital mobile products to save mold costs. Users can define material type, set independent filling and packing parameters for each material, and observe the flow rate variation from two melt entrances. Moldex3D helps users predict weld line locations to enhance the quality of two-colored parts.

Microcellular Injection Molding (MuCell®)



Moldex3D MuCell® simulates the nucleation and growth of microcellular bubbles when the melt flow is injected into a cavity. It provides the results of microcellular bubble size and number, density distribution, volumetric shrinkage, etc. Users can observe shrinkage compensation during the packing process and further acquire warpage prediction. Moldex3D helps users determine optimal processing parameters and reduce product defects more efficiently.

Product Features

Mesh Technology	Product Package	eDesign Basic	eDesign	Professional	Advanced	IC Packaging
eDesign		Enabled	Enabled	Enabled	Enabled	
Shell				Enabled	Enabled	
Solid					Enabled	Enabled

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

Solution Add-on	CAD	eDesignSYNC	Optional	Optional	Optional	Optional	
		CADdoctor*	Optional	Optional	Optional	Optional	
	Fiber Reinforced Plastics	Fiber*	Optional	Optional	Optional	Optional	
		Stress*		Optional	Optional	Optional	Yes
		FEA Interface*		Optional	Optional	Optional	Yes
	DOE	Digmat Interface		Optional	Optional	Optional	
		Expert*		Optional	Optional	Optional	
	Thermal	Advanced Hot Runner		Optional	Optional	Optional	
		3D Coolant CFD				Optional	
	Optical	Optics				Optional	
		Viscoelasticity		Optional	Optional	Optional	Optional
	Special Molding Process	Compression Molding*				Optional	Optional
		Injection Compression Molding				Optional	
Powder Injection Molding		Optional	Optional	Optional	Optional		
Gas-Assisted Injection Molding				Optional	Optional		
Water-Assisted Injection Molding					Optional		
Co-Injection					Optional		
Bi-Injection					Optional		
MuCell®					Optional		
Underfill					Optional		

1. A module marked with an asterisk (*) is also available for thermoset analysis. (Except IC Packaging)

2. Moldex3D eDesignSYNC supports Creo, NX, and SolidWorks.

3. Moldex3D FEA Interface includes interface modules to Abaqus, ANSYS, MSC.Nastran, Nastran, NENastran, NXNastran, LS-DYNA, Marc, and Radioss.

4. MuCell® is a registered trademark of Trexel, Inc.

System Requirements:

Platform	Windows	Microsoft Windows 8, Windows 7, Windows Vista, Server 2012, 2008, 2003
Hardware	Minimum	Intel® Core 2 Quad processor, 4 GB RAM, and at least 100 GB of free space
	Recommended	Intel® Core i7 or Intel® Xeon® processor, 16 GB RAM, and at least 200 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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