

SOLIDWORKS PLASTICS

OBJECTIVE

For companies that design plastic parts or injection molds, SOLIDWORKS® Plastics helps users predict and avoid manufacturing defects during the earliest stages of part and mold design, eliminating costly mold rework, improving part quality, and decreasing time-to-market.

OVERVIEW

SOLIDWORKS Plastics offers Computer-Aided Engineering (CAE) simulation tools that predict how melted plastic flows during the injection molding process—the manufacturing method used to produce more than 80% of all plastics products. The ability to predict how the plastic will flow allows the prediction of manufacturing-related defects. By being able to predict these defects, users can change mold geometry, processing conditions, or the plastic material used to minimize potential defects, thus saving energy, natural resources, time, and money.

BENEFITS

- **Avoid Hidden Costs:** SOLIDWORKS Plastics products can be used to optimize part wall thickness, gate locations, runner system size, and layout to ensure the mold works right the first time, reducing or eliminating the need for rework.
- **Reduce Manufacturing Defects and Scrap:** SOLIDWORKS Plastics makes it easy to analyze design iterations at the earliest stages of product development—when the cost of change is least and the impact on manufacturability is greatest. This improves part quality and minimizes scrap rates.
- **Reduce Time-to-Market Delays:** SOLIDWORKS Plastics helps to predict and avoid potential manufacturing defects before any mold tooling is cut, virtually eliminating the need for time-consuming and costly mold rework and ensuring project deadlines and ship dates are met on-time and within budget.
- **Avoid Inefficient “Islands of Automation”:** SOLIDWORKS Plastics provides automated report generation tools that facilitate the sharing and interpretation of simulation results, allowing increased collaboration among development teams at different sites.

CAPABILITIES

SOLIDWORKS Plastics Standard

SOLIDWORKS Plastics Standard is easy-to-use plastics injection molding software that guides part designers through the process of optimizing their part designs, improving part quality, and decreasing time-to-market.

SOLIDWORKS Plastics Professional

SOLIDWORKS Plastics Professional guides mold designers and mold makers through the process of optimizing their designs, eliminating costly mold rework.

SOLIDWORKS Plastics Premium

SOLIDWORKS Plastics Premium guides mold designers and mold makers through the process of optimizing their designs, analyzing injection mold cooling line layouts, and predicting molded part warpage.

Not all capabilities are available in every package or for all studies.

SOLIDWORKS Design Support

- Native SOLIDWORKS files
- Associative with SOLIDWORKS geometry
- Fully embedded in SOLIDWORKS 3D CAD

General Analysis and Meshing

- Wizard for mesh generation and analysis setup
- Automatic, Local Mesh Refinement
- Global Mesh Refinement
- Boundary Mesh (Shell)
- Solid 3D mesh

Mold Geometry Support

- Runner Design Wizard
- Sprues and Runners
- Hot and Cold Runners
- Multi-Cavity Molds
- Family Molds
- Cooling Lines
- Baffles and Bubblers
- Conformal Cooling Channels
- Mold Inserts
- Runner Domain Category

Results (partial listing)

- eDrawings® support
- Fill time, Ease of Fill, Results Adviser
- Nominal Wall Thickness Adviser
- Pressure at End of Fill
- Flow Front Temperature, Temperature at End of Fill, Mold Temperature at Cooling End
- Shear Rate
- Cooling Time
- Weld Lines, Air Traps, Sink Marks, Sink Mark Profiles
- Frozen Layer Fraction at End of Fill
- Clamp Force, Cycle Time
- Volumetric Shrinkage, Density at End of Pack
- Displacement due to Residual Stress
- Exports STL, Nastran®
- Export with mechanical properties ABAQUS®, ANSYS®, Digimat®

Plastics Material Database

- Database: 4,000+ commercial thermoplastic grades
- Customizable material

Simulation Capabilities

- Filling Phase (1st stage injection)
- Packing Phase (2nd stage injection)
- Cooling Analysis
- Warpage Prediction
- Automatic Gate Location(s)

- Instantaneous Fill Time Plot
- Runner Balancing
- Sink Mark Analysis
- Symmetry Analysis

Advanced Simulation Capabilities

- Co-Injection
- Multi-Shot
- Insert Overmolding
- Gas-Assist
- Fiber Analysis
- Reaction Injection Molding (RIM); Thermosets
- Birefringence
- Valve Gates (sequential injection)
- Automatic Valve Gates (opening times)
- Venting Analysis
- Cooling Line Analysis
- Conformal Cooling Analysis
- Warpage Analysis

Language Support

- English
- Traditional Chinese
- Simplified Chinese
- German
- Korean
- French
- Japanese
- Italian
- Russian
- Spanish

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