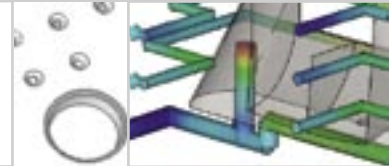


MPI/Synergy



MPI/Synergy is the pre- and post-processor that supports all analysis modules of the Moldflow Plastics Insight® (MPI®) product family.

MPI analysis modules offer the greatest range of molding process simulation tools in the plastics industry, and the MPI/Synergy environment supports traditional midplane models, MPI/Fusion models based on Moldflow's patented Dual Domain™ technology, and 3D solid models.

Capabilities

Supported Analysis Modules:

- Thermoplastic materials:
 - ┆ MPI/Flow
 - ┆ MPI/Cool
 - ┆ MPI/Warp
 - ┆ MPI/Stress
 - ┆ MPI/Shrink
 - ┆ MPI/Fiber
 - ┆ MPI/Optim
 - ┆ MPI/Gas
 - ┆ MPI/Co-Injection
 - ┆ MPI/Injection Compression
 - ┆ MPI/MuCell®
- Thermoset materials:
 - ┆ MPI/Reactive Molding
 - ┆ MPI/Microchip Encapsulation
 - ┆ MPI/Underfill Encapsulation

Graphical User Interface:

- Multi-document, multi-window display
- Multiple levels of undo and redo
- Layers
- Selection lists
- Customizable menus and tool bars
- View controls:
 - ┆ Dynamic pan, zoom, and rotate
 - ┆ Incremental pan, zoom, and rotate
 - ┆ Center
 - ┆ Standard views: isometric, front, back, left, right, top, bottom
 - ┆ Explicit x, y, z coordinates
 - ┆ Save views, bookmarks

Visualization:

- ┆ Wire frame
- ┆ Solid shaded
- ┆ Feature edges
- ┆ Cutting planes

Entity selection methods:

- ┆ Direct mouse pick
- ┆ Multiple mouse selection
- ┆ Rubberband selection
- ┆ Bounded selection
- ┆ Select by circle
- ┆ Select by polygon
- ┆ Selection with occlusion filters
- ┆ Select by label
- ┆ Select by property or entity type

■ Occurrence numbers

■ Output static and dynamic images

■ Print preview

■ Integrated Web browser (Windows PC only)

■ Automatic revision update notification

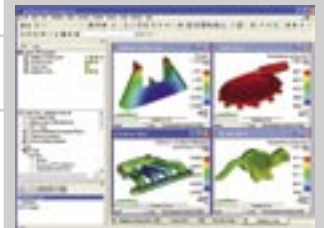
CAD/CAE Interfaces:

■ Import from CAD:

- ┆ STL
- ┆ IGES
- ┆ STEP (add-on option)
- ┆ ParaSolid (add-on option)
- ┆ Pro/ENGINEER (add-on option)
- ┆ CATIA V5 (add-on option)

■ Import from CAE:

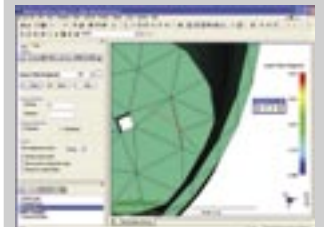
- ┆ Moldflow MFL and M3I files
- ┆ C-MOLD CMF files
- ┆ I-DEAS universal file
- ┆ Nastran bulk data file
- ┆ ANSYS PREP7 file
- ┆ PATRAN neutral file



Multi-window display



Compare materials



Job manager



API macro recording

MPI/Synergy Features



- **Export:**
 - ┆ Moldflow Results file
 - ┆ PATRAN Neutral file
 - ┆ ZIP Archive
 - ┆ Part/Runner/Cooling Model in IGES format

Geometry Modeling:

- **Geometry types:**
 - ┆ Nodes
 - ┆ NURBS curves
 - ┆ NURBS surfaces
 - ┆ Regions
- **Geometry operations:**
 - ┆ Rotate
 - ┆ Translate
 - ┆ Scale
 - ┆ Mirror
- **Geometry creation:**
 - ┆ Nodes: locate, divide, offset, intersect
 - ┆ Curves: line, arc, spline, connect, trim
 - ┆ Regions: bounded, ruled, extruded, hole
 - ┆ Local coordinate system (LCS):
 - ┆ Create unlimited LCS
 - ┆ Only one LCS can be active
 - ┆ Create by specifying 1, 2 or 3 coordinates
 - ┆ All modeling and meshing operations are performed with respect to the active LCS
 - ┆ Modeling planes:
 - ┆ Useful when modeling 1D beam elements
 - ┆ Grid size and snap to grid preferences

Finite-Element Modeling:

- **Element types:**
 - ┆ Line: beam, connector
 - ┆ Midplane: triangular shell
 - ┆ Fusion: Dual Domain
 - ┆ 3D: tetrahedral
- **Mesh generation:**
 - ┆ Automatic shell, Dual Domain, and tetrahedral mesh generation
 - ┆ Global and local edge length control
 - ┆ Local remeshing
- **Numerous Mesh editing Tools**
- **Comprehensive Mesh validity checks**
- **Tetra statistics**
- **Mesh diagnostics report**

- **Diagnostic navigation tool to systematically validate mesh quality**
- **Automatic midplane generation (add-on option)**
- **STL optimization (add-on option)**
- **3D solid model optimization (add-on option)**

Processing Conditions Modeling:

- **Injection location placement**
- **Valve gates**
- **Cooling inlets**
- **Warp/Stress loads and constraints**
- **Dynamic Feed® control locations**

Mold Component Modeling:

- **Runner modeling:**
 - ┆ Circular
 - ┆ Half-circular
 - ┆ Trapezoidal
 - ┆ U-shaped
 - ┆ Rectangular
 - ┆ Tapered
 - ┆ Customizable cross-section shape
- **Automatic runner creation tools:**
 - ┆ Hot and cold runners
 - ┆ Internally heated annular runners
- **Cooling-line modeling:**
 - ┆ Curved and straight cooling lines
 - ┆ Baffles, bubblers, hoses
- **Explicit modeling of mold inserts**

Material Databases:

- **7,800+ thermoplastic materials:**
 - ┆ Cross-WLF and second-order viscosity models
 - ┆ 2-domain, modified Tait pvT model
 - ┆ CRIMS (Corrected Residual In-Mold Stress) model
 - ┆ Mechanical properties
 - ┆ Rheological and thermal data
- **Thermoset materials**
- **Standard and customizable coolant materials**
- **Standard and customizable mold materials**

- **Material data report:**
 - ┆ Reports qualifying accuracy of material data and material testing methods
 - ┆ Allows users to assess the adequacy of material data for accurate analysis results
- **Material comparison:**
 - ┆ Compare properties of two or more materials
 - ┆ Plot data for multiple materials on the same graph

Machine Databases:

- **1100+ standard machines**
- **Specific manufacturers:**
 - ┆ Battenfeld
 - ┆ Ferromatik Milacron
 - ┆ Husky
- **Generic tonnage machines**
- **Customizable machines**

Project Management:

- **Name or rename projects and studies**
- **Automatic project organization**
- **Compact project to reduce file size by deleting redundant files**
- **Check model prior to launch of a full analysis**
- **View intermediate analysis results**
- **Job restarts**
- **Analysis sequencing**
- **Remote job submission**
- **Command line execution**
- **Notification of job completion**
- **DOE: automatic job sequencing**
- **Study comparison feature to identify key differences in various studies of a project**
- **Setup analysis quality criteria**
- **Compare studies against quality criteria**

MPI/Synergy Features



Results Displays:

- Plot types:
 - ┆ XY
 - ┆ Path
 - ┆ Continuous fringe
 - ┆ Contours
 - ┆ Gouraud shading
 - ┆ Displacement
 - ┆ Highlight
 - ┆ Vector and tensor
 - ┆ Time series results
- 3D plot types:
 - ┆ Iso-surfaces
 - ┆ Time series animation
 - ┆ Time series cutting plane animation
 - ┆ Capped/non-capped cutting plane display
 - ┆ Vector data as darts
- Min./max. options:
 - ┆ Global
 - ┆ Per frame
 - ┆ User-specified
- Animation:
 - ┆ Control start/stop frames, direction, speed, and min./max. data limits
- Results query:
 - ┆ Explicit values at element
 - ┆ Crosshair locations on 2D graphs
- Results editing:
 - ┆ Scale min./max.
 - ┆ Scale linking for multiple results windows
 - ┆ Results window synchronization
- Results summary:
 - ┆ Comprehensive summary of each analysis in a sequence
 - ┆ Options to print or include summary in project report

Report Generation:

- Automatic generation of DOC-, PPT-, and HTML-based reports
- Unlimited report sections and sub-sections

- Supports all results displays
- Add company logo or other images
- Dynamic displays:
 - ┆ Animated GIF
 - ┆ AVI movie
- Unlimited result combinations
- Multiple analyses/models on one report
- Live connectivity with report to allow for real-time update of static/dynamic report content
- View reports inside the MPI/Synergy user interface

Context-Sensitive Online Help:

- Industry standard, HTML help system
- Comprehensive index and full search capability
- Extensive coverage of theory, procedures, design advice, and results interpretation
- Interactive online tutorials
- Release notes

Application Programming Interface:

The application programming interface (API) allows users to extend, automate and customize a wide range of MPI functionality. API tools expand the scope of MPI software by enabling users to automate common tasks, customize the user interface, implement standardized corporate protocols and best practices, and interface with third-party software applications. The API mechanism is based on Microsoft's OLE Automation Interface and allows integration to any COM-compliant language (Visual Basic, Visual Basic Scripts, JavaScript,

Python, PERL, etc.).

- The API Tools Include:
 - ┆ Script-enabled user interface: each menu button and toolbar icon is associated to a script
 - ┆ Macro recording:
 - ┆ Record MPI/Synergy operations to Visual Basic macro files
 - ┆ Recorded macros assist in configuring custom macro scripts or commands
 - ┆ Macro playback: play back recorded macros
 - ┆ Command line capability:
 - ┆ Execute common tasks from a command line instead of selecting from a menu or toolbar
 - ┆ Execute customized macros created to perform a specific task or series of tasks
 - ┆ ASCII input and output files:
 - ┆ Import or export model file in ASCII format
 - ┆ Export analysis results in PATRAN and XML formats
 - ┆ New Result Creation:
 - ┆ Extract scalar/vector/ tensor/ mesh diagnostic data for an array of elements or nodes
 - ┆ Create custom plots by manipulating extracted data
 - ┆ Custom plots can be static, animation or xy plots

Global Headquarters

Moldflow Corporation
492 Old Connecticut Path
Suite 401
Framingham, MA 01701
USA
Tel: +1 508 358 5848
Fax: +1 508 358 5868

For further information about Moldflow®

Design Analysis Solutions, Manufacturing solutions, services and global office locations, visit www.moldflow.com.



St.Hua Pte Ltd

St.Hua Private School

CAD/CAM/CAE Engineering Solutions & Training Provider

Address: BLK 131 Jurong East St 13, #04-241 Singapore 600131

Tel: (65) 6561 3877

Email: info@sthua.com

Fax: (65) 6561 9679

Website: <http://www.sthua.com>

MF-1312D-1205 Copyright © 2004 Moldflow Corporation. Moldflow, Moldflow Plastics Insight and MPI are trademarks or registered trademarks of Moldflow Corporation. All other trademarks are properties of their respective holders.

D E S I G N A N A L Y S I S S O L U T I O N S

www.moldflow.com