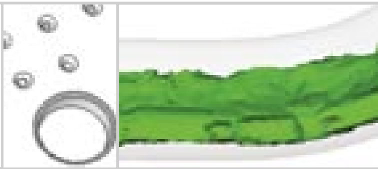
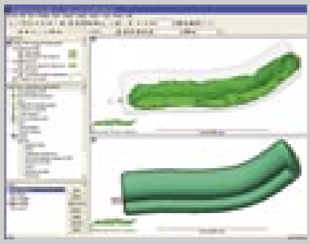
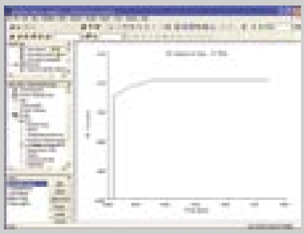
MPI/3D Gas-assist



MPI/3D Gas-assist simulates the gas-assisted injection molding process, where gas, usually inert nitrogen, is injected into the polymer melt. The gas drives the polymer through the mold cavity to complete mold filling and create a network of hollow channels throughout the component. With MPI/3D Gas-assist, you can determine where to position plastic and gas entrances, how much plastic to inject prior to gas injection, where to place gas channels, and how large to size them.

Capabilities





- MPI/3D Gas-assist simulates the filling and packing phases of gas-assisted injection molding process using a 3D tetrahedral mesh
- Benefits of using a 3D tetrahedral mesh instead of a traditional Midplane mesh are:
  - Eliminates the need to employ special modeling techniques to represent gas channels
  - Significantly reduces model preparation time
  - Facilitates more accurate representation of the part geometry
- Evaluate the filling pattern with the influence of gas injection to aid in part design, gate placement, and process setup
- Properly size gas channels for optimal filling and gas penetration
- Determine the best gas channel layout to control gas penetration
- Inject gas at any location or in multiple locations within the part or runner system
- Inject gas through multiple gas pins simultaneously or at different times during the process
- Detect areas of inadequate gas penetration as well as areas of undesirable gas penetration (fingering)
- Determine the proper shot size to avoid gas "blowout"
- Automatically determine gas pressure required to avoid short shots, melt front hesitation, or gas blowout
- Investigate the effects of overflow wells (spillovers or overspills) in the gas-assisted injection molding process
- Optimize injection speed profile for the plastic injection stage
- Determine injection pressure and clamp force requirements for proper molding machine selection
- Incorporate delay time prior to injecting gas allowing thin areas to solidify
- Determine final part weight after gas injection to help maximize material savings and minimize weight
- Estimate the final wall thickness after gas penetration

moldflow®
plastics made perfect™

MPI/3D Gas-assist Features

Filling Analysis:

- Simulates the plastic injection phase, with melt filling the cavity partially or completely as required. Process conditions, runner and cavity flow balancing, and material selection can all be optimized through this analysis
- Once the polymer injection phase is complete, analysis of the gas injection phase begins at a user defined time or cavity fill level
- Predicts the location of gas "blow-through" of the polymer flow front during fill, which results in short shots and unacceptable part quality
- Independent gas and polymer injection locations can be selected
- MPI/3D Gas-assist simulates pressure increase or decrease during the injection phase, followed by the gas pressure history as gas expands into the melt

Packing Analysis:

- Simulates the advancement of the gas flow front during the packing phase, as the gas compresses the melt, compensating for plastic material shrinkage
- Areas with gas penetration will have lesser plastic material through the thickness which affects their localized part strength

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.

Local office address: