

Selecting a Hot Runner Supplier

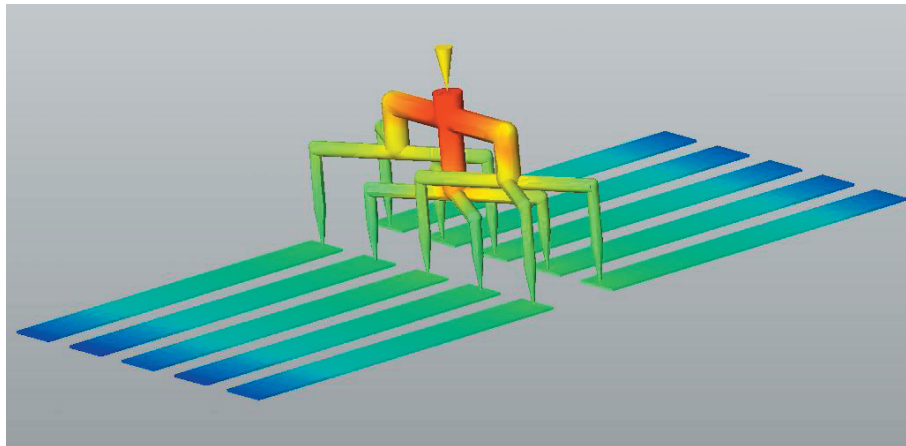
Three influences that are critical to mould performance

Analysis, integrated design and value-engineering play an important role in choosing the correct hot runner supplier.

When confronted with the increase in available hot runner systems on the market, making the correct choice for a hot runner supplier is critical. In addition to quality, service and global support, the right supplier needs to be able to assist with pre-mould build part analysis, design processes and add value to your mould by using leading-edge proven technology coupled with the required special knowledge and experience. When selecting a hot runner supplier a mouldmaker must consider three qualities: (1) analysis capabilities, (2) design input and (3) product range.

1. Analysis Capabilities

During the infant stages of a new mould build it is critical that your hot runner designer can provide input and feedback on the part design and layout of the mould. Analysis software programs can assist with correct gate location and number of gates, warpage, shrinkage, pressure drop, weld lines, gas traps, shear stress, temperature rise and part fill time so the performance of the hot runner and the mould are optimized.



Incorrect use of a hot runner can adversely affect the performance of a mould and the product it produces. An example of this is the degradation of material within a hot runner or mould cavity. Some factors affecting plastic material degradation are:

- Poor venting
- Increasing melt temperature or injection velocity
- Dead areas or shear points within the hot runner
- Long residence times inside the hot runner

Proper hot runner analysis and manufacture can assist with:

- Identifying likely areas for gas traps to determine vent placement
- Optimizing melt channel diameters to keep shear stresses at ideal values
- Thermocouple placement for accurate and reliable heater control
- Advice on profiling and polishing melt channels and the use of correct diameter reduction techniques
- Optimizing melt channel lengths to each cavity, particularly in family moulds

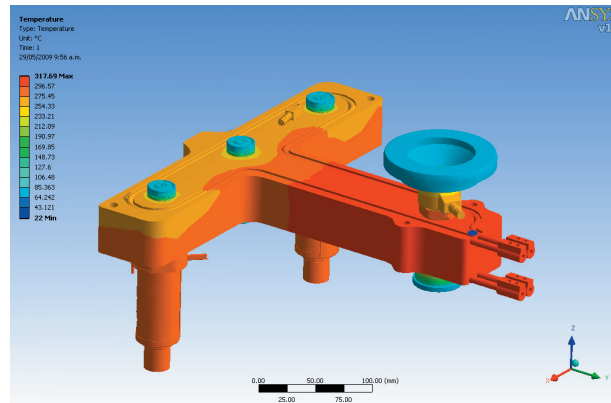
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Thermal finite element analysis (FEA) can assist with determining the optimum thermal profile of the hot runner system. Through the use of proper analysis tools and techniques, the hot runner supplier can predict issues at an early design stage and make recommendations to the moulder and mouldmaker for an improved result.



2. Design Input

During the design process the mouldmaker should look for a partner that can supply hot runner drawings and models that are easily integrated into their mould designs. Hot runner 3-D models used for approval drawings ensure they are simple for the mould designer to check and can easily provide gate insert or plate drawings to manufacturing. The hot runner supplier's ability to be flexible with drawing file formats and CAD packages is key to a successful partnership.

Correct part design is crucial to a successful mould build and there are many areas where the hot runner supplier can offer advice based on experience in the injection moulding industry. Design features such as cooling circuits around the gate, dimples in the gate area and thin wall sections can be commented on and improvements made before a commitment to a particular design. When the hot runner supplier is invited to be involved in projects at an early stage they are able to provide input into part design, cavity design and mould layout that can be crucial to a successful mould.

Competition, the rising costs of materials, time restraints and new technologies are pressures that are not new, but exponentially increasing. Efficient use of time, mould and plastic materials are critical to the success of every new tooling program. Ensuring optimization at the earliest stage of design when the cost of change is lowest will save time and money throughout the build process. Commissioning, production efficiency, part quality, cycle time and material content is also influenced by time invested with your hot runner supplier during the early design stage.



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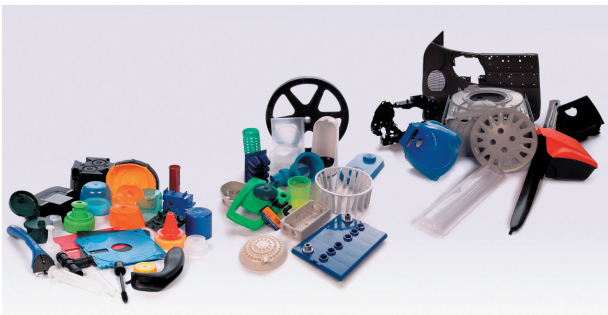
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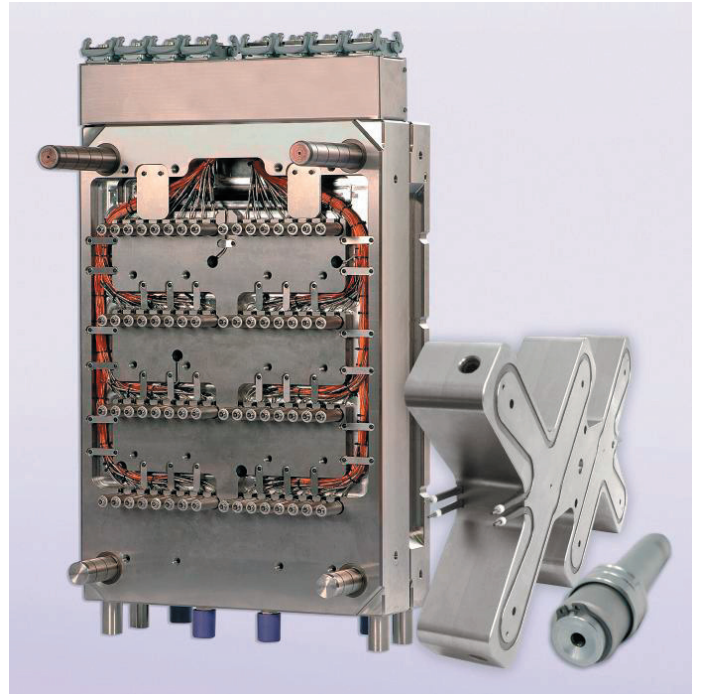
The cost of making corrections or modifications to a hot runner after manufacturing is expensive and timely. Quick, yet accurate, engineering is critical to keeping a new tool on time and within budget. The use of leading-edge technology and the knowledge base within the hot runner supply's engineering group is crucial when building a high-performance and high quality mould.

3. Product Range

Hot runner technology has advanced significantly in the last decade. A hot runner supplier should be able to assist you in all areas of gating styles, dimple design, cooling requirements, electrical optimization and gating position for precise flow balancing. When faced with the difficult choice of selecting the correct hot runner for your mould, accurate professional advice and clear explanations of the complex technology are important to the build of a high performance solution.



A broad product range that covers all applications and markets is critical. Using a single supplier for all applications removes compatibility and consistency issues that potentially can occur when working with a variety of suppliers. A strong working relationship with one supplier streamlines the whole process for a mouldmaker whether it is a simple hot sprue, complex multi-material, hot half or family mould. Working closely with a hot runner specialist enables the mouldmaker to deliver their customer's runnerless tooling that is right for the application and performs to the customer's exacting specifications.



The Hot Runner Influence

The mouldmaker's choice in a hot runner supplier can dramatically influence the quality and performance of the mould, the moulded parts, value and quality of after sales service. The ideal hot runner supplier will assist with analysis during part design and mould design, provide compatible, accurate and timely design information and utilize the latest technology to improve product performance. Overall customer satisfaction builds strong mouldmaker and moulder relationships that result in repeat business and sales growth.

For more information contact your local Mastip Representative - visit www.mastip.com for global contact details.

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