



# Cooling Analysis FAQ

## **Definition**

MoldCool provides the ability to accurately simulate any number of cooling designs in order to optimize part quality and productivity. Steel types, cooling channel sizes, bubblers, baffles, coolant temperatures and flow rates can be evaluated for an optimized design. The ability to simulate any number of cooling designs (different channel sizes, locations, etc.) creates a “what if” design environment prior to cutting steel. The result is an optimized cooling design that ensures minimum cycle times with uniform cooling.

## **What can a cooling analysis determine?**

- Evaluation of cooling design
- Recommended modifications to cooling design
- Effects of different steel types (if applicable)
- Circuiting (hose connections required)
- Appropriate coolant temperature
- Flow rate to ensure coolant turbulence
- Cycle time, based on a specified ejection temperature

## **Moldbuilders typically locate cooling channels wherever there is room, therefore, how can a MoldCool analysis help?**

It is not so much the number of cooling channels, but where they are placed within the mold to ensure that hot and cold spots are minimized throughout the part surface. A second key consideration is not only how the channels are designed into the mold, but also how the channels are circuited or connected on the exterior of the mold. Cooling analysis determines the optimum coolant temperature, pressure and flow rates for a given design.

## **What type of molding problems can a MoldCool analysis solve?**

- Part warpage problems
- Excessive coolant flow requirements
- Long cycle times
- Controlling part surface quality
- Reducing total mold set-up time

### **What information do you provide with a MoldCool analysis?**

- Coolant temperatures
- Coolant flow rates
- Coolant supply pressure
- Proper hose circuiting
- Cycle time

### **What benefits can I expect to realize from a MoldCool analysis?**

- Elimination of cut and try methods
- Cycle time reductions
- Reduced mold set-up time
- Improved part quality
- Provides optimum processing conditions
- Solutions to existing cooling problems

### **Does a MoldCool analysis take into account the different types of steel used to build molds today?**

Yes, we can simulate any type of mold material by simply inputting the appropriate heat transfer properties. Areas of the mold that are inserted with a different mold material can be simulated also.

### **How can a MoldCool analysis help to increase my productivity with my existing molds?**

Reduced cycle times are the result of providing uniform cooling and adequate coolant flow. It is often the case that improper circuiting or insufficient pump capacity results in laminar flow instead of turbulent flow, which reduces the heat transfer rate by a factor of seven. Determining the best way to circuit cooling lines together ensures turbulent flow with the least effort.

### **Will a MoldCool analysis improve part quality and reduce cycle times?**

Yes, providing your part quality issues are cooling related. MoldCool analysis will provide cycle time reduction of 10-12% as compared to trial and error methods.