



Cycletime Tips - Automotive

Volume 49: The Forgotten Molding Factor:

Cooling: Maintaining Effectiveness (Part III of III)

Let me start out by asking you a cool question: how much scale buildup do your waterlines contain in the injection mold? Did you know each .001” of scale corrosion decreases heat transfer from the mold and increases cycle time by 10%, leading to less effective cooling?

Unfortunately, a household drain cleaner is not going to help you here. Cleaning this debris requires either bottle brushing the channels, or sometimes even demands gun drilling thru the channels to remove severe buildup. Bubbler and baffle clearances require close inspection at the bottom of the blind hole to assure corrosion is not blocking the flow path.

Often, a preventative measure to eliminate corrosion is adding ethylene glycol to the water in an attempt to keep flow channels clear. While this is an effective method of corrosion control; the downfall is a reduction in turbulent flow of the mixture. For example: a 5/16” flow channel of pure water requires 1.5 GPM to achieve the target Reynolds Number of 10,000. By adding 30% Glycol, a 3.4 GPM is required to reach a RN of 10,000. Adjusting to 50% Glycol requires 6.3 GPM to hit the 10,000 mark.

Water treatment is a necessary measure to aid in corrosion resistance, as well as keeping algae and hardness out of the water channels and heat exchangers. There are various ways to accomplish this challenge on the market today such as; rust inhibitors, ozone generators, magnetic water conditioners and sand filtration.

Once you determine the optimum treatment system for your plant, be sure to put temperature gages and flow meters in place to measure the difference in temperature between inlet and outlet, as well as assuring turbulent flow for optimum cooling performance.

Best Regards,

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