



## Cycletime Tips - Automotive

### Volume 44: Nozzle Temperature Stability

As the plastics industry evolves, often times we need to take a step back and be sure that we are doing our best to control all process variables. In nearly all cases, we'd like to see conditions relating to temperature kept constant during the production run. As our group travels to various molders combating efficiency issues, we are confronted with temperature instability and unreliable part quality as a result of it. In this tip, we will address the importance of the appropriate nozzle temperature setup for injection molding.

As processors, our goal is to deliver a melt that is symmetrical in temperature. When a significant variance arises, we can see things like blush and what is termed as "tiger striping." In severe cases, degradation may occur, causing discolored parts. Over the years, technology has evolved in the area of nozzle setup to offset some issues relating to specific materials and also to obtain the stated goal. Generally speaking, we need to observe the following bullet points:

- Use the same nozzle tip orifice and geometry throughout the life of the part.
- Select the shortest nozzle possible and stick with it long term. This promotes temperature control with the remote thermocouple locations.
- Cover the entire surface of the nozzle body with a heater band.
- Be sure the thermocouple is bottomed out in the nozzle hex. Avoid spade type thermocouples.

Internally heated nozzles have effectively addressed some control issues and work beautifully if people are trained on proper use. These nozzles have been difficult to work with in some engineering grade semi-crystalline resins, however. Consistency is the name of the game here.

Please let us know if we can provide further insight on this topic.

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