Process Optimization via Scientific Molding

Seminar Outline

1) Introduction
   a) Purpose
   b) Perspectives on the plastics’ industry, Manufacturing
   c) Profits
   d) What is your product
   e) The components of a successful plastic’s application
   f) Concurrent engineering and its benefits
   g) The four molding variables
   h) Machine conditions vs. Plastic conditions
   i) Machine and Molding Overview; 1 hour
      i.i) When and with what did the molding industry get started
      i.ii) Basic injection molding concept
      i.iii) Machine Components
      i.iv) Machine Component functions
      i.v) Videos of machine components and functions

2) Optimizing First Stage; Plastic Flow Rate
   a) How plastic flows, viscosity
   b) Viscosity curve
   c) Viscosity vs. temperature, lot variations and injection rate
   d) Flow balance
   e) Cruise Control on injection molding machines
   f) Two stage molding
   g) Case history
   h) Non-return valve (check ring)
   i) Nozzles/mixers
   j) Nozzle tips

3) Plastic Pressure
   a) Basic hydraulics
   b) Hydraulic Pressure vs. Melt Pressure
   c) Back Pressure
   d) Intensification Ratio
   e) Pressure Loss
   f) Gate seal vs. unseal
   g) Pressure vs. time graphs
   h) Clamp force
   i) Platen wrap
j) Pressure Loss Documentation

4) Cooling Rate and Time
   a) Cycle Percentage
   b) Three types of cooling
   c) Turbulent Flow
   d) Series vs. parallel circuits
   e) Cooling issues
   f) Infrared Thermography

5) Plastic Temperature (What is like for the plastic to go through the machine)
   a) The hopper
   b) Drying
   c) The feed throat
   d) Barrel vs. melt temperatures
   e) Screw components and design
   f) How plastics melt
   g) Back pressure
   h) Screw problems
   i) How to measure

6) Miscellaneous
   a) Process Optimization Procedure
   b) Universal Setup Sheet Documentation
   c) Recommended resources and web sites
   d) Hot Runner Startup
   e) Energy Saving Tips
   f) Items for sale
   g) Knowledge survey
   h) Evaluation