

Processing III: “Find-The-Solution”

XTREEM / VSX / 486 CONTROL - Process Utilization & Troubleshooting

Two-Day “Hands-On” @ Machine Site

This seminar is designed to further develop skills previously established in Processing I and/or II for your experienced personnel. Processing III increases analytical ability for troubleshooting processing related part defects.

Students setup a process then optimize each portion of the process, such as Injection Rate, Packing, Cooling, etc. to achieve an optimum cycle and defect-free parts. Utilizing a series of interactive learning exercises, students are guaranteed to acquire the highest learning gain possible at the machine site, in this 100% “hands-on” learning environment.

Due to course curriculum, this seminar is currently available at Milacron’s Headquarters for the Plastics Technologies Group, Batavia, Ohio facility only utilizing our injection molding machinery and molds. Processing I is the minimum requirement for attendance in Processing III.

DAY ONE:

Review Mold Installation

- Discuss proper mold lifting technique
- Discuss establishing the number of clamps required for particular mold & location of clamps

Water Hook-Up of Mold

- Type of water hook-up for best results such as Series or Manifold type
- Set proper mold temperature for material processed
- Pre-Heat the mold

Establish Proper Machine Settings

- Set clamp opening stroke
- Establish Mold Touch point
- Set clamp slow down position for clamp close & open
- Set ejector stroke
- Set Start of Eject (Eject-on-the-fly)
- Establish proper heater band temperature settings for material processed

Optimize the Mold Opening and Closing Speed

- Set the clamp opening and closing speeds to optimize the cycle time

Setting the Proper Clamp Tonnage

- Calculate the proper clamp tonnage required for the mold used and material processed.

Auto Die Height Adjustment (applies to toggle clamp machine)

- Set proper tonnage on toggle clamp machine from previous calculation
- Set machine to check Auto Die Height to compensate for mold expansion

Establish Proper Melt & Mold Temperatures

- Check actual melt temperature of material using a pyrometer
- Check actual temperature of mold after pre-heating and after cycling material through mold

Set up the Molding Process for Mold Installed

- Start-up using short shot start-up procedure

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DAY TWO:

Optimize the Molding Process

- Optimize the Injection Speeds & Speed Profiling if required for correcting defects
- Optimize the Pack & Hold Pressures and use Pressure Profiling if necessary
- Evaluate Velocity and Pressure traces
- Review and/or determine possible causes for fill time variations

Hydraulic Transfer Control

- Establish Hydraulic Transfer setpoint
- Switch machine into Hydraulic Transfer Control
- Determine if Hydraulic Transfer Control would be more beneficial than position transfer for particular mold used

Establishing the Gate Freeze

- Establish Gate Freeze using part weight

Optimizing the Cooling

- Optimize the cooling using a pyrometer and HDT (Heat Distortion Temperature)

Set Up SPC on Machine

- Determine variables to set up for monitoring with SPC
- Evaluate *process* for stability from SPC data
- Evaluate *machine* for stability from SPC data

Establish Melt Front on Injection into Cavity (Optional)

- Determine if material established melt front (Fountain Flow) after going through gate
- Determine at what point the melt front was established

Troubleshooting Molded Part Defects

- Defects will be set up on parts molded when applicable, for students to correct, example:
 - Correct burn marks molded into part
 - Correct sink marks molded into part / various troubleshooting exercises

Stress Analysis – Orientation Shrinkage Test (Oven Required)

- Determine oven temperature for material molded
 - Example: ABS may show best results at 250°F
- Measure overall length of part molded
- Bake part for 45 minutes/1 hour
- Cool part & re-measure part calculating shrinkage
- Determine amount of molded in orientation

Course conducted by Polymer Training Resources®

For more information or to schedule an injection molding training seminar contact
Milacron Customer Training Administrator at: (513) 536-2265 or training@milacron.com