

Roboshot Processing #3: “Find-The-Solution” Process Utilization & Troubleshooting

Two Day “Hands-On” @ Machine Site

This seminar is designed to further develop skills previously established in **Roboshot** Processing #1 and/or #2 for your experienced personnel. **Roboshot** Processing #3 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. **Roboshot** Processing #1 is the minimum requirement for attendance in Roboshot Processing #3.

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

- 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

- Start-up using short shot start-up procedure

Continued on next page....

Roboshot Processing #3: “Find-The-Solution” Process Utilization & Troubleshooting

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)

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