

HOW TO USE OUR FOCUSED TRAINING MODULES

▶ STEP 1 **Review the Lesson Content**

Preview the video training lesson for the module to determine which employees at your facility could benefit from this training. Focus on the following criteria:

- Who would benefit directly from learning this topic?
- Who should know about the concepts covered in this module?

▶ STEP 2 **Complete the Training Plan**

List all the employees identified in STEP 1 in your **TRAINING PLAN** for the module. We recommend that you identify your employees by job description (such as all the technicians or operators) and use this to track their progress throughout the training initiative.

▶ STEP 3 **Have Your Employees Watch the Video Training Lesson**

Have each employee on your training plan sit down and watch the video training lesson. We suggest that you train from the top down: This will help you get everyone on the same page.

▶ STEP 4 **Carry out the On-The-Job Training**

Identify a few knowledgeable employees who can take the others out to the plant floor and cover the **ON-THE-JOB TRAINING SHEET**. Be sure to complete this step within a week of completing STEP 3.

▶ STEP 5 **Quiz Your Employees**

Have each employee on your training plan take the **TRAINING QUIZ**. To pass the test, your employees must answer at least 3 out of the 4 questions correctly. If they fail the quiz, have them repeat STEP 3 and STEP 4 before giving them another opportunity to pass the quiz.

FOCUSED TRAINING MODULE #4

Traditional Molding

ON-THE-JOB TRAINING SHEET

Training Facilitator:	
Training Participant:	
Training Date:	
Training Location:	<p><i>In front of an injection molding machine with pressure controlled 1st stage (generally an older molding machine) .</i></p> <p><i>If such a machine is not available, you can temporarily pressure-limit a newer molding machine.</i></p>

Explain how the molding machine controls the injection molding process:

- 1st stage pressure is set
- Transfer is set using 1st stage time or screw position

Show the employee how the screw slows down during injection as the resistance to flow increases. Explain that this is a pressure limited process where the injection flow rate does not remain consistent. A pressure limited process is very sensitive to:

- Material viscosity changes
- Material temperature changes
- Material density changes

Explain that since the mold is filled and packed during 1st stage, it is easy to vary between defects such as shorts and flash in this situation.

Also explain that time is one of the least consistent 1st stage transfer methods available since the injection flow rate will speed up and slow down as the material changes – creating large shifts in the amount of material that is injected into the mold during 1st stage.

You should not operate a velocity controlled machine in a pressure limited manner. Here are some ways to identify whether the machine is operated pressure limited:

- Machine is reaching maximum 1st stage pressure set point
- Machine does not maintain the velocity set point during 1st stage
- Molded part is completely full during 1st stage injection

Walk the plant floor and identify which machines must be operated using a pressure limited process.

FOCUSED TRAINING MODULE #4

Traditional Molding

TRAINING QUIZ

Facilitator Name:	
Participant Name:	
Date:	

Question #1:

In a traditional molding process, how much material is injected into the mold during 1st stage?
(circle one)

- A. 50%
- B. 90%
- C. 95%
- D. 100%

Question #2:

Time is the most consistent and reliable method of 1st stage transfer. (circle one)
True or False

Question #3:

Which is not a characteristic of a pressure-limited process? (circle one)

- A. Machine reaches maximum 1st stage pressure set point
- B. Machine cannot maintain the velocity set point during 1st stage
- C. Molded part is completely full during 1st stage
- D. All of the above indicate a pressure limited process

Question #4:

List which molding machines in your facility must be operated in a pressure-limited manner.
(write your answer in the space below)

FOCUSED TRAINING MODULE #4

Traditional Molding

TRAINING QUIZ ANSWERS

Passing Score:

3 of the 4 questions must be answered correctly

Question #1:

In a traditional molding process, how much material is injected into the mold during 1st stage?
(circle one)

- A. 50%
- B. 90%
- C. 95%
- D. 100%

Traditional molding couples the fill and pack phases into the first stage, while the hold is used as the second stage. Therefore, one hundred percent of the material is injected into the mold during the initial stage.

Question #2:

Time is the most consistent and reliable method of 1st stage transfer. (circle one)

True or False

Time is one of the least consistent 1st stage transfer methods available since the injection flow rate will speed up and slow down as the material changes – creating large shifts in the amount of material that is injected into the mold during 1st stage.

Question #3:

Which is not a characteristic of a pressure-limited process? (circle one)

- A. Machine reaches maximum 1st stage pressure set point
- B. Machine cannot maintain the velocity set point during 1st stage
- C. Molded part is completely full during 1st stage
- D. All of the above indicate a pressure limited process

All these conditions prevent the material from dynamically filling the mold using the desired velocity set point.

Question #4:

List which molding machines in your facility must be operated in a pressure-limited manner.

This is a plant-specific question requiring your input.