TRAINING CENTER
PERFORMANCE RANGE AND TRAINING PROGRAMMS

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SURVEY TRAINING CENTER

- training
- our advanced courses
- the equipment
- certified as per AWZV*
- training documents
- examples
- training documents
- analysis for continuous improvement
- further Details
Training

Not only machine functions are trained, but the holistic process approach is promoted!

Advantages:

• elastomer processing from A to Z for a better understanding of problems
• reservations towards this technology are reduced
• staff is promoted and motivated
• identifying potential for improvement and benefitting from it
Our advanced courses

- **FlowControl** cold runner block
- cure time optimization
- ICM/ITM
- and much more ...

All courses can be conducted in our training center or at your location!
The equipment

... for hands-on classes

- injection moulding machine with mould internal pressure measurement
- a specific form of training
- FlowControl cold runner training model
- sample articles with typical faults
- various models:
  among others cold runner, hydraulic and electric engineering
Training documents

... for reading up – extensive and matched
## Example: ES-2 course

With matched documents for new projects

<table>
<thead>
<tr>
<th>Process step</th>
<th>Precondition</th>
<th>Operations</th>
<th>Fx. Pictures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. GZA to be moved away, control, mold clearing, injection process and core time</td>
<td>- Clamping cylinder of the GZA to be moved back</td>
<td>a) By actuating the lower 3 hand screw nuts, both locking cylinders of the hydraulic lifting device are moved back (GZA to be unclamped)</td>
<td><img src="image1.jpg" alt="Image 1" /></td>
</tr>
<tr>
<td></td>
<td>- Guide bolts of the GZA unlocated in the bushings of the hydraulic lifting device</td>
<td>b) GZA to be extracted backward and to be run into parking position (behind the photoelectric safety guard). Correct position of the GZ in the mold to be controlled</td>
<td><img src="image2.jpg" alt="Image 2" /></td>
</tr>
<tr>
<td></td>
<td>- Position of GZ in the mold is correct</td>
<td>c) Button to be actuated → Hole lifting device returns completely (gap: 0 mm). → Mold is closed → Injection unit runs to the mold → Injecting until the sensors are reached. Overflow channel is then closed. → Dwell pressure and core time delay → Core is actuated and moves back</td>
<td><img src="image3.jpg" alt="Image 3" /></td>
</tr>
</tbody>
</table>
Example: Maintenance course IS-4
Example: Cure time optimization with the **DesCure** system

Depending on the application of the article, the individual test properties are very important:

- Chilling agent
- Degree of cure
- Exhaust suspension
- E.g. Permanent compression set
- E.g. Dynamic modulus
- E.g. Ultimate tensile strength

![Graph showing test properties and degree of cure with labels and axes](image)

> Fig. 10: Relationship between test properties and degree of cure.

If the degree of vulcanization varies, some article properties will change suddenly. That's why for individual products a specific SET degree of vulcanization is defined, at which the quality of the article is optimal.

Variations in quality are very often caused by the varying degree of vulcanization.

![Graph showing variations in quality](image)

The calculation of the vulcanization degree comprises four stages taking place one after the other:

- **Initialization stage**: Acquisition of the initial values at the beginning of injection
- **Filling stage 1**: Calculation of the stock temperature while filling the upper or the injection port
- **Filling stage 2**: Calculation of the stock temperature while filling the mould cavity (filling temperature)
- **Vulcanization stage**: Continuous acquisition of the mould temperature and calculation of the current vulcanization degree

![Diagram showing stages of vulcanization](image)

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Example: *FlowControl* cold runner training

### 1.2 Controlling the nozzle opening times

The FlowControl cold runner has been prepared for utilisation in a DESMA machine.

1. **Items to prepare:**
   - Preheat the machine to the correct temperature.
   - Ensure the injection unit is ready.
   - Check the nozzle opening times:
     1. Open the machine.
     2. Observe the nozzle opening times displayed on the machine interface.
     3. Adjust the nozzle opening times as required.

2. **Procedure:**
   - **Step 1:**...
Learning target control

1. How is the FIM procedure converted to ICM or EIM procedure?
   - The ICM/EIM procedure within has to be set to "CM".
   - In the FIM, scroll the function no. for "Injection moves forward" to ordered before the function "Clamping pressure build-up".
   - In the FIM, scroll the function no. for "Clamping pressure build-up" to ordered after the function for the injection process.

2. How is the FIM procedure activated?
   - The switch "FIM procedure" has to be set to "ON".
   - In the FIM, scroll the function "FIM procedure" to ordered.
   - The machine recognizes FIM module for itself.

3. Which statement is correct?
   - During the FIM filling stage, the cavities are filled at a certain speed.
   - During the FIM filling stage, different stages pressure among the cavities.
   - During the FIM filling stage, the cavities are filled at a certain speed.

4. Why is the SPECIFIC IM procedure used?
   - Because the rubber compound used in particularly hard because it makes a good impression on the customers.
   - Because the rubber compound used in particularly hard because a lot of very small cavities need to be filled evenly.

Certificate about the result achieved and state-registered title
Analysis for continuous improvement

Questionnaire

<table>
<thead>
<tr>
<th>Question 1</th>
<th>Question 2</th>
<th>Question 3</th>
<th>Question 4</th>
<th>Question 5</th>
<th>Question 6</th>
<th>Question 7</th>
<th>Question 8</th>
<th>Question 9</th>
<th>Question 10</th>
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</thead>
<tbody>
<tr>
<td>2009</td>
<td>2010</td>
<td>2011</td>
<td>2012</td>
<td></td>
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</tbody>
</table>

Evaluation

- Question 1: Customer Service
- Question 2: Instructor
- Question 3: Overall satisfaction
- Question 4: Course content
- Question 5: Practical work
- Question 6: Knowledge transfer
- Question 7: Understanding
- Question 8: Self-evaluation
- Question 9: Orientation to practice
- Question 10: Operation/maintenance

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Our training instructor

Following his education as a tool technician and several years spent as a journeyman in production and electrical assembly of DESMA, he started advanced training to become a mechanical engineer with trainer qualification as per AEVO* in 1992. In 1994 Olaf Küchler supported the then new Process Engineering Center and was responsible for all trials from 1996 on. In 1998 he started to build up our Training Center which is headed by him since then.

Olaf Küchler has been coordinating our training program, preparing training documents and chairing all courses since 1995.

* German Trainer Aptitude Regulation

Olaf Küchler, instructor and Head of Training Center Certified mechanical engineer with additional instructor qualification as per AEVO*
Further details

... in our comprehensive training catalogue

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Your experts in rubber and silicone injection moulding.