CUSTOMER TRAINING
GERMANY

July to December 2019
Dear Sir or Madam,

It doesn’t matter whether you are new to the plastic industry, whether you are looking to increase your knowledge, or whether you want make more efficient use of our machines: our courses on machines, service, plastics technology and robotic systems and our certified trainers will build and extend your knowledge in a focussed approach.

Using our clearly structured training course planner, you can easily and conveniently put together the appropriate courses for you and your staff from our wide range of offers.

In order to ensure a pleasant stay, please book your accommodation independently. We would be pleased to send you a list of recommended hotels.

We are pleased to receive your questions and registrations by e-mail to kundenschulung@arburg.com, by phone +49 7446 33-4343 or via our contact form on the website.

Yours faithfully,

Uwe Klumpp
Group Manager, Product Training
ARBURG GmbH + Co KG
Registration / confirmation
Our administration team will be happy to answer your questions and to confirm your course registration. Course enquiries are also possible via our website (https://www.arburg.com/en/products-and-services/global-services/training-courses/courses/customer-training-course). You will receive a confirmation no later than two weeks before the start of the course.

Contact
E-Mail: kundenschulung@arburg.com
Tel.: +49 (0)7446 33-4343
Fax: +49 (0)7446 33-3170

Course times / prices
First day: 08:00 a.m.-04:00 p.m.
Last day: 08:00 a.m.-03:00 p.m.

The price (not including VAT) covers extensive course documentation, lunch, snacks and beverages.

Hotel reservation
Please book your accommodation independently. We would be pleased to send you a list of recommended hotels.

Implementation / cancellation
Please note that ARBURG reserves the right to cancel or change course dates for important reasons.

A cancellation fee of 10% will be charged for cancellations from seven workdays (Mon – Fri) prior to the beginning of the course. For cancellations from three workdays prior to the beginning of the course, the full price will be charged.

Standards / certification
ARBURG places high demands on its trainers. All our courses are carried out according to a unified standard worldwide.
Our Team

Administration

Nadja Feldmann
Janina Schmid

Application technology courses / Loßburg

Joachim Burkhardt
Frank Eberhard
Fabian Frey

Stefan Kalmbach
Klaus Schwab
Kai-Uwe Vorwalder

Kedao Yu
Service courses / Loßburg

Timo Böhringer  Marco Dölker  Benjamin Gnegel

Martin Jeckle  Elmar Mäntele  Simon Rebholz

Stefan Seid
Our Team

The complete training team
Machine

Machine course

Main course on machine operation and programming

p. 9
Course description

Course objective: Independent preparation of parts and operation of the ARBURG freeformer

Target group: Installation technicians, machine operators and employees in the design of prototypes

Requirements: A freeformer must be available in the company

Course duration: 3 days

Course fee: 1500,- EUR

Documents: Course folder and CD

Course content

- General machine and process description
- Controlling the freeformer
- Using the ARBURG freeformer software
- Preparing 3D data
- Working with the freeformer and practical exercises
- Maintaining the freeformer

<table>
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<tr>
<th>Machine</th>
<th>Code</th>
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<tbody>
<tr>
<td>freeformer</td>
<td>AS-AKF</td>
</tr>
</tbody>
</table>
Injection moulding course overview

**Machine**

- **G** Basic machine course
  - Introductory course on machine operation
  - p. 12

- **M** Machine adjustment course
  - Main course on machine operation and programming
  - p. 13

- **P** Intensive machine course
  - Advanced course following on from the machine adjustment course
  - p. 14

**Service**

- **SK** Main service courses
  - Hydraulics/mechanics, electrics/electronics
  - p. 15-17

- **PSK** Intensive practical service course
  - Advanced course SK EL, focus on troubleshooting
  - p. 18

- **SK Abgl** Service calibration course
  - Course on calibrating an injection moulding machine
  - p. 19-20
### Injection moulding course overview

#### Technology

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<td></td>
<td>Injection moulding materials/injection moulding process, moulded part/mould</td>
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<table>
<thead>
<tr>
<th>SV</th>
<th>Courses on special processes</th>
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<tr>
<td></td>
<td>Multi-component technology, thermoset processing, powder injection moulding, LSR processing, compression injection moulding, micro-injection moulding</td>
<td></td>
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</table>

#### Automation

<table>
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<th>RP</th>
<th>Courses on robotic systems</th>
<th>p. 27-28</th>
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<tr>
<td></td>
<td>Six-axis robotic systems, MULTILIFT V/ MULTILIFT SELECT, MULTILIFT H</td>
<td></td>
</tr>
</tbody>
</table>

We are also pleased to offer individualised courses upon request, with customer-specific content. These courses can be held either at your premises or at ARBURG.

Upon request, we are also able to offer you a course on earlier machine types, which are no longer featured in the machine range.
Course description

Course objective: Basic knowledge of how to operate and program an injection moulding machine
Target group: Those new to injection moulding, machine operators
Requirements: None
Course duration: 2 days
Course fee: 600,- EUR
Documents: Course folder and CD

Note: To further enhance your knowledge, we recommend participation in a machine adjustment course (M)

Course content

- Fundamentals of the injection moulding machine and control
- Injection moulding process
- Typical plastics processing requirements
- Practical situations: starting/ending the injection moulding process, remedying faults and malfunctions, changing the mould and moulding material with cylinder and screw cleaning
- Machine maintenance

<table>
<thead>
<tr>
<th>Machine</th>
<th>Control</th>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>ALLROUNDER A</td>
<td>SELOGICA direct</td>
<td>G-A d</td>
</tr>
<tr>
<td>ALLROUNDER E</td>
<td>SELOGICA direct</td>
<td>G-E</td>
</tr>
<tr>
<td>ALLROUNDER H</td>
<td>SELOGICA direct</td>
<td>G-H</td>
</tr>
<tr>
<td>ALLROUNDER 170 S - 570 S</td>
<td>SELOGICA direct</td>
<td>G-S</td>
</tr>
<tr>
<td>ALLROUNDER C</td>
<td>SELOGICA</td>
<td>G14</td>
</tr>
<tr>
<td>ALLROUNDER GOLDEN EDITION</td>
<td>SELOGICA direct</td>
<td>G-GE</td>
</tr>
</tbody>
</table>
Course description

Course objective: Independent operation and programming of an injection moulding machine
Target group: Installation technicians, machine operators
Requirements: Participation in a basic machine course (G) or a basic knowledge of injection moulding
Course duration: 3 days
Course fee: 900,- EUR
Documents: Course folder and CD

Note: To further enhance your knowledge, we recommend participation in an intensive machine course (P), corresponding to your machine adjustment course (M)

Course content

- Explanation of typical machine features
- Programming the SELOGICA machine control system
- Setting up clamping and injection units
- Adapting the set values
- Quality monitoring and data recording/backup
- Machine maintenance

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<tr>
<td>ALLROUNDER GOLDEN EDITION</td>
<td>SELOGICA direct</td>
<td>G-GE</td>
</tr>
<tr>
<td>ALLROUNDER V</td>
<td>SELOGICA direct</td>
<td>M-V d</td>
</tr>
<tr>
<td>ALLROUNDER T</td>
<td>SELOGICA direct</td>
<td>M-T</td>
</tr>
</tbody>
</table>
Intensive machine course

Course description

Course objective: Development of knowledge on adjusting an injection moulding machine

Target group: Installation technicians, machine operators

Requirements: Participation in a machine adjustment course (M) or several years of experience with injection moulding machines and the SELOGICA control system

Course duration: 3 days

Course fee: 900,- EUR

Documents: Course folder and CD

Note: To enhance your knowledge, we recommend participation in a plastics technology course

Course content

- Independent determination of process data for an injection moulding machine under practical conditions.
- Adjusting an ALLROUNDER
- Working with example scenarios
- Using different injection moulding materials

<table>
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<tr>
<td>ALLROUNDER A</td>
<td>SELOGICA direct</td>
<td>P-A d</td>
</tr>
<tr>
<td>ALLROUNDER S</td>
<td>SELOGICA direct</td>
<td>P-S</td>
</tr>
<tr>
<td>ALLROUNDER GOLDEN EDITION</td>
<td>SELOGICA direct</td>
<td>P-GE</td>
</tr>
</tbody>
</table>
Course description

Course objective: Unaided execution of maintenance work on electric ALLROUNDERs

Target group: Service personnel, electronics engineers, mechatronics engineers

Requirements: Basic knowledge of electrics

Course duration: 5 days

Course times:
- Day 1: 10.00 h-16.00 h
- Day 2-4: 08.00 h-16.00 h
- Day 5: 08.00 h-13.30 h

Course fee: 1500,- EUR

Documents: Course folder and CD

Course content

- Explanation of the most important function screens of the SELOGICA control system
- Function of clamping unit and injection unit
- Working with electric and hydraulic circuit diagrams
- Measurement and diagnostic options
- Structured detection, diagnosis and rectification of faults
- Maintenance protocol for an electric ALLROUNDER
- Maintenance of the electrical and mechanical components

Machine | Control | Code
----------|---------|-----
ALLROUNDER A | SELOGICA direct | SK A
ALLROUNDER E | SELOGICA direct | SK E
Course description

Course objective: Development of knowledge of hydraulic machine sequences, fast fault detection and rectification
Target group: Service personnel, electronics engineers, fitters
Requirements: Basic knowledge of hydraulics and mechanics
Course duration: 2 days
Course fee: 600,- EUR
Documents: Course folder and CD

Course content

- Explanation of the most important function screens of the SELOGICA control system
- Regulating valves
- Pump control
- Working with the hydraulic circuit diagram
- Measurement and diagnostic options
- Structured detection, diagnosis and rectification of faults
- Maintenance

<table>
<thead>
<tr>
<th>Machine</th>
<th>Control</th>
<th>Code</th>
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<tbody>
<tr>
<td>ALLROUNDER S</td>
<td>SELOGICA direct</td>
<td>SKS H/M</td>
</tr>
<tr>
<td>ALLROUNDER GOLDEN EDITION</td>
<td>SELOGICA direct</td>
<td>SKGE H/M</td>
</tr>
</tbody>
</table>
**Main service course**
on electrics/electronics

**SK EL**

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**Course description**

**Course objective:** Development of knowledge of electric machine sequences, fast fault detection and rectification

**Target group:** Service personnel, electronics engineers

**Requirements:** Basic knowledge of electrics and electronics

**Course duration:** 2 days

**Course fee:** 600,- EUR

**Documents:** Course folder and CD

**Note:** To further enhance your knowledge, we recommend participation in the intensive course in practical service (PSK)

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**Course content**

- Explanation of the most important function screens of the SELOGICA control system
- Working with the electrical circuit diagram
- Machine sequence, block diagrams
- Regulating valves
- Measurement and diagnostic options
- Structured detection, diagnosis and rectification of faults

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**Machine** | **Control** | **Code**
---|---|---
ALLROUNDER S | SELOGICA direct | SKS EL
ALLROUNDER GOLDEN EDITION | SELOGICA direct | SKGE EL
Course description

Course objective: Development of knowledge of fault detection and rectification  
Target group: Service personnel, electronics engineers  
Requirements: Participation in the main service course on electrics/electronics (SK EL)  
Course duration: 1 day  
Course fee: 300,- EUR  
Documents: Course folder and CD

Course content

- Focus on electrics/electronics  
- Intensive detection, diagnosis and rectification of faults  
- Measurements and fault detection on regulating valves  
- Comprehensive fault analysis

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<th>Control</th>
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<tr>
<td>ALLROUNDER S</td>
<td>SELOGICA direct</td>
<td>PSK S</td>
</tr>
<tr>
<td>ALLROUNDER GOLDEN EDITION</td>
<td>SELOGICA direct</td>
<td>PSK GE</td>
</tr>
</tbody>
</table>
Service calibration course hydraulic

SK Abgl HY

Course description

Course objective: Independent calibration of a hydraulic injection moulding machine
Target group: Service personnel
Requirements: Participation in a service course for hydraulic ALLROUNDER (SK H/M)
Course duration: 2 days
Course fee: 600,- EUR
Documents: Course folder and CD

Course content

- Mechanical settings
- Checking the sensors
- Calibration of pumps, regulation systems and measuring systems
- Maintenance schedule

<table>
<thead>
<tr>
<th>Machine</th>
<th>Control</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>all hydraulic ALLROUNDERS</td>
<td>SELOGICA or SELOGICA direct</td>
<td>SK Abgl HY</td>
</tr>
</tbody>
</table>
Course description

Course objective: Independent calibration of the most important components of an electric injection moulding machine

Target group: Service personnel

Requirements: Participation in a service course for electric ALLROUNDER (SK A, SK E) or for hybrid ALLROUNDER (SKH H/M and SKH EL)

Course duration: 2 days

Course fee: 600,- EUR

Documents: Course folder and CD

Note: We recommend the prior participation in a service calibration course for hydraulic ALLROUNDER (SK Abgl HY)

Course content

- Calibration of the clamping unit
- Calibration of the toggle
- Calibration of the mould height adjustment system
- Calibration of the force transducer for the clamping unit
- Calibration of the injection force sensor
- Calibration of the injection unit
- Calibration and maintenance of the hydraulic accumulator
- Maintenance schedule for electric machines

<table>
<thead>
<tr>
<th>Machine</th>
<th>Control</th>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>all electric ALLROUNDERs</td>
<td>SELOGICA or SELOGICA direct</td>
<td>SK Abgl EL</td>
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</tbody>
</table>
Course description

**Course objective:** Development of knowledge of injection moulding materials and the injection moulding process

**Target group:** Installation technicians, machine operators, production managers, controllers, sales personnel, designers, planners

**Requirements:** Basic knowledge of injection moulding and injection moulding materials

**Course duration:** 2 days

**Course fee:** 600,- EUR

**Documents:** Course folder and CD

Course content

**Injection moulding materials**
- Structure / properties of the plastics
- Condition ranges / fine structure of plastics
- Overview of the most important plastics

**Injection moulding process**
- Design of the injection moulding machine
- Various injection moulding processes
- Process parameters and their influence on moulded parts

<table>
<thead>
<tr>
<th>Technology</th>
<th>Code</th>
</tr>
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<tbody>
<tr>
<td>Injection moulding materials /</td>
<td>KT1</td>
</tr>
<tr>
<td>injection moulding process</td>
<td></td>
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</tbody>
</table>
Course description

Course objective: Development of knowledge of moulded part design and injection mould configuration
Target group: Moulded-part and injection mould designers, mould-makers, installation technicians, production managers, controllers
Requirements: Basic knowledge of injection moulding, moulds and injection moulding materials
Course duration: 2 days
Course fee: 600,- EUR
Documents: Course folder and CD

Course content

Moulded part
- Design of moulded parts
- Shrinkage characteristics-dimensional accuracy

Mould
- Construction and design of injection moulds
- Types of mould and demoulding
- Design of sprue and runner systems
- Mould temperature control

Technology Code

<table>
<thead>
<tr>
<th>Technology</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moulded part / injection mould</td>
<td>KT4</td>
</tr>
</tbody>
</table>
Course on special processes
Multi-component technology

Course description

Course objective: Independent equipment, set-up and operation of a multi-component injection moulding machine

Target group: Process technicians and installation technicians for multi-component machines

Requirements: Basic knowledge of injection moulding and participation in a machine adjustment course (M)

Course duration: 3 days

Course fee: 900,- EUR

Documents: Course folder and CD

Note: Please bring personal safety equipment (safety shoes) to the course

Course content

- Introduction to multi-component processing
- Explanation of various multi-component moulds
- Introduction to the machine technology and accessories
- Options, setup and adjustment of multicomponent moulds including rotary platens and strippers plates
- Programming of various production processes
- Production control
- Process optimisation
- Machine and accessory maintenance

Special processes

| Multi-component technology | SV MK |

23
Course description

Course objective: Developing knowledge of material properties and the injection moulding of metal and ceramic powders (PIM)

Target group: Installation technicians, machine operators

Requirements: Basic knowledge of injection moulding and participation in a machine adjustment course (M)

Course duration: 3 days

Course fee: 900,- EUR

Documents: Course folder and CD

Course content

- Introduction to the structure/properties of powder materials and different binder systems
- PIM-specific equipment of an ALLROUNDER
- PIM-specific programming, settings and monitoring of an injection moulding machine
- Detection, diagnosis and rectification of faults
- Process optimisation
- Machine maintenance

Special processes  

<table>
<thead>
<tr>
<th>Powder injection moulding process</th>
<th>Code</th>
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<tbody>
<tr>
<td></td>
<td>SV PIM</td>
</tr>
</tbody>
</table>
Course on special processes
LSR processing

Course description

Course objective: Developing knowledge of material properties and the injection moulding of liquid silicones (LSR)

Target group: Installation technicians, machine operators, mould designers

Requirements: Basic knowledge of injection moulding and participation in a machine adjustment course (M)

Course duration: 3 days

Course fee: 900,- EUR

Documents: Course folder and CD

Course content

- Introduction to the structure/properties of plastics and LSR materials
- LSR-specific equipment of ALLROUNDERS
- LSR-specific programming, setting and monitoring of an injection moulding machine
- Basics of LSR injection mould configuration
- Process optimisation

Special processes | Code
--- | ---
LSR process | SV LSR
Course description

**Course objective:** In-depth knowledge of various injection coining methods and functions
**Target group:** Installation technicians, machine operators, mould designers
**Requirements:** Basic knowledge in injection moulding and participation in a machine set-up course (M)
**Course duration:** 2 days
**Course fee:** 600,- EUR
**Documents:** Course folder and CD

Course content

- Introduction to mould technology
- Introduction of various injection coining techniques
- Injection coining functions in the SELOGICA direct controller
- Programming the injection coining sequence in dry cycle on an ALLROUNDER
- Process documentation

Special processes

<table>
<thead>
<tr>
<th>Code</th>
<th>Special processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV PTP</td>
<td>Injection coining</td>
</tr>
</tbody>
</table>
Course description

Course objective: Independent working with a six-axis robotic system  
Target group: Installation technicians, machine operators  
Requirements: Experience in automation  
Course duration: 5 days  
Course fee: 1500,- EUR  
Documents: Course folder and CD

Note: As preparation, we recommend participation in one of the MULTILIFT courses (RP ML-V, RP ML-H).

Course content

- Introduction to the six-axis robotic system
- Technical data, KUKA Control Panel, safety circuits
- Movements of the six-axis robotic system
- Creation of teach points
- Programming basic settings, different removal methods, set-down sequences and placing finished parts in patterns
- Creation of a complete production sequence
- Monitoring functions, working area monitoring

<table>
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<tr>
<th>Robotic system</th>
<th>Control</th>
<th>Code</th>
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<tr>
<td>Six-axis</td>
<td>SELOGICA direct</td>
<td>RP 6AC</td>
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</table>
Course description

Course objective: Unaided programming of the ARBURG robotic system MULTILIFT V, SELECT and H

Target group: Programmers of MULTILIFT robotic systems

Requirements: Participation in a machine set-up course (M) for ALLROUNDERs with SELOGICA ‘direct’ controller

Course duration: 3 days

Course fee: 900,- EUR

Documents: Course folder and CD

Course content

- Operation of the vertically (V) operating MULTILIFT V or the horizontally (H) operating MULTILIFT H
- Programming of the MULTILIFT on ALLROUNDERs
- Various practical applications: teach-in programming, programming of sequences, patterned part set-down and monitoring functions
- Function description of the inputs and outputs
- Data set management
- Maintenance and inspections of the safety equipment
## Overview of dates, Lossburg 2019

### Additive manufacturing courses

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<th>Course</th>
<th>Dates</th>
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### Injection moulding courses

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<th>Course</th>
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<tbody>
<tr>
<td>SKGE H/M</td>
<td>02.09. - 03.09.</td>
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<tr>
<td>SKS H/M</td>
<td>15.07. - 16.07.</td>
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<tr>
<td>SK Abgl HY</td>
<td>04.09. - 05.09.</td>
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<tr>
<td>KT1</td>
<td>09.09. - 10.09.</td>
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<tr>
<td>KT4</td>
<td>11.09. - 12.09.</td>
</tr>
<tr>
<td>RP ML-V1</td>
<td>11.11. - 13.11.</td>
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</table>
ARBURG headquarters in Lossburg
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WIR SIND DA.

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