Training Modules

Welding Basics  |  Processes  |  Welding technology  |  Maintenance

Welding specialists  |  Application engineers  |  Service engineers  |  Maintenance engineers
SKS practical training

The handling, installation and operating concepts of SKS welding machines are simple and intuitive. However, training courses help with rapid parameter finding and lay the foundations for optimising practical applications.

Our training programme is divided into individual modules, enabling specially tailored training packages to be put together to meet widely differing requirements.

Basic modules are identified with an A and include the basic principles of welding using SKS welding systems. Modules identified with a B include the SKS control concept and the use of the Q8Tool software. C-modules include the basic theoretical principles of our welding processes. D covers the installation and maintenance of SKS systems. We have also created a flexible E module in order to address customer-specific questions. Customer-specific courses can be put together by selecting the required modules. Concentrating on the essentials saves time and investment in competence management.

Course matrix

- SKS Welding Machines – Basics
  - A1
  - A2
  - A3
- GMAW
  - A2
  - B1
- Welding Process Controller – Operation
  - B1
  - B2
- Software – Parameter Administration
  - B2
  - B3
- Maintenance
  - D1
- Customer-specific in-depth training
  - E1
  - C1
  - C2
  - C3
- Synchroweld™
  - C2
  - C3
- Dual Wire™
  - C1
  - C2
- microMIG™ / microMIG-cc™
  - C2
  - C3
- GTAW
  - A3
- Software – Weld Data Acquisition
  - B3
Training Modules

<table>
<thead>
<tr>
<th>Module</th>
<th>Course content</th>
<th>Prerequisites</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>SKS welding machine – basics</td>
<td>None</td>
<td>6h (1 day)</td>
</tr>
<tr>
<td>A2</td>
<td>GMAW</td>
<td>Welding qualification or Module A1</td>
<td>9h (1.5 day)</td>
</tr>
<tr>
<td>A3</td>
<td>GTAW</td>
<td>Welding qualification or Module A1</td>
<td>9h (1.5 day)</td>
</tr>
<tr>
<td>B1</td>
<td>Weld process controllers – operation</td>
<td>Welding qualification or Module A1 + A2</td>
<td>3h (0.5 days)</td>
</tr>
<tr>
<td>B2</td>
<td>Software – parameter administration</td>
<td>Module B1</td>
<td>3h (0.5 days)</td>
</tr>
<tr>
<td>B3</td>
<td>Software – weld data acquisition</td>
<td>Module B1</td>
<td>3h (0.5 days)</td>
</tr>
<tr>
<td>C1</td>
<td>Dual Wire™ / microMIG™ / microMIG-cc™</td>
<td>Welding qualification or Module A1 + A2+ B1</td>
<td>6h (1 day)</td>
</tr>
<tr>
<td>C2</td>
<td>microMIG™ / microMIG-cc™</td>
<td>Welding qualification or Module A1 + A2+ B1</td>
<td>6h (1 day)</td>
</tr>
<tr>
<td>C3</td>
<td>Synchroweld™</td>
<td>Welding qualification or Module A1 + A2+ B1</td>
<td>3h (0.5 days)</td>
</tr>
<tr>
<td>D1</td>
<td>Maintenance</td>
<td>None</td>
<td>12h (2 days)</td>
</tr>
<tr>
<td>E1</td>
<td>Customer-specific in-depth training</td>
<td>Selection of module to be taught in depth</td>
<td>6h (1 day)</td>
</tr>
</tbody>
</table>

Languages: German, English, Polish, Czech

The SKS welding test laboratory is the ideal platform for practical exercises. Here you will be shown how to find the optimum parameters for a workpiece. You will also be shown what to look for in order to assess the quality of welds using sectional examples from our metallurgical laboratory.

Four fully equipped robots are available in the test laboratory for exercises and welding trials. These will be retooled and equipped for the required processes.

The C-modules serve to explain our welding processes and their areas of application. Settings for practically spatter-free welding and the use of new materials are treated in depth.

Practical applications are used to explain how optimised welds can be achieved using, for example, the pulse process. Special features which arise with newer materials are also included.

Knowledge of the individual processes will be addressed in detail using practical exercises.

SKS torch necks make installation easier with the innovative bayonet fixing concept. As well as fast changing of the torch neck without tools, a TCP of ± 0.2 mm is guaranteed.

Our training modules for maintenance engineers concentrate specifically on the advantages of SKS components. Along with the reliable installation of torch systems, the objective is to maintain individual components and integrate them into the overall system.

In doing so, particular attention will be paid to our pre-assembled installation options in order to achieve the highest possible availability.
## Scope of training module A1, A2, A3

<table>
<thead>
<tr>
<th>Training module</th>
<th>Course objectives</th>
<th>Participants</th>
</tr>
</thead>
</table>
| A1 – SKS welding machines – basics | • To obtain a basic knowledge of welding with SKS systems  
• To recognise external influences on the welding system | Maximum 6 persons |
| A2 – GMAW | • To understand the principle of operation of the overall system | Maximum 6 persons |
| A3 – GTAW | • To understand GTAW welding processes | Maximum 6 persons |

### Module A1 – SKS welding machine – basics

**Theoretical part**
- Inert gas welding processes
- Welding processes with melting electrode
- Types of arc
- Special processes
- Overview of influencing factors encountered when welding

**Practical part**
- Use of programming tips
- Use of angle gauges
- Test welds to illustrate problems
- Areas of application of the individual arc processes
- Assessing welds

**Target group** – Persons requiring a basic knowledge of welding technology

**Order number:** 020-A1

### Module A2 – GMAW with SKS systems

**Theoretical part**
- System design
- System components
- Connecting components
- Processes (GMAW welding)
- Explanation of GMAW welding parameters
- Trouble shooting

**Practical part**
- Test welds
- Comparison of process types
- Variations in the pulse process
- Changing wearing parts
- Trouble shooting

**Target group** – Welders | Application engineers | Service engineers

**Order number:** 020-A2

### Module A3 – GTAW with SKS systems

**Theoretical part**
- System design
- System components
- Connecting components
- Explanation of GTAW welding parameters
- Definition of protective gas and centre gas
- Cold wire
- Maintenance and care

**Practical part**
- Gas adjustment
- Checking ignition (no contact with component due to ignition stroke)
- Test welds
- Welding reports

**Target group** – Welders | Application engineers | Service engineers

**Order number:** 020-A3
## Scope of training module B1, B2, B3

<table>
<thead>
<tr>
<th>Training module</th>
<th>Course objectives</th>
<th>Participants</th>
</tr>
</thead>
</table>
| B1 – Weld process controllers – operation | • Learning to use the controller  
• Understanding the controller parameter architecture  
• Knowledge of controller parameters available | Maximum 6 persons     |
| B2 – Software – parameter administration | • Learning to use the Q8Tool software  
• Knowledge and concepts for managing controller content and parameters | Maximum 6 persons     |
| B3 – Software – weld data acquisition | • Learning to use the automated data recording facility  
• Understanding networking options  
• Knowledge and concepts for recording welding data during production | Maximum 6 persons     |

### Module B1 – Weld process controllers – operation

**Theoretical part**
- Connections
- Structure of groups / parts / programs
- Operation with particulars of control devices
- Operation with particulars of menu contents
- Characteristics / Single-button operation
- Options
- Measurements and alarms

**Practical part**
- Navigation within the controller
- Various exercises (e.g. selection of group / part / program)
- Changing parameters
- Changing monitoring functions
- Simulation of test welds (Q8 simulator)
- Viewing measurements online and in the memory
- Backup and restore

**Target group** – Welders | Application engineers | Service engineers

### Module B2 – Software – parameter administration

**Theoretical part**
- Purpose of the Q8Tool software
- Administrative part
- Measurements and alarms
- Rights system and allocation of rights during installation

**Practical part**
- Practical exercises on all items

**Target group** – Welders | Application engineers

### Module B3 – Software – weld data acquisition

**Theoretical part**
- Purpose of the Q8Tool software
- Q8Tool server and Q8Tool client
- Creating log jobs
- Viewing and exporting log files
- Strategies for orderly data storage

**Practical part**
- Practical exercises on all items

**Target group** – Application engineers
Scope of training module C1, C2, C3

<table>
<thead>
<tr>
<th>Training module</th>
<th>Course objectives</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 – Dual Wire™</td>
<td>To become familiar with the design, components and principle of operation of twin-wire welding</td>
<td>Maximum 6 persons</td>
</tr>
<tr>
<td>C2 – microMIG™ / microMIG-cc™</td>
<td>To understand the welding process, To become familiar with the areas of application</td>
<td>Maximum 6 persons</td>
</tr>
<tr>
<td>C3 – Synchroweld™</td>
<td>To use the Synchroweld™ function, To understand the interaction between robot and welding system</td>
<td>Maximum 6 persons</td>
</tr>
</tbody>
</table>

### Module C1 – Dual Wire™

**Theoretical part**
- System design
- System components
- Connecting the components
- Explanation of twin-wire welding parameters
- Use of I-pulse and KF-pulse
- Comments on wire feed speed and welding direction
- Possible uses of twin-wire welding

**Practical part**
- Test welds
- Changing wearing parts

**Target group** – Welders | Application engineers

### Module C2 – microMIG™ / microMIG-cc™

**Theoretical part**
- System design
- Connecting the components
- Description of the welding process
- The microMIG process parameters
- Possible uses of the microMIG process

**Practical part**
- Test welds
- Welding reports

**Target group** – Welders | Application engineers

### Module C3 – Synchroweld™

**Theoretical part**
- Function and use of Synchroweld
- UNI5C / field bus module

**Practical part**
- Test welds (with and without Synchroweld)
- Welding reports

**Target group** – Welders | Application engineers
## Scope of training modules D1, E1

<table>
<thead>
<tr>
<th>Training module</th>
<th>Course objectives</th>
<th>Participants</th>
</tr>
</thead>
</table>
| D1 – Maintenance | • To be able to maintain welding components  
• To teach customer-specific topics in greater depth | Maximum 6 persons |
| E1 – Customer-specific in-depth training | | Maximum 6 persons |

### Module D1 – Maintenance

**Order number:** 020-D1

**Theoretical part**
- Fitting and installation of SKS welding equipment on different types of robot  
  - General system design, principle of operation of individual components  
  - Control via standard interface and integration in a field bus environment  
  - System commissioning (initialisation) and system test  
- SKS welding machine concept  
  - Design and function of welding process controllers, wire feed units, power sources, robot interfaces, field bus interfaces  
- Maintenance of welding torches, LSQ-Series power sources and wire feed units  
- Aids for fault finding and possible repairs on site  
  - Introduction to the Q8Tool software  
  - Documentation structure, alarm assignment, repair strategies

**Practical part**
- Welding tests with fault simulation and localisation of faults in the overall system

**Target group** – Maintenance engineers

### Module E1 – Customer-specific in-depth training

**Order number:** 020-E1

**Theoretical part**
- As requested by customer  
- In-depth training in a specific topic

**Practical part**
- Consideration of customer-specific welding tasks

**Target group** – Application engineers