

# WP 2

## Inventory of Courses for Innovative Maintenance Techniques

## Welding Basic Skills

### Description of content

- Basic knowledge about different materials and welding techniques
- Adjusting of different welding flames
- Welding with material 1-5 mm
- Safety, health-protection and environment-protection in the workplace

### Technologies

- Arc-welding
- MAG-welding
- Soldering and brazing

### Target group

Industrial workers

### Modalities

Offered by IBB (Institute for professional education)

160 hours (4 weeks in full-time 40 h/week or 8 weeks in part-time 20 h/week)

720 Euro

### Type of certification

Internal certificate from IBB

### Sources

IBB - Institut für Berufliche Bildung

<http://www.ibb.com/index.php?menu=2&suche=Schwei%C3%9Fen>

## Container Metal Worker

### Description of content

- Container-types and –components
- Container repair procedures
- Metal welding techniques
- Processing of metal and wood
- Work organisation and optimising of workflows
- Internship with documentation

### Technologies

- Inert gas welding
- Container repair tasks

### Target group

Industrial workers

### Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH)

Course in training facilities and internship in container repair companies

10 weeks, 400 hours

4.019,20 Euro

### Name of certification

The course includes a DVS certificate for inert welding (DVS = German Welding Association).

### Level of certification

National

### Sources

Elbcampus, Container Metal Worker (Containerschlosser)

<http://www.elbcampus.de/weiterbildung/schweisstechnik/>

# International Welding Expert Engineer

## Description of content

Special welding knowledge and practical skills for

- bridge building
- pressure vessels
- steam boilers
- steel construction
- water, air and outer space vehicles
- machine-, facility- and pipeline construction

## Technologies

- Hot gas welding
- Arc welding
- Inert gas welding
- Demonstration of various welding techniques

## Target group

Engineers

## Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH)

5 weeks, 64 hours – evening course

1.090 Euro

## Name of certification

International Welding Expert Engineer DVS-IIW/EFW 1170

## Level of certification

International

DVS (DVS = German Welding Association) in co-operation with IIW (International Institute of Welding) and EWF (European Welding Federation) within their system for certification of welding personnel according to ISO 3834.

## Sources

Elbcampus, International Welding Expert Engineer (Internationaler Schweißfachingenieur)

<http://www.elbcampus.de/weiterbildung/schweisstechnik/>

[http://www.ewf.be/media/documentosDocs/doc\\_58\\_paper-ewf-iiw-personnel\\_qualification\\_certification\\_systems\\_-\\_nigeria\\_march\\_2009.pdf](http://www.ewf.be/media/documentosDocs/doc_58_paper-ewf-iiw-personnel_qualification_certification_systems_-_nigeria_march_2009.pdf)

# International Welding Craftsman

## Description of content

Education to become a welding observational craftsman

- Introduction to technical drawing and calculations, basics of electronic engineering, chemistry, material knowledge and processing of materials
- Welding techniques and equipment
- Different materials and their changes through processing in welding
- Steel production
- Welded alloys
- Non-iron metals, metallography
- Consistency and other qualities of welded joints

## Technologies

- Oxy-acetylene welding
- Arc welding
- Hot gas welding
- Inert gas welding
- Resistance welding
- Soldering and brazing
- Joining
- Cutting
- Repair welding
- Non-destructive material testing

## Target group

Craftsmen workers, technicians

### Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH)  
14 weeks, 330 hours  
4.860 Euro

### Name of certification

International Welding Craftsman DVS-IIW/EFW 1170

### Level of certification

International  
DVS (DVS = German Welding Association) in co-operation with IIW (International Institute of Welding) and EWF (European Welding Federation) within their system for certification of welding personnel according to ISO 3834.

### Sources

Elbcampus. International Welding Craftsman, (Internationaler Schweißfachmann)  
<http://www.elbcampus.de/weiterbildung/schweisstechnik/>  
[http://www.ewf.be/media/documentosDocs/doc\\_58\\_paper-ewf-iiw-personnel\\_qualification\\_certification\\_systems\\_-\\_nigeria\\_march\\_2009.pdf](http://www.ewf.be/media/documentosDocs/doc_58_paper-ewf-iiw-personnel_qualification_certification_systems_-_nigeria_march_2009.pdf)

## International Welding Practitioner

### Description of content

- Welding techniques and equipment
- Different materials, their qualities and changes through processing in welding
- Alloys, construction steels
- Construction and design
- Welded joints
- Electrical engineering
- Quality controlling
- Supervising welding

### Technologies

- Hot gas welding
- Inert gas welding
- Oxy-acetylene welding
- WIG welding
- Resistance welding
- Soldering and brazing
- Thermal cutting
- Non-destructive material testing

### Target group

Craftsmen workers, industrial workers who are certified in pipe welding and are at least 20 years old including 2 years of practical welding experience.

### Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH)

6 weeks, 140 hours

3.525 Euro

### **Name of certification**

International Welding Practitioner DVS-IIW/EFW 1170

### **Level of certification**

International

DVS (DVS = German Welding Association) in co-operation with IIW (International Institute of Welding) and EWF (European Welding Federation) within their system for certification of welding personnel according to ISO 3834.

### **Sources**

Elbcampus, International Welding Practitioner (Internationaler Schweißpraktiker)

<http://www.elbcampus.de/weiterbildung/schweisstechnik/>

[http://www.ewf.be/media/documentosDocs/doc\\_58\\_paper-ewf-iiw-personnel\\_qualification\\_certification\\_systems\\_-\\_nigeria\\_march\\_2009.pdf](http://www.ewf.be/media/documentosDocs/doc_58_paper-ewf-iiw-personnel_qualification_certification_systems_-_nigeria_march_2009.pdf)



## International Welding Technician

### Description of content

Education to become a welding technician in construction and production, to work as a qualified welding supervisor in small and medium sized businesses and/or to hold a substitute position for welding engineers in bigger businesses.

### Technologies

- Hot gas welding
- Arc welding
- Inert gas welding
- Applying and being able to give instructions to those and other welding techniques

### Target group

Technicians with engineer exam

### Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH)  
5 weeks, 64 hours, evening course  
1.090 Euro

### Name of certification

International Welding Technician DVS-IIW/EFW 1170

### Level of certification

International  
DVS (DVS = German Welding Association) in co-operation with IIW (International Institute of Welding) and EWF (European Welding Federation) within their system for certification of welding personnel according to ISO 3834.

### Sources

Elbcampus, International Welding Technician (Internationaler Schweißtechniker)  
<http://www.elbcampus.de/weiterbildung/schweisstechnik/>  
[http://www.ewf.be/media/documentosDocs/doc\\_58\\_paper-ewf-iiw-personnel\\_qualification\\_certification\\_systems\\_-\\_nigeria\\_march\\_2009.pdf](http://www.ewf.be/media/documentosDocs/doc_58_paper-ewf-iiw-personnel_qualification_certification_systems_-_nigeria_march_2009.pdf)

## Welding Draftsman

### Description of content

Basic knowledge for welding techniques and welding equipment

Materials and their reaction in processing

Construction and calculation

### Technologies

Technologies

### Target group

Master craftsmen, technicians, draftsmen

### Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH)

5 days, 40 hours

960 Euro plus 180 Euro examination fee

### Name of certification

Welding draftsman exam DVS 1181 (DVS = German Welding Association)

### Level of certification

National

### Sources

Elbcampus, Welding Draftsman (Schweißkonstrukteur)

<http://www.elbcampus.de/weiterbildung/schweisstechnik/>

# Assistant Foreman Welding Basics

## Description of content

This course prepares for the Assistant Foreman Welding exam.

- Introduction to different welding techniques
- Drafts drawing and calculation
- Electrical engineering
- Material technology and processing
- Technical mechanics
- Chemistry

## Technologies

- Different welding techniques
- Joining elements
- Processing of different materials

## Target group

Industrial workers at least 22 years of age with at least 3 years of work experience

## Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH)

2 weeks, 80 hours

750 Euro plus 180 Euro examination fee

## Name of certification

Assistant Foreman Welding DVS 1157 (DVS = German Welding Association)

## Level of certification

National

## Sources

Elbcampus, Assistant Foreman Welding Basics Course (Schweißwerkmeister Teil 0)

<http://www.elbcampus.de/weiterbildung/schweisstechnik/>

# Assistant Foreman TIG/MIG Steel Welding

## Description of content

This course prepares for the Assistant Foreman TIG Welding exam.

- Introduction to different welding techniques
- Drafts drawing and calculation
- Construction and design
- Electrical engineering
- Material technology and processing
- Quality controlling
- Technical mechanics
- Chemistry
- Supervising welding

## Technologies

- Different welding techniques and applications of equipments
- Oxy-acetylene welding
- Arc welding
- Hot gas welding
- Inert gas welding
- MIG welding
- TIG welding
- Joining elements
- Thermal cutting
- Soldering and brazing
- Processing of different materials

## Target group

Industrial workers at least 22 years of age with at least 3 years of work experience

## Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH) 7 weeks, 280 hours  
5.360 Euro

## Name of certification

Assistant Foreman TIG/MIG Steel Welding DVS 1157 (DVS = German Welding Association)

## Level of certification

National

## Sources

Elbcampus, Assistant Foreman TIG/MIG Steel Welding (Schweißwerkmeister MAG/WIG Stahl)  
<http://www.elbcampus.de/weiterbildung/schweisstechnik/>

## Assistant Foreman Gas Metal Arc Welding

### Description of content

This course prepares for the Assistant Foreman Gas Metal Arc Welding exam.

- Introduction to different welding techniques and equipment
- Drafts drawing and calculation
- Construction and design
- Electrical engineering
- Material technology of steels, steel production and construction steels
- Qualities and structures of metals and alloys
- Quality controlling
- Technical mechanics
- Chemistry
- Supervising welding

### Technologies

- Different welding techniques and applications of equipments
- Oxy-acetylene welding
- Arc welding
- Hot gas welding
- Inert gas welding
- MIG welding
- TIG welding
- Joining elements
- Thermal cutting
- Soldering and brazing
- Processing of different materials
- Non-destructive material testing

### Target group

Industrial workers at least 22 years of age with at least 3 years of work experience

### Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord GmbH) 7 weeks, 280 hours, 5.240 Eur

### Name of certification

Assistant Foreman Gas Metal Arc Welding DVS 1157 (DVS = German Welding Association)

**Level of certification:** National

### Sources

Elbcampus, Assistant Foreman Gas Metal Arc Welding (Schweißwerkmeister Gas- und Lichtbogenhandschweißen), <http://www.elbcampus.de/weiterbildung/schweisstechnik/>

## Plastic Welder

### Description of content

Preparation of the plastic welder exam:

- Plastic welding
- Knowledge about the processing of plastics and additional materials
- Handling of welding equipment

### Technologies

- Hot gas welding
- Welding of PP, PVDF und PE-HD

### Target group

Craftsmen, industrial workers

### Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH)

5 days, 40 hours

485 Euro plus examination fee

### Name of certification

DVS 2212 Plastic-Welder Exam (DVS = German Welding Association)

### Level of certification

National

### Sources

Elbcampus, Plastic Welder (Kunststoffschweißerprüfung)

<http://www.elbcampus.de/weiterbildung/kunststofftechnik/>

## Extrusion Welder

### Description of content

Preparation of the extrusion welder exam:

- Knowledge about the processing of plastics and additional materials
- Handling of welding devices
- Different welding methods

### Technologies

- Hot gas welding
- Extrusion welding of PE-HD, PP-H, PP-B and PP-R plates
- V-, DV-, HV-, und DHV-seams
- Controll of welding parameters, examination in pulling and bending procedures

### Target group

Craftsmen with several years of experience

### Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH)

5 days, 40 hours

960 Euro plus examination fee

### Name of certification

Certified DVS 2212-Extrusionwelder (DVS = German Welding Association)

### Level of certification

National

### Sources

Elbcampus, Extrusion Welder (Extrusionsschweißerprüfung)

<http://www.elbcampus.de/weiterbildung/kunststofftechnik/>

## Plastic welding for Sewers

### Description of content

- Basic knowledge about plastics
- Basic knowledge about waste water
- Welding and laying of PE-pipes
- Production of sample pieces
- Inspection and repair of pipes
- Inspection of welded seams

### Technologies

- Welding of plastics
- Welding of pipes

### Target group

Craftsmen, master craftsmen

### Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH)

5 days, 40 hours

490 Euro plus examination fee

### Name of certification

Certified DVS Welder (DVS = German Welding Association)

### Level of certification

National

### Source

Hamburg Chamber of Skilled Crafts and Small Businesses

Plastic welding for Sewers (Kunststoffschweißen im Abwasser- und Kanalbau)

<http://www.hwk-hamburg.de/kurse/kunststofftechnik/>



## Welding and Laying of PE-Pipes for Gas- and Waterlines

### Description of content

Preparation of exam:

- Knowledge about norms, guidelines and welding methods
- Production of sample-pieces

### Technologies

- Different pipe-welding methods

### Target group

Craftsmen, industrial workers

### Modalities

Offered by SLV-Nord (Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH)

1 day, 10 hours

395 Euro

### Name of certification

Certified PE Welder for Gas and Water Pipes DVGW GW 330 (DVGW = German Gas and Water Association)

### Level of certification

National

### Sources

Elbcampus, Welding and Laying of PE-pipes for Gas- and Waterlines (Schweißen und Verlegen von PE-Leitungen für Gas- und Wasserleitungen)

<http://www.elbcampus.de/weiterbildung/kunststofftechnik/>