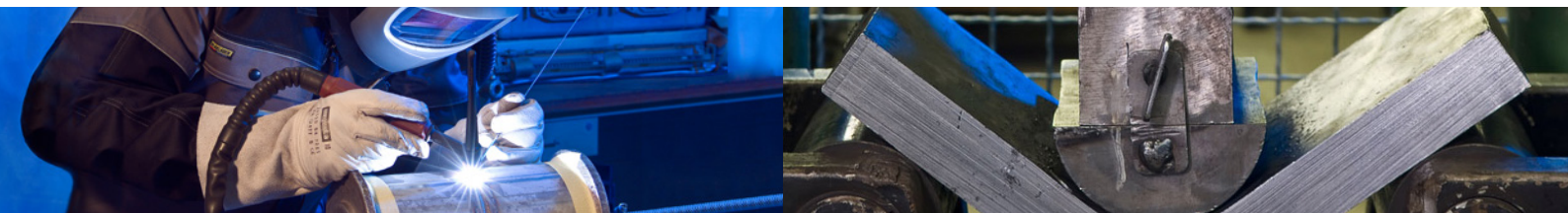


*joined for welding*

**GSI SLV**

Gesellschaft für Schweißtechnik  
International mbH



**EDUCATIONAL  
PROGRAMME**  
Training Courses  
Seminars  
2015



# PREFACE

## Educational Programme 2015

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### Update Your Knowledge about Joining!

Joining is the Key Technology to fabricate all kinds of metal products. But every year new standards are produced by ISO, EN, DIN, DVS, API, AWS, ASME and various other standardization bodies. When modern industry changes rapidly their products, the applied materials, the processes, and the testing methods they need to apply also the newest standards.

- Do you really know all the current standards and norms and technical possibilities in the field of joining?
- Is your personnel sufficiently trained according to the requirements of your customers?

GSI again offers in 2015 updated courses in the fields of welding and testing. In these courses distance learning, blended learning, virtual training and virtual reality are integrated modern parts of our education and training.

This Educational Programme 2015 is an extract in English language from our more than 200 courses and seminars which we offer annually in our German training institutes and welding schools. Locally also courses are offered in our branches in Poland, Czech Republic, Turkey, Egypt, Estonia, and China.

Also in-house tailor-made courses inside your company can be offered by sending our experienced staff directly to your facilities for training on your products and with your equipment and using your processes.

Additionally you can apply for Distance Learning Courses for becoming International Welding Engineer IWE, International Welding Technologist IWT, International Welding Specialist IWS, or International Welding Inspector IWIP.

Distance learning courses are available now in the following languages: English, German, Dutch, Romanian, Italian, Russian, Turkish, French.

Please also ask for our

- Complete catalogue in German language
- Our NDT Training catalogue
- Catalogue on Practical Training.

You can directly call for further information and support: [ahrens@gsi-slv.de](mailto:ahrens@gsi-slv.de)



Dr.-Ing. Klaus Middeldorf  
Managing Director GSI – Gesellschaft  
für Schweißtechnik International mbH  
[middeldorf@gsi-slv.de](mailto:middeldorf@gsi-slv.de)



Christian Ahrens  
Managing Director Foreign Business

Duisburg, December 2015



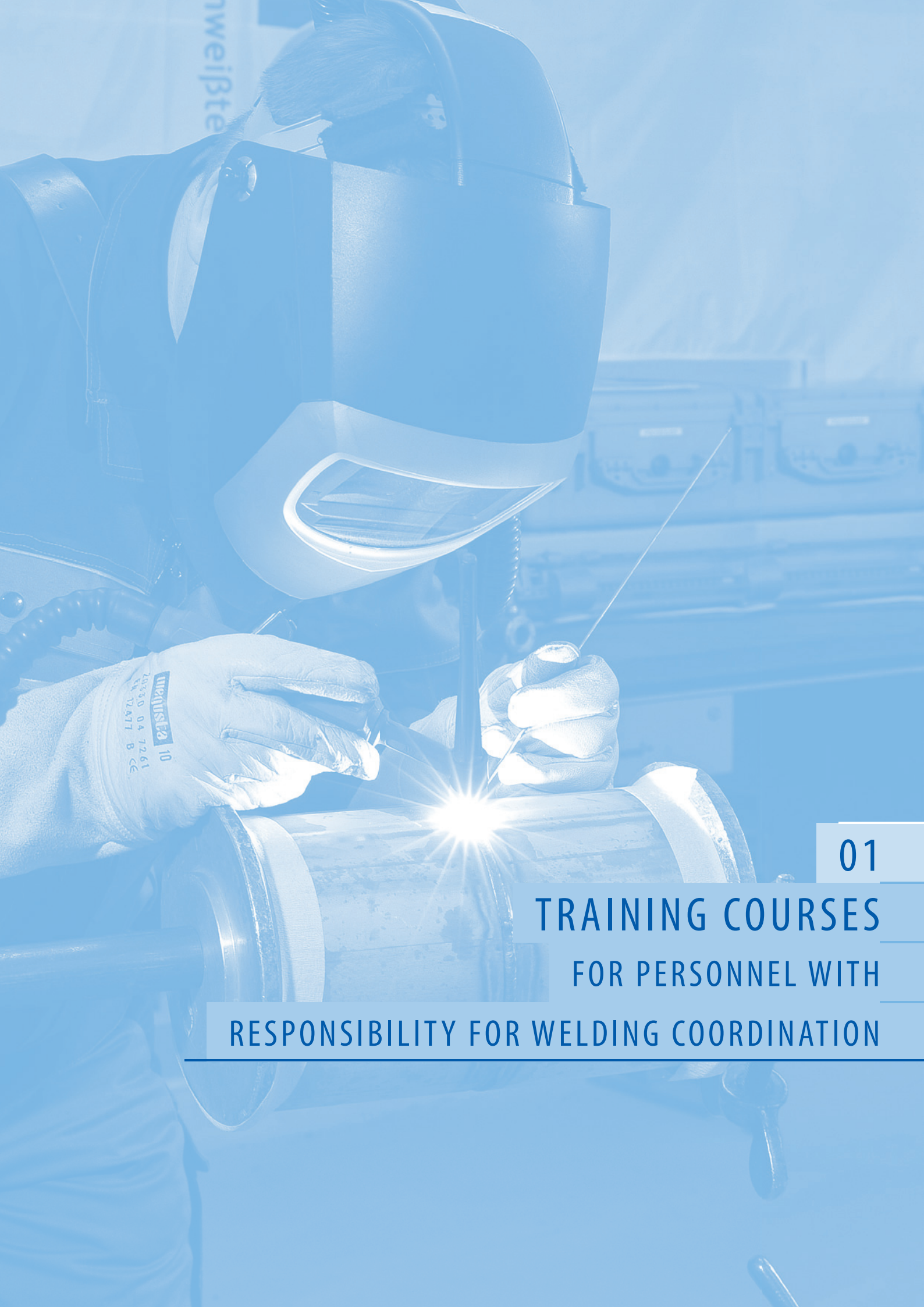
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01

## TRAINING COURSES

FOR PERSONNEL WITH

RESPONSIBILITY FOR WELDING COORDINATION

## TRAINING COURSES

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All courses are free of VAT and valid until 2015-12-31, but subject to alterations.





## 1.1 IIW-Training Courses for Personnel with Responsibility for Welding Coordination



01

Training Courses

### Contents

Welding processes have been used to a large extent to the manufacture of industrial products while having a key position in the production in many companies. There is a wide range of welded structures from pressure vessels up to housecraft and agricultural machines including cranes, bridges and other components. Welding has a decisive influence on the manufacturing costs and the quality of the products. Therefore, it is important to perform the welding works to be carried out as effectively as possible and to provide adequate supervision of all connected activities. Well trained specialists can assure the product quality of welded structures through the well-aimed selection of adequate welding and testing equipment and an economic welding technology. National and international standards and guidelines determine the tasks and responsibilities in an internationally harmonised system of education, examination and certification. Due to this, conformity of the welded products and education services for the European and international market can be assured. The manufacturers of welded products must have competent welding coordinators according to EN ISO 14731 for the purpose of the welding personnel receiving the necessary welding and working instructions and the whole scope of work being carefully executed and supervised.

Tasks and responsibilities of the welding coordinators have been set forth in EN ISO 14731. Welding coordinators depending on the type and/or complexity of manufacture can be assigned according to the groups stated in the following with the International Institute of Welding (IIW) having determined recommendations for the minimum requirements on welding coordinators:

- **Welding Coordinator with comprehensive technical knowledge:**  
**INTERNATIONAL WELDING ENGINEER (IWE)**  
Unlimited tasks and responsibilities
- **Welding Coordinator with special technical knowledge:**  
**INTERNATIONAL WELDING TECHNOLOGIST (IWT)**  
Tasks and responsibilities for a selected or limited field
- **Welding Coordinator with basic technical knowledge:**  
**INTERNATIONAL WELDING SPECIALIST (IWS)**  
Tasks and responsibilities for a limited field of simple structures

# 1 TRAINING COURSES



## 1.2 IIW-Training Course International Welding Engineer acc. to Guideline IAB-252r2-14

### The Welding Engineer – Guarantor of Quality Assurance in Welding

01

Engineers with comprehensive knowledge in welding are necessary from design to manufacture, in order to fulfil the extensive tasks when designing bridges, pressure vessels, steam boilers, steel structures, vehicles for use in water, air, space and on rail as well as the construction of machines, installations and pipelines.

**Required Qualification** Graduate, and B.Eng. or M.Eng. at a university, technical school, university of applied sciences or technical college on a technical subject or graduate as B.Sc. and M.Sc. on a technical subject. Participation in a training course is also possible for university graduates without professional experience. It is, however recommendable to have obtained at least one year of experience in a job.

**Training Programme** The training course for welding engineers (441 teaching hours) is divided into 3 parts and 4 modules:

**Parts 1 and 3** *Theoretical Education*  
The IWE-course Part 1 can be taken as a distance learning course. The IWE course Part 3 can also be taken as a blended learning course (distance learning combined with classroom learning).

**Module 1** *Welding Processes and Equipment (90 teaching hours)*  
Autogenous technology, cutting, power sources, arc welding, shielded arc welding, submerged arc welding, resistance welding, special welding processes, spraying, soldering and brazing, joining, automation

**Module 2** *Materials and their behaviour during Welding (115 teaching hours)*  
Steel production, alloys, thermal treatment, formation of cracks, corrosion, wear, non-iron metals, metallography

**Module 3** *Construction and Design (62 teaching hours)*  
Strength of materials, calculation of weld seams, design, construction, behaviour of welded joints exerted to different loads and fracture mechanics

**Module 4** *Fabrication, applications engineering (114 teaching hours)*  
Quality assurance, welders examination, welding procedure specification, working safety, internal stresses and distortion, workshop equipment, non-destructive testing, economic efficiency, repair welding, case studies

**Part 2** *Fundamental practical skills (60 teaching hours)*  
Gas welding, arc welding, gas-shielded metal arc welding, tungsten inert gas welding, presentation of other welding processes

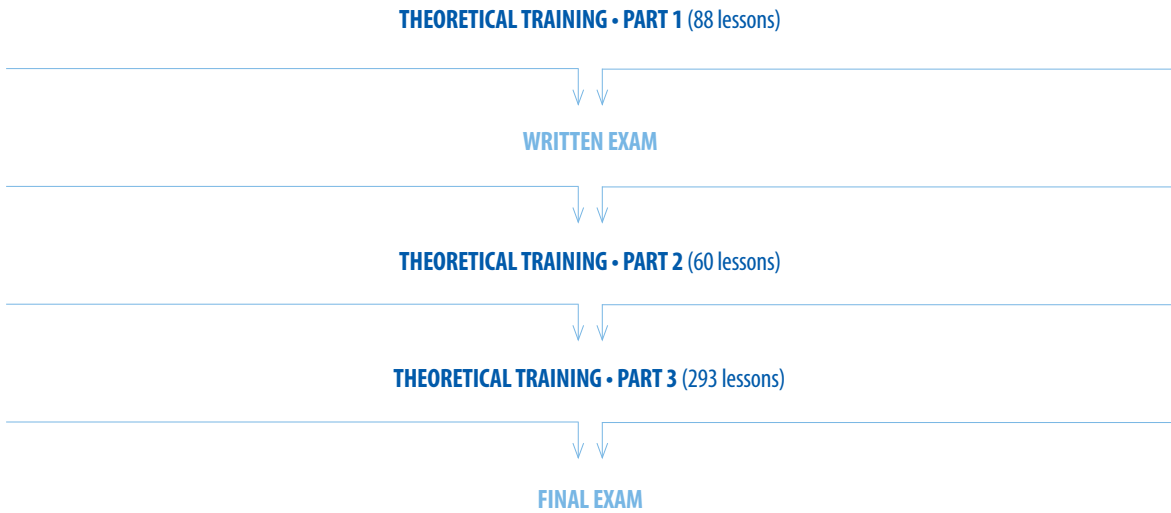
**Exams** Written and Oral (12 hours)

**Completion of the course** After having passed the exam, the participant will receive a diploma **International Welding Engineer**.

**Duration** 438 hours

**Fee** 14.370,00 € (incl. exams)





VENUE	DATE	CONTACT	PHONE	EMAIL
Duisburg	20.04.2015 - 12.11.2015	Frank Moll	+49 203 3781-252	moll@slv-duisburg.de

Date gives the starting date of Practical training Part 2. Previously Part 1 of the course and the intermediate examination have to be finished. It is recommended to start the distance learning Part 3 not later than 01 March 2015.

# 1 TRAINING COURSES



## 1.3 IIW-Training Course International Welding Technologist acc. to Guideline IAB-252r2-14

The Welding Technologist – Expert in many fields of Welding

01

Welding technologists are required in the same industrial sectors as welding engineers – from design to manufacture. In medium- and small-sized companies they are often the responsible welding coordinators, in larger companies they are often the deputies of the welding engineers.

**Required Qualification** Examination as a technician at an approved technical school or qualification of participation in the course of welding engineer.

**Training Programme** The training course for welding technologists (362 teaching hours) is divided into 3 parts and 4 modules:

**Parts 1 and 3** *Theoretical Education*

The welding technologist course Part 1 can also be taken as a distance learning course. The welding technologist course Part 3 can also be taken as a blended learning course (distance learning combined with classroom learning).

**Module 1** *Welding Processes and Equipment (81 teaching hours)*

Autogenous technology, cutting, power sources, arc welding, shielded arc welding, submerged arc welding, resistance welding, special welding processes, spraying, soldering and brazing, joining, automation

**Module 2** *Materials and their behaviour during Welding (96 teaching hours)*

Steel production, alloys, thermal treatment, formation of cracks, corrosion, wear, non-iron metals, metallography

**Module 3** *Construction and Design (44 teaching hours)*

Strength of materials, calculation of weld seams, design, construction, behaviour of welded joints exerted to different loads and fracture mechanics

**Module 4** *Fabrication, applications engineering (81 teaching hours)*

Quality assurance, welders examination, procedure specification, working safety, internal stresses and distortion, workshop equipment, non-destructive testing, economic efficiency, repair welding, case studies

**Part 2** *Fundamental practical skills (60 teaching hours)*

Gas welding, arc welding, gas-shielded metal arc welding, tungsten inert gas welding, presentation of other welding processes

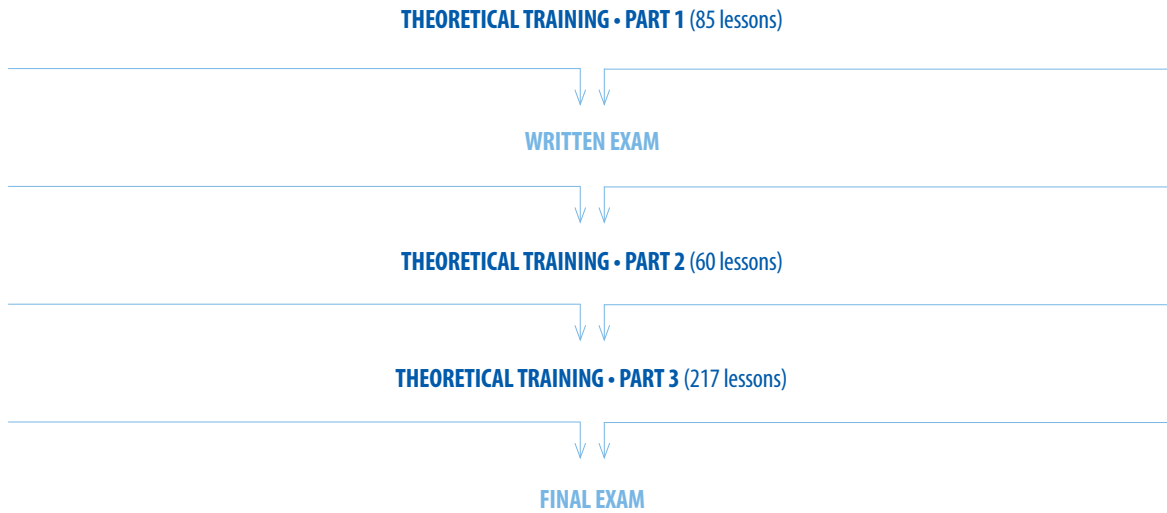
**Exams** Written and Oral (12 hours)

**Completion of the course** After having passed the exam, the participant will receive a diploma International Welding Technologist.

**Duration** 358 hours

**Fee** 11.070,00 € (incl. exams)





VENUE	DATE	CONTACT	PHONE	EMAIL
Duisburg	20.04.2015 - 12.11.2015	Frank Moll	+49 203 3781-252	moll@slv-duisburg.de

Date gives the starting date of Practical training Part 2. Previously Part 1 of the course and the intermediate examination have to be finished. It is recommended to start the distance learning Part 3 not later than 01 March 2015.

# 1 TRAINING COURSES



## 1.4 IIW Training Course International Welding Specialist acc. to Guideline IAB-252r2-14

The Welding Specialist – the Practice-oriented Welding Coordinator

01

In small- and medium sized companies welding specialists may function as the responsible welding coordinators. In large companies they are the link between the welding engineer and the high quality execution of the welding work.

**Required Qualification** Part 1: Master in a metal processing trade, industrial master, technician with an approved diploma or graduated engineer.

**Training Programme** The training course of the welding specialist (242 teaching hours) is divided into 3 parts and 4 modules:

**Module 1** Welding Processes and Equipment (48 teaching hours)  
Autogenous technology, cutting, power sources, arc welding, shielded arc welding, submerged arc welding, resistance welding, special welding processes, spraying, soldering and brazing, joining, automation

**Module 2** Materials and their behaviour during Welding (56 teaching hours)  
Steel production, alloys, thermal treatment, formation of cracks, corrosion, wear, non-iron metals, metallography

**Module 3** Construction and Design (24 teaching hours)  
Basics on strength of materials and the calculation of weld seams, design, construction, behaviour of welded joints exerted to different loads

**Module 4** Fabrication, applications engineering (54 teaching hours)  
Quality assurance, welders examination, procedure specification, working safety, internal stresses and distortion, workshop equipment, non-destructive testing, economic efficiency, repair welding, case studies

**Part 2** Fundamental practical skills (60 teaching hours)  
Gas welding, arc welding, tungsten inert gas welding, presentation of other welding processes

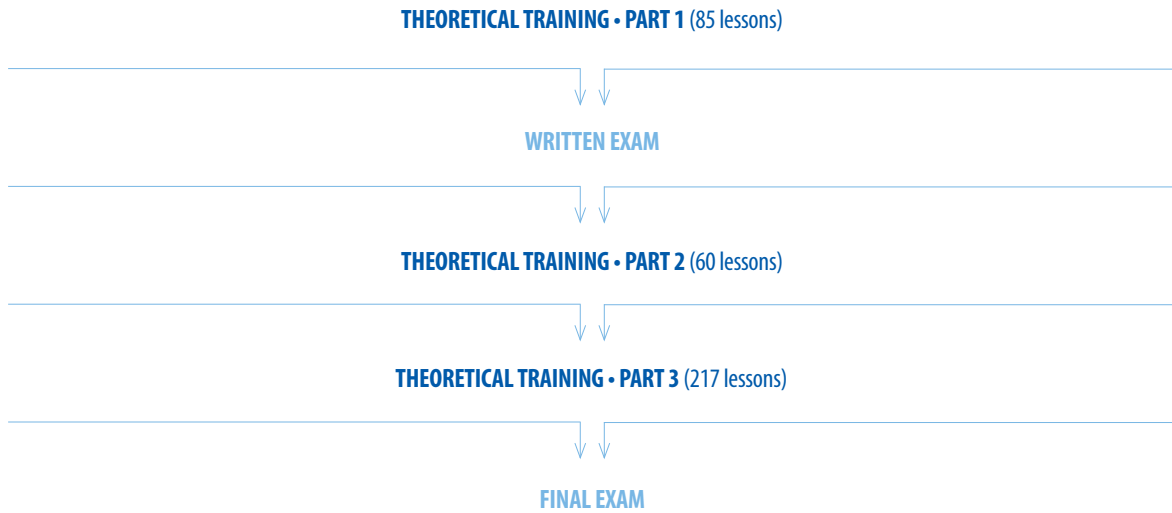
**Exams** Written and Oral (5,5 hours)

**Completion of the course** After having passed the exam the participant will receive a diploma International Welding Specialist

**Duration** 237 hours

**Fee** upon request





VENUE	DATE	CONTACT	PHONE	EMAIL
Duisburg	20.04.2015 - 12.11.2015	Frank Moll	+49 203 3781-252	moll@slv-duisburg.de

Date gives the starting date of Practical training Part 2. Previously Part 1 of the course and the intermediate examination have to be finished. It is recommended to start the distance learning Part 3 not later than 01 March 2015.

# 1 TRAINING COURSES



## 1.5 IIW Training Course International Welding Inspection Personnel acc. to Guideline IAB-041r3-08

01

Education of international welding inspection personnel joins the fields of welding and inspection engineering. The international welding inspection personnel offers the industry a coordinator/supervisor having double competence by fulfilling the demands on welding engineering and on inspection.

**Required Qualification** IWI-C: Direct start into the modules Welding Inspection possible for welding engineers or welding technologists (IWE/ EWE or IWT/EWT diploma). IWI-S: Direct start into modules Welding Inspection possible for welding specialist (IWS/EWS diploma) or welding practitioner (SWM diploma). If you are not full filling the required qualification, the necessary prior knowledge in the field of welding technology can be learned by selfstudy with a program (e-Learning).

**Training Programme** IWI-C (97 teaching hours), IWI-S (63 teaching hours)  
General Introduction to Welding Inspection and Materials Testing:  
Mechanical tests on weld seams, determination of the composition as well as metallographic examination

Weld Seam Imperfections  
Types of weld seam defects, evaluation of weld seam

Testing Methods  
Overview on testing methods, visual testing, penetration testing, magnetic particle testing, radiographic testing, ultrasonic testing, other non-destructive testing methods, critical evaluation of the selection of non-destructive testing methods, other methods.

Quality Assurance  
Execution of Quality Assurance  
Practical Training

**Note** We like to elaborate a special offer for alternative In-house Training in your company. In such a training we can focus on your products.

**Exams** Written and Oral (IWI-C 5,5 hours, IWI-S 5 hours)

**Completion of the course** After having passed the exam the participant will receive a diploma International Welding Inspection Personnel. In coordination with the authorised certification boards the precondition of a certification according to EN ISO 9712 (ISO 2712) can be given by partially acknowledging individual training modules of the IWIP and a certain additional training.

**Duration** 63 hours (IWI-S)  
97 hours (IWI-C)

**Fee** 4.085,00 € IWI-C (Module Welding Inspection incl. exam)  
3.420,00 € IWI-S (Module Welding Inspection incl. exam)

VENUE	DATE	CONTACT	PHONE	EMAIL
Duisburg	09.03.2015 - 27.03.2015	Helmut Schmeink	+49 203 3781-155	schmeink@slv-duisburg.de
Duisburg	16.11.2015 - 04.12.2015	Helmut Schmeink	+49 203 3781-155	schmeink@slv-duisburg.de

Training Courses





# 1 TRAINING COURSES

## 1.6 Distance Learning Courses – Blended Learning – eLearning



The following courses and parts of courses, respectively will also be offered as distance learning courses:

- Welding Engineer Part 1
- Welding Technologist Part 1
- Welding of Stainless Steel
- Cost Aspects in Welding Production

Furthermore, the following courses and parts of courses, respectively will also be offered as blended learning courses (approx. 50 % as distance learning and 50 % as classroom learning):

- Welding Engineer Part 3
- Welding Technologist Part 3

eLearning means that the participants save time by not travelling to the SLV over several weeks and receiving training there at fixed hours. For participants working on a job there are the following advantages: no travelling time and fares, no time-related stress, possibly not giving away your days off, no absence from the company you are working with. For participants having long distances to travel there won't be any costs for accommodation and expenses. You can study whenever you want, wherever you want (in most of the cases at home) and as long and quickly as you want. Time planning is free, no binding to time schedules of lectures held. Stopping for the weekend or a short holiday is always possible without interruption of the course. Classroom lessons serve to extend your knowledge and enhance the personal contact to the lecturer and the other students. In laboratory lessons and case studies the theoretical knowledge is transferred into practice. In addition, an exchange of information will be taken via email, the forum or by phone. Of course, the participant of the distance learning course must have a multi-media computer with access to the Internet.

01

Training Courses

VENUE	DATE	CONTACT	PHONE	EMAIL
Duisburg	anytime	Frank Moll	+49 203 3781-252	moll@gsi-elearning.de

# 1 TRAINING COURSES



## 1.7 European Practitioner for Resistance Welding acc. to Guideline EWF 621

01

**Participants** Operators of resistance welding equipment

**Contents** This guideline for the European education and training of Welding Practitioners for resistance welding has been prepared, evaluated and formulated by members of the Technical Committee of EWF. It is designed to provide the basic core education in resistance welding as required by resistance welding personnel who is active in job function in accordance to EN ISO 14554-1 (chapter 6.3), technical sales ect. The education and training covers the elementary knowledge that is needed in a wide range of the job functions in resistance welding e.g. weld setter, instructor, inspector, supervisor, foreman, constructor and technical sales personnel. European Resistance Welding Practitioner may also be a relevant qualification for people whose job is to assist responsible Resistance Welding Coordinators in accordance to EN ISO 14554-1 (chapter 6.4) in manufacturing companies.

**Note** Personal Protective Equipment (PPE. glasses, gloves, working shoes) is mandatory.

**Duration** 48 hours

**Fee** 4.195,00 €

VENUE	DATE	CONTACT	PHONE	EMAIL
Duisburg	on request	Stefan Schreiber	+49 203 3781-224	schreibe@slv-duisburg.de



# 1 TRAINING COURSES

## 1.8 Course ECWRV Auditor Qualification



01

Training Courses

**Participants** ECWRV Auditor Qualification

**Contents** Content of this training is the expansion of knowledge of welding auditors in the field of railway vehicles.

Focus:

- Tasks and responsibilities of the EC WRV
- Basics of the EN ISO 3834 quality requirements for fusion welding of metallic materials
- Interpretation of standards EN 15085 Railway applications – Welding of Railway Vehicles and Components
- Guideline ECWRV – certification system Online Register Design, calculation and fatigue strength of welded joints
- Design, calculation and fatigue strength of welded joints
- Welding Procedure Specification (WPS) and Welding Procedure Qualification Record (WPQR)
- Requirements and qualifications of welding procedures for metallic materials acc. to EN ISO 15607 to EN ISO 15614pp
- Qualification testing of welders and welding operators acc. to EN ISO 9606-1, EN ISO 9606-2 and EN ISO 14732
- Chances and limits of non-destructive testing NDT personnel acc. to EN ISO 9712
- Presentation of new welding processes
- Special contract requirements of manufacturers System Online Register – exercises and practice
- Components
- Guideline ECWRV – certification system Online Register

**Note** Prerequisites for participating in the examination: qualification as EWF-welding engineer, EWF-welding technologist, welding coordinator level A acc. to EN 15085-2.

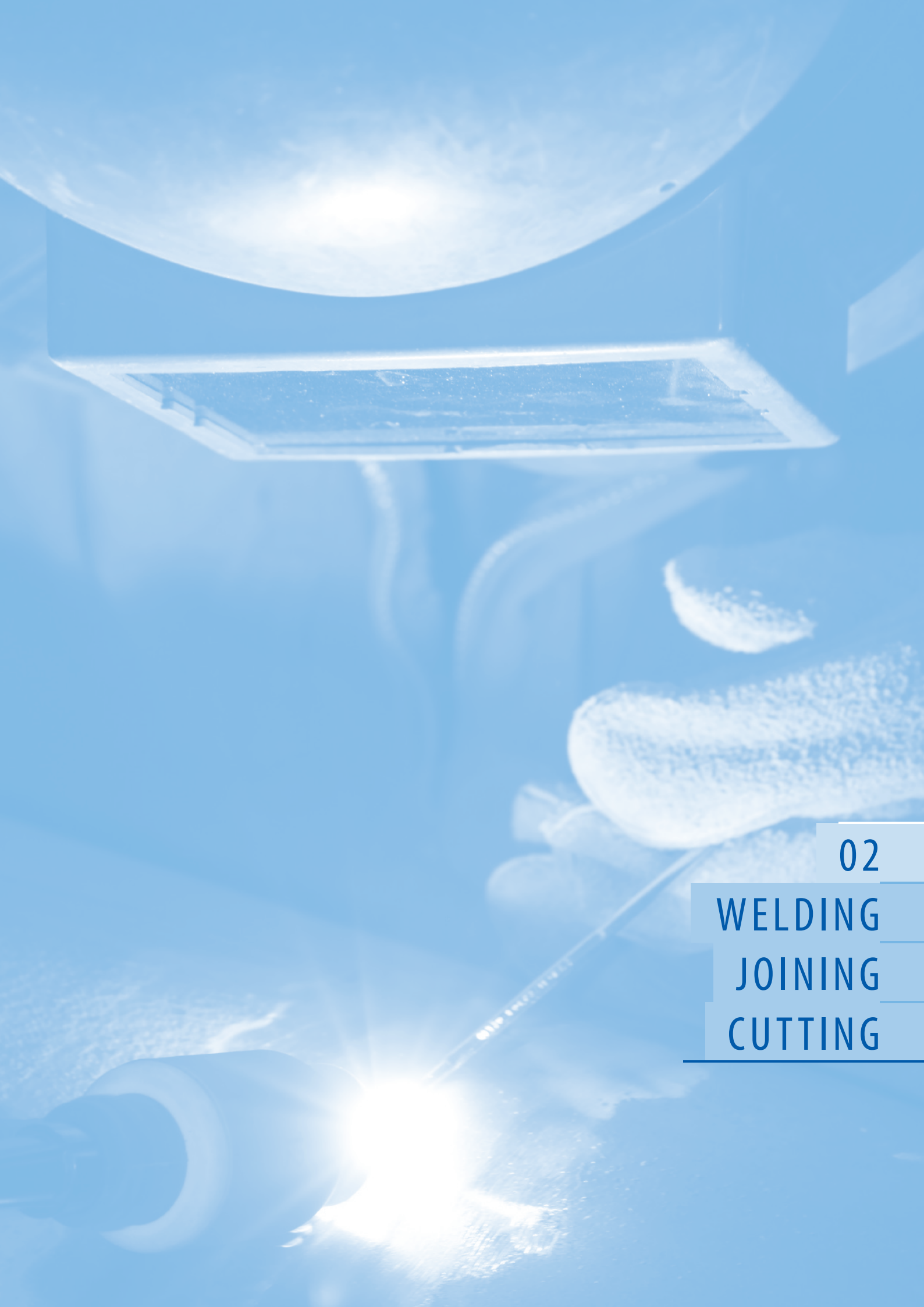
**Duration** 4 days

**Duration** 32 hours

**Fee** 1.700,00 € (incl. Examination and Certification)

VENUE	DATE	CONTACT	PHONE	EMAIL
Dresden	06.10.2015 - 09.10.2015	Christiane Brogsitter	+49 351 88342-716	brogsitter@slv-halle.de





02

WELDING

JOINING

CUTTING

## WELDING • JOINING • CUTTING

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All courses are free of VAT and valid until 2015-12-31, but subject to alterations.



### 2.1 Education of Operators for the Submerged Arc Welding Process and Preparation for a Qualification according to EN ISO 14732

Theory and Practice



**Participants** Qualified welders, operators of submerged arc welding units, welding coordinators.

**Contents** Damages due to incorrect welding are much higher than the cost for the education and training of welders, welding coordinators and operators of fully mechanised welding processes. In this course, theoretical and practical knowledge on submerged-arc welding are taught. The course is concluded by a theoretical exam according to EN ISO 14732. Practical examination has to be made in the welding manufacturing regarding to the rules for qualification to EN ISO 14732. The course, however can be attended without doing the exam. It is directed to welders, foremen, masters but also to welding coordinators who want to acquire knowledge on the process.

**Note** Protective clothing are included in the fee.

**Duration** 3 days

**Fee** 2.390,00 €

VENUE	DATE	CONTACT	PHONE	EMAIL
Duisburg	on request	Alexander Maier	+49 203 3781-107	maier@slv-duisburg.de

02



### 2.2 Robotic Gas Metal Arc Welding: No Problem?

02

**Participants** Operators of welding robots, welding coordinators, fitters, production planners

**Contents** The state-of-the-art performance of the robotic systems used in welding processes together with the relevant power sources today enables high-quality welding performance as well as seam qualities. The technical and economic advantages can, however only be used to their optimum if the unit operator is aware of the basics of programming and of the special welding parameters in robotic gas metal arc welding. The seminar teaches the theoretical and practical background for recognising the influences of welding errors in running production and for being able to minimise them based on the resulting weld seam appearance. The course has been designed in such a way that the theoretically taught knowledge and possibilities of errors are intensified by practical training and demonstrations. The objective of this seminar is to offer the interested participant important impulses on improving and optimising the welding quality and efficiency when welding using a robot. Minor sample parts can be processed upon prior agreement during the workshop accompanying the seminar. The seminar is predominantly addressed towards operators of robotic welding units but also to welding coordinators and designers to obtain important information on achieving the optimised welding process.

**Note** Please bring a welding helmet and protective clothing with you.

**Duration** 3 days

**Fee** 3.060,00 €

VENUE	DATE	CONTACT	PHONE	EMAIL
Duisburg	on request	Franz Gesthuysen	+49 203 3781-271	gesthuysen@slv-duisburg.de





03

## ADHESIVE BONDING

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## ADHESIVE BONDING

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All courses are free of VAT and valid until 2015-12-31, but subject to alterations.



## 3 ADHESIVE BONDING

### 3.1 EWF Training Course European Adhesive Bonder (EAB), acc. to Guideline EWF 515-01



03

**Participants** Staff from manufacture and assembly as well as staff from the dispatching department entrusted with adhesive bonding work

**Contents** In operational practice sometimes problems occur during the manufacture of bonded joints. Marginal conditions that can be neglected in conventional joining processes will be of essential importance then. If those conditions are not observed, poor bonded joints result that will be either claimed by the customer, require re-work or will be rejected. The participants will be trained to skilfully execute bonding work according to the instructions given. The knowledge learnt in the theoretical lessons will be applied and experienced in the practical training. Intensive interlinking of theory and practice will lead to understand the connection of bonding compared to the traditional joining techniques, thus helping to avoid faults in production. The education is concluded by a practical and theoretical exam in the presence of an independent examination board of the DVS. After the passed exam, the participants will receive a diploma valid throughout Europe, which has been approved by the EWS.

**Duration** 5 days

**Duration** 40 hours

**Fee** *Seminar:* 1.250,00 €  
*Exam:* 205,00 €

VENUE	DATE	CONTACT	PHONE	EMAIL
Übach-Palenberg	upon request	Andrea Janke	+49 2451 971-212	anmeldung@tc-kleben.de

Adhesive Bonding

### 3 ADHESIVE BONDING



#### 3.2 EWF Training Course European Adhesive Specialist (EAS), acc. to Guideline EWF 516-01

03

**Participants** Supervisors/Coordinators from the fields of construction, development, production, planning, quality assurance, laboratory and dispatch

**Contents** The violent development in chemistry and materials engineering has enabled a variety of product and process innovations through the application of bonding. For making use of the potential and for optimization of production sequences the knowledge of elementary correlations is indispensable. Within the course of this training these correlations will be taught. Theoretical knowledge will be supplemented by practical work in the laboratory, in order to "handle" the knowledge obtained. Thus, the participants will receive a close look into the world of bonding, which, after having concluded the education brings them into the position of being responsible for the supervision/ coordination, designing adequate to bonding, performing a qualified selection of the bonding material and systematically recognizing the failures in the process chain of bonding work in manufacture. The education is concluded by a practical and theoretical exam in the presence of an independent examination board of the DVS. After the passed exam the participants will receive a diploma valid throughout Europe, approved by the EWS.

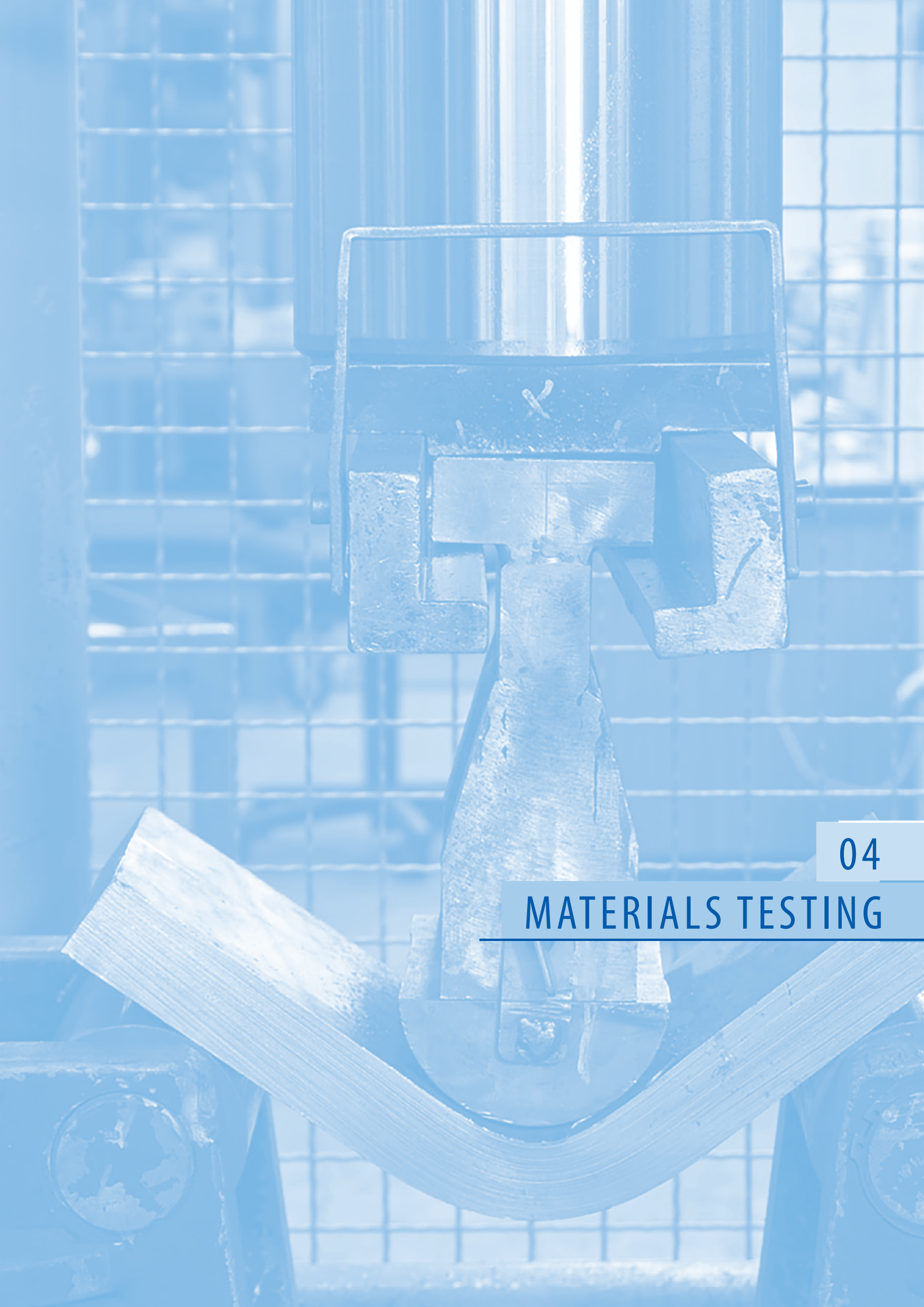
**Duration** 3 x 5 days

**Duration** 120 hours

**Fee** *Seminar:* 4.050,00 € per Week  
*Exam:* 395,00 €

VENUE	DATE	CONTACT	PHONE	EMAIL
Übach-Palenberg	15.06.2015 - 03.07.2015	Andrea Janke	+49 2451 971-212	anmeldung@tc-kleben.de





04

## MATERIALS TESTING

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## MATERIALS TESTING

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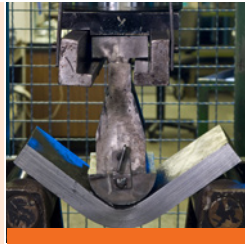
For the certification of the EN ISO 9712 courses within the GSI and the affiliated SLVs, a cooperation agreement has been concluded with the TÜV Nord, thus offering the opportunity to receive a certificate issued by the TÜV Nord. These certificates are widely accepted by trade and industry on an international scale in particular in the field of the pressure equipment directive. Through this agreement the separation of education and examination/certification is consistently taken into account with the contents of the courses and examinations optimally being coordinated by the close cooperation of the two partners. Furthermore, we offer you certifications complying with the system of the ASNT American Society for Non-Destructive Testing which is demanded essentially in America and out of Europe, respectively. All courses are free of VAT and valid until 2014-12-31 but subject to alterations. The examination fees will be calculated on behalf the TÜV Nord and do not include VAT (19 % at present).





## 4 MATERIALS TESTING

### 4.1 Training Course Ultrasonic Testing (UT) comprising Specialised Practical Training incl. Certification acc. to EN ISO 9712



**Participants** Inspection personnel

**Contents** For the evaluation of internal imperfections on the most various components, ultrasonic testing is a proven method of non-destructive testing. The physical and technical fundamentals such as the generation of sound and its propagation, built-up of probes and ultrasonic devices, adjusting of test devices will be treated in lectures and practical training. Emphasis will further be laid on the verification of the testing systems and mastering of regulations and standards. The participant will obtain the skills for testing components made of steel and other materials. Based on test instructions, the measurement of wall thickness, testing of sheets, measuring of the speed of sound, detecting of imperfections as well as simple evaluations of the results will be performed. For obtaining the transfer into practice, the specialised practical training UT 1 is recommended. An examination according to EN ISO 9712 considering the pressure equipment directive 97/23/EG will be performed. The theoretical content of the course is provided on a CD. Based on the theoretical knowledge the participant attends a practical course with an endurance of 4 days in the classroom (Computer based Training CBT)

**Note** An industrial experience of 7 days has to be stated by the employer to fulfill the preconditions for the examination. Knowledge corresponding to that of a skilled worker in a technical profession, if possible in metal processing, is desirable. In case of proving the required experience on the field of ultrasonic testing and the physical aptitude (eye test), the certification of the participant can be issued.

**Duration** 40 hours

**Fee** *Course UT 1:* 1.750,00 €  
*Examination/Certification:* 675,00 €

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Duisburg	09.03.2015 - 12.03.2015	Helmut Schmeink	+49 203 3781-155	<a href="mailto:schmeink@slv-duisburg.de">schmeink@slv-duisburg.de</a>
Duisburg	24.11.2015 - 27.11.2015	Helmut Schmeink	+49 203 3781-155	<a href="mailto:schmeink@slv-duisburg.de">schmeink@slv-duisburg.de</a>

04

Materials Testing

## 4 MATERIALS TESTING



### 4.2 Training Course Penetrant Testing (PT) incl. Certification acc. to EN ISO 9712

04

**Participants** Inspection personnel who have graduated from technical college or university, or have completed at least two years of engineering or science study at college or university

**Contents** For detecting surface imperfections (cracks, pores) on components such as weld seams, cast parts, ceramics, penetration testing has proven to be a simple, cost efficient and highly sensible test method. During the course, the contents of levels 1 and 2 will be taught. The physical-chemical and technical fundamentals will be presented in lectures and practical training. At the same time, knowledge on the objects will be taught, in order to understand the properties typical of the process for performing tests on them. Emphasis of the training which to a large extent is practice oriented, will be laid on the use of testing techniques for various applications, the selection and verification of the applicable testing systems. Moreover, evaluation and recording of the indications as well as the development of test instructions will be taught. The examination will be carried out according to EN ISO 9712 considering the pressure equipment directive 97/23/EG.

**Note** An industrial experience of 10 days has to be stated by the employer to fulfill the preconditions for the examination. If the required experience on the field of penetration testing and the physical aptitude can be proven (eye test), certification of the participant according to EN ISO 9712 can be issued.

**Duration** 24 hours

**Fee** Course PT 1/2: 1.390,00 €  
Examination/Certification: 580,00 €

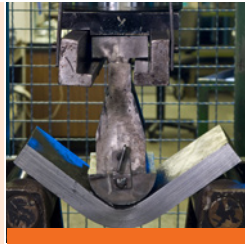
VENUE	DATE	CONTACT	PHONE	EMAIL
Duisburg	19.03.2015 - 20.03.2015	Helmut Schmeink	+49 203 3781-155	<a href="mailto:schmeink@slv-duisburg.de">schmeink@slv-duisburg.de</a>
Duisburg	20.11.2015 - 23.11.2015	Helmut Schmeink	+49 203 3781-155	<a href="mailto:schmeink@slv-duisburg.de">schmeink@slv-duisburg.de</a>





## 4 MATERIALS TESTING

### 4.3 Training Course Magnetic Particle Testing (MT) incl. Certification acc. to EN ISO 9712



**Participants** Inspection personnel who have graduated from technical college or university, or have completed at least two years of engineering or science study at college or university

**Contents** For detecting cracks and lack of fusion on the surface of components made of ferromagnetic materials such as welded components, cast and forged parts, magnetic particle testing has proven to be a simple, cost efficient and highly sensitive test method. During the course, the contents of levels 1 and 2 will be taught. The physical and technological fundamentals will be presented in lectures and practical training. At the same time, object will be explained, in order to understand how to test them. Emphasis of the training, which to a large extent is practice oriented, will be laid on the use of testing techniques for various geometries, the development of test instructions in connection with suitable magnetising techniques and devices. Further emphasis will be laid on the evaluation and recording of indications. Examination will be carried out according to EN ISO 9712 considering the pressure equipment directive 97/23/EG.

**Note** An industrial experience of 10 days has to be stated by the employer to fulfill the preconditions for the examination. Knowledge corresponding to that of a skilled worker in a technical profession, if possible in metal processing, is desirable. In case of proving the required experience on the field of radiographic testing and the physical aptitude (eye test), the certification of the participant can be issued.

**Duration** 24 hours

**Fee** Course MT 1/2: 1.390,00 €  
Examination/Certification: 640,00 €

VENUE	DATE	CONTACT	PHONE	EMAIL
Duisburg	17.03.2015 - 18.03.2015	Helmut Schmeink	+49 203 3781-155	schmeink@slv-duisburg.de
Duisburg	18.11.2015 - 19.11.2015	Helmut Schmeink	+49 203 3781-155	schmeink@slv-duisburg.de

04

Materials Testing

## 4 MATERIALS TESTING



### 4.4 Training Course Visual Testing (VT) incl. Certification acc. EN ISO 9712

04

- Participants** Inspection personnel who have graduated from technical college or university or have completed at least two years of engineering or science study at college or university.
- Contents** For detecting surface imperfections like cracks and pores and geometric deviations to the requirements of the standard EN ISO 5817. Discontinuities like incomplete penetration, undercut, root concavity are evaluated referring the quality levels of the standard. During the course, the levels 1 and 2 will be taught. The physical fundamentals will be presented in lectures and practical training. The application of technical equipment like mirrors endoscopes and borescopes is content of the course. Welded components with flaws are tested and the test report is elaborated.
- Note** The examination will be carried out according to EN ISO 9712 considering the pressure equipment directive 97/23/EG.
- Duration** 24 hours
- Fee** *Course VT 1/2:* 1.390,00 €  
*Examination/Certification:* 580,00 €

VENUE	DATE	CONTACT	PHONE	EMAIL
Duisburg	13.03.2015 - 16.03.2015	Helmut Schmeink	+49 203 3781-155	<a href="mailto:schmeink@slv-duisburg.de">schmeink@slv-duisburg.de</a>
Duisburg	16.11.2015 - 17.11.2015	Helmut Schmeink	+49 203 3781-155	<a href="mailto:schmeink@slv-duisburg.de">schmeink@slv-duisburg.de</a>





A microscopic image of a metal surface showing significant corrosion. The surface is covered with a dense layer of corrosion products, and a prominent crack runs vertically through the center. The image is overlaid with a blue semi-transparent layer containing text.

05

CORROSION PROTECTION  
SURFACE TECHNOLOGY

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## CORROSION PROTECTION • SURFACE TECHNOLOGY

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All courses are free of VAT and valid until 2015-12-31, but subject to alterations.



## 5.1 EWF Training Course European Thermal Spraying Specialist (ETSS) acc. to Guideline EWF 459r2-13



05

<b>Participants</b>	Supervising/coordinating personnel, foremen, executives in the field of thermal spraying
<b>Contents</b>	High-quality and economic thermal spraying requires a specialized technical knowledge. Thermal sprayed coatings are applied in many industrial and also high tech sectors. The requirements to the quality of the sprayed coatings are often very high and can only be achieved if planning, execution and controlling of a thermal sprayed coating is performed by a skilled expert from the first draft until the last production step. That is why a supplementary education has been created by the EWF – European Federation for Welding, Joining and Cutting – with the course of the European Thermal Specialist. This course is performed according to the training guideline EWF 459r2-13 and is concluded by exams according to guideline EWF 459r2-13.
<b>Required Qualification</b>	<p>a) Specific technical qualifications as a master in trade or industry, education either as a technician or engineer with a two-years of professional experience or adequate, see also Appendix 1 of EWF 459-06 for each country.</p> <p>b) EWF qualification acc. to training guideline (EWF 507) as European Thermal Sprayer (ETS) and min. 2 years of experience.</p> <p>c) Thermal Sprayer and 5 years of experience or qualification as a skilled worker in the metal processing trade and min. of 3 years of experience in a technology similar to spraying (skilled worker with certificate by the IHK – Industry of Trade and Commerce) or adequate, see also Appendix 0 of EWF 459-06 for each country.</p>
<b>Note</b>	For participants only fulfilling the required qualification according to b) and c) a qualification test (entry test) is required.
<b>Duration</b>	144 hours
<b>Fee</b>	<p>Course: 4.055,00 €</p> <p>Examination: 380,00 €</p>

VENUE	DATE	CONTACT	PHONE	EMAIL
München	15.06.2015 - 24.07.2015	Sabina Romanowski	+49 89 126802 -10	anmeldung@slv-muenchen.de



5.2 EWF Training Course European Thermal Sprayer (ETS)  
acc. to Guideline EWF 507-06

05

**Participants** Thermal sprayers, workmen, interested people in the field of thermal spraying

**Contents** Thermal sprayed coatings are applied in many industrial and also high tech sectors. The required quality of thermal sprayed coatings is often very high and can be achieved only by well trained and experienced personnel.

Within the scope of common professional education, the manifold details concerning thermal spraying are not yet taught to the required extent. A supplementary education has been created by the EWF – European Federation for Welding, Joining and Cutting – by the course of the European Thermal Sprayer. This course is performed according to the training guideline EWF 507-06 and is concluded by exams according to EN ISO 14918. The education as a thermal sprayer according to the EWF standard is acknowledged as complying with EN ISO 14922 – quality requirements of thermal sprayed components.

**Required Qualification** Conditions of admission: Normal physical and mental capabilities. The knowledge of the English language, written and oral, should be as good as the participant is able to understand the information and follow instructions given in the course and that he is able to attend the theoretical exams. Basic skills of metal working should be present. If not, a corresponding practical basic education is recommended. The participant shall have also profound experience in practical thermal spraying. Beginners please contact SLV Munich.

**Duration** 5 days

**Duration** 40 hours

**Fee** upon request

VENUE	DATE	CONTACT	PHONE	EMAIL
München	upon request	Sabina Romanowski	+49 89 126802 -10	anmeldung@slv-muenchen.de





**CONTACT DETAILS**

# LOCATIONS

06

Overview Map



Gesellschaft für Schweißtechnik  
International mbH

- Headquarters of GSI mbH
- Headquarters of DVS – German Welding Society
- Branch of GSI mbH
- Cooperating Facility of GSI mbH
- Other Facility of GSI mbH







## ADDRESSES

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