TWI

Training & Examination

Services Worldwide

www.twitraining.com

TWI Training & Examination Services across the globe

Providing training solutions Worldwide

Every year over 15,000 customers in more than 60 countries benefit from the expertise of TWI, the world's largest training organisation in NDT, welding, welding inspection and a host of allied disciplines.

TWI provides training and examination services via its network of offices, training centres and agents worldwide. **Standard courses are scheduled at all TWI venues.**

Courses and examinations are **designed to service all key industry sectors including:**

- Oil and gas
- Aerospace
- Construction
- Power (nuclear, fossil, renewables)
- Automotive

All courses are supported by **internationally recognised certification.**

Training courses can be customised to meet specific needs. Many companies decide that they require training especially designed for their purpose. They may, for example, require:

- Specific induction training for engineers and technician staff
- Retraining or continuous professional development of existing staff
- Increased workforce flexibility through multi-skilling
- Certification of competence for processes and techniques specific to the company

With knowledge of over 100 technologies and more than three decades of training experience at its disposal, TWI is ideally placed for all your special training needs.

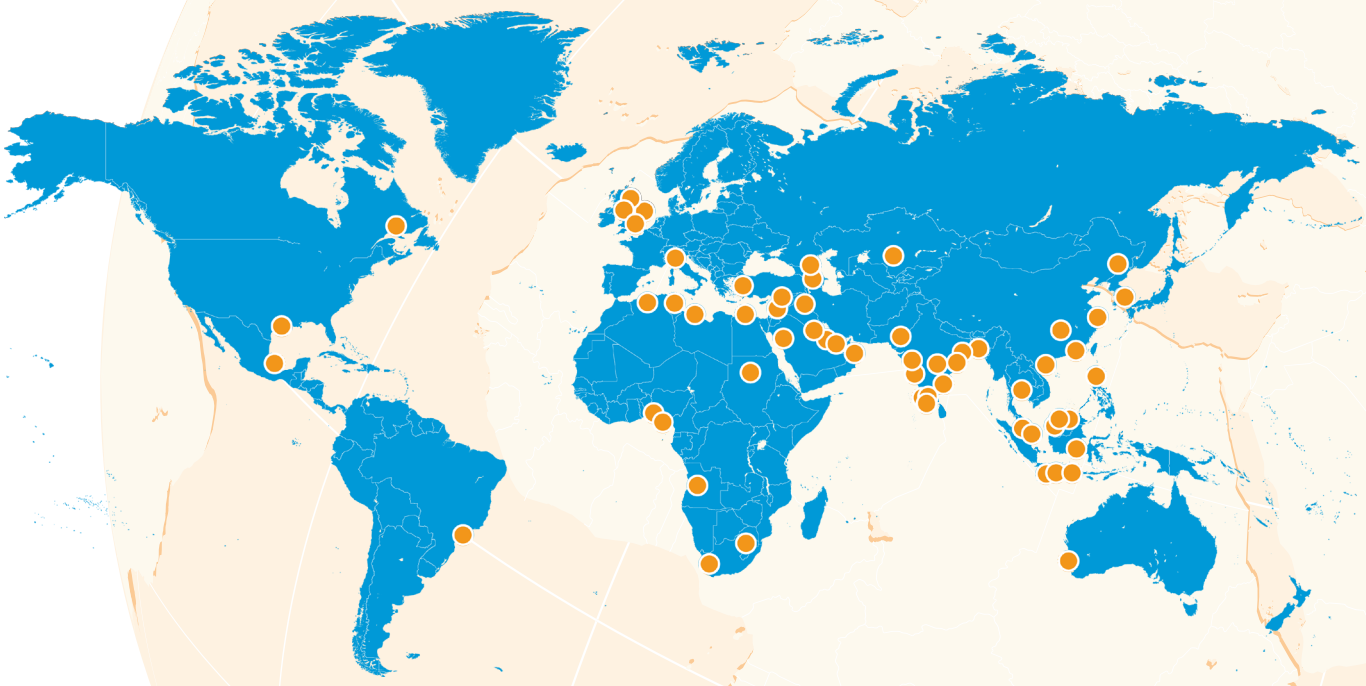
TWI offers **complete flexibility** enabling courses to be matched to your personal, company or industry requirements.

World class staff deliver an **unrivalled quality of training and examinations**, leading to industry-required qualifications worldwide.

TWI counts amongst its customers some of the most influential companies in the world.

Do not hesitate to contact us to discuss your company's training requirements: trainexam@twi.co.uk

TWI Ltd
TWI is a global leader in technology engineering providing research and consultancy to its members. Respected for its expertise, professionalism, impartiality and confidentiality, TWI works with the most influential companies worldwide across all industry sectors. **TWI Industrial Members quality for a 10% discount on all training courses.**
Find out more at www.twi.co.uk



Contents

ASNT Level III Refresher Courses

Basic/Magnetic Particle/Penetrant Testing/ Radiographic Testing/Ultrasonic

Course Code: NDT35

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Suitable for

NDT personnel requiring US based certification.

Duration

Basic	3 days
Magnetic Particle	1.5 days
Penetrant Testing	1.5 days
Radiographic Testing	2 days
Ultrasonic	2 days

Course content

These ASNT Refresher Courses use material produced by ASNT and review each attendee's knowledge of the Level III body of knowledge for the specified NDT method. ACCP Level III examinations will be arranged immediately following each course.

Course objective

Preparation for ASNT centrally certificated Level III examinations.

Additional information

ASNT offers Level II certifications. The ACCP Professional Level III is an extension of the traditional ASNT NDT Level III certification adding a practical examination and a procedure writing examination. Both the ACCP Level II and ACCP Professional Level III certifications incorporate examination components that fit within employer-based qualification and certification programmes. The first ACCP Professional Level III was certified in 1996 and the first ACCP Level II in 1997.

Attendees on the **Basic** course will be provided with:

- Basic Study Guide
- Recommended Practice SNT-TC-1A
- Materials and Processes
- Nondestructive Testing Handbook - NDT Overview

Attendees on the **MT, PT, UT, RT, ET** and **VT** courses will be provided with:

- Relevant Level III Study Guide
- Question and Answer Book
- Nondestructive Testing Handbook
- Application forms for ACCP are available on request

BGAS-CSWIP

Agricultural and Environmental Inspector — Course Code: ATC91

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

3 days

Course content

Key environmental issues; general understanding of agricultural operations; interpretation of strip maps; reportable diseases; field drainage - principles, types of system, drain types; farm/pipeline fencing; topsoil strip; excavation and drain making; backfill; civilisation and ripping; reinstatement; reporting.

BS 8010; P10; MAFF: Soil Code; MAFF: Code of Good Practice for the Protection of Water; MAFF: Preventing the Spread of Plant and Animal Diseases; Badgers Act 1992.

Certification/Awarding Body

BGAS-CSWIP

Additional information

Fee does not include the exam fee.

Candidates MUST bring:

- 2 passport sized photographs
- a valid eyesight certificate - Times Numeral 4
- a completed application form and full examination fee

BGAS-CSWIP Blast Cleaning/Prep Operative - Level 5A Course Code: ATC85

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

10 days

Suitable for

Candidates with or without experience in the painting/coating industry. Most candidates will go on to sit the BGAS/CSWIP Blast Cleaning/Preparation Operative Grade 5A examination.

Course content

Safety rules and regulations, blasting standard interpretation, rust grade identification, blasting equipment, equipment maintenance, blasting abrasives, inspection tools, ventilation protection, blasting, handtools, and/or power tools cleaning, materials, handling, housekeeping.

Certification/Awarding Body

BGAS-CSWIP

BGAS-CSWIP Painting Inspector - Grade 2/3

Course Code: ATC88

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

Four day training course with examination on day 5, or for less experienced candidates there is the opportunity to take the examination the following week.

Suitable for

Candidates with or without experience in the Painting Inspection Industry.

Candidates will be assessed during the course and advised on either grade 3 or 2 exam route dependent on their progress during training.

Entry requirements

No formal entry qualifications required, but a knowledge of dry abrasive blast cleaning or industrial paint application techniques would be advantageous.

Course content

Corrosion theory; surface preparation; surface contaminants and tests; paint constituents and technology; solutions and dispersions; drying and curing properties and performance; specified painting conditions; cathodic protection; holiday/pinhole detection; paint-application methods; paint/paint film testing; paint identification; metal coatings; paint faults; colour; inspection methods; specification requirements; health and safety and working practices.

Certification/Awarding Body

BGAS-CSWIP

Objectives

- To recognise and identify the benefits/disadvantages of paint systems
- To understand the importance of surface preparation
- To understand methods of application and testing
- To understand paint system inspections
- To interpret requirements of standards
- To meet the syllabus requirements for the BGAS-CSWIP Painting Inspector Examination

Additional information

Candidates MUST bring:

- 2 passport sized photographs
- a valid eyesight certificate from a doctor or an optician showing satisfactory eyesight for near vision, permitting reading a minimum of Times Roman N4, or equivalent type and size letters, at not less than 300mm on a standard test chart for near vision, in at least one eye, corrected or uncorrected. Candidates for the painting inspector will be required to have had a colour perception assessment by the Ishihara 24 plate test or an equivalent
- a completed application form and full examination fee

NOTE: Renewal can only be made within three months of the expiry date. Any application received after three months of the expiry cannot be considered and can only be renewed by re-examination.

If the applicant is a holder of BGAS-CSWIP Site Coatings Inspector Approval, it should be noted that day 1 of the syllabus will cover items which the applicant may be already conversant in and therefore attendance on this day (although strongly recommended) is entirely at their discretion. Course duration may then be only 4 days. However, should the applicant decide against attendance on this day, there will be no reduction in course fee.

BGAS-CSWIP Painting Inspector - Grade 1 — Course Code: ATC89

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

Four-day training course with a half-day examination on day 5, or for less experienced candidates there is the opportunity to take the examination the following week.

Suitable for

Candidates who already hold BGAS-CSWIP grades 3 and 2 in paint/painting inspection. This, the advanced qualification, deals specifically with offshore practices.

Entry requirements

Candidates must hold a current Grade 2 qualification prior to obtaining Grade 1. A good knowledge of offshore working, safety, and painting inspection is required.

Course content

Zones of offshore structures; offshore working; safety offshore; medical, emergency procedures/escape routes; permit to work systems; vessel entry and enclosed space working; scaffolding; fire protection; BS 5378 safety signs and colours; BS 1710 identification of pipelines; finish colour schedules BS 381C and BS 4800.

Certification/Awarding Body

BGAS-CSWIP

Objectives

- To recognise zones and structures of offshore platforms
- To recognise the dangers and the safety precautions required when working offshore
- To understand the importance and nature of fireproof coatings
- To understand paint systems and their use for particular substrates and temperatures
- To pass BGAS-CSWIP grade 1 examination

Additional information

Candidates MUST bring:

- 2 passport sized photographs
- a valid eyesight certificate from a doctor or an optician showing satisfactory eyesight for near vision, permitting reading a minimum of Times Roman N4, or equivalent type and size letters, at not less than 300mm on a standard test chart for near vision, in at least one eye, corrected or uncorrected. Candidates for the painting inspector will be required to have had a colour perception assessment by the Ishihara 24 plate test or an equivalent
- a completed application form and full examination fee

NOTE: Renewal can only be made within three months of the expiry date. Any application received after three months of the expiry cannot be considered and can only be renewed by re-examination.

BGAS-CSWIP Painting Supervisor - Level 4 — Course Code: ATC87

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

10 days

Suitable for

Candidates who already hold BGAS-CSWIP Painting Operative Grade 5B. This course deals with the supervision of painting application and leads to BGAS-CSWIP Painting Supervisor Grade 4.

Course content

Safety factors and efficient practices in the workplace, erection and dismantling of basic working platforms; preparation of work areas - site and workshop; preparation of surfaces - hand and mechanical means; producing surface finishes - brush, roller and airless spray.

Certification/Awarding Body

BGAS-CSWIP

Additional information

The student must have successfully completed the blast/painter course.

BGAS-CSWIP Pipeline Welding Inspector — Course Code: WIS12

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Those who wish to move into pipeline inspection and gain the BGAS Pipeline Welding Inspection Certificate.

Course content

Welding processes; pipeline construction; consumables; procedures; welding defects; specifications; mechanical testing of welds; radiographic interpretation; joint preparation; heat affected zones; preheat and postheat; weld repairs; code interpretation, exam practice questions, practical inspection of welds/fit-ups/fittings.

Certification/Awarding Body

BGAS-CSWIP

Objectives

- To understand the principles of pipe welding
- To identify materials and consumables
- To undertake visual inspections
- To interpret requirements of standards
- To pass the BGAS-CSWIP examination

Additional information

Fee includes the examination fee.

In addition to the general theory, the course covers the relevant specifications.

Additional BGAS-CSWIP courses are available subject to demand.

BGAS-CSWIP Protective Painter/ Sprayer Operative - Level 5B — Course Code: ATC86

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Candidates who already hold BGAS/CSWIP Blast Cleaning/ Preparation Operative Grade 5A. This course deals with the correct application of the protective paints and leads to BGAS-CSWIP Painting Operative Grade 5B approval.

Course content

Adhere to safety rules and regulations, interpretation of protective coating specifications, material handling, use of inspection tools, coating materials-product knowledge, ventilation/protection system requirement, mixing of coating materials, thinning of materials, wet film thickness calculation, application of coatings, operation of spraying equipment, upkeeping of spraying equipment, roller and brush applications, housekeeping.

Certification/Awarding Body

BGAS-CSWIP

Additional information

The student must have successfully completed the blast/ painter course.

BGAS-CSWIP Site Coatings Inspector

Course Code: ATC90

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

Four-day training course with examinations on day 5, or for less experienced candidates there is the opportunity to take the examination the following week.

Suitable for

Candidates with or without previous experience in site coatings inspection wishing to attain BGAS-CSWIP Approval as a Site Coatings Inspector.

Suitable for individuals engaged in the inspection and coating of new and existing pipelines. This approval is very useful to welding inspectors as it can extend their working time capability on pipelines projects.

Entry requirements

No formal entry qualifications required, but a knowledge of pipeline fabrication techniques, safe working practices, and a general understanding of coating application would be advantageous.

Certification/Awarding Body

BGAS-CSWIP

Course content

Corrosion, specified coating conditions; surface preparation methods and standards; surface contaminants and tests for detection; coating technology; film thickness; coal tar enamels; special situations; hot applied tapes; cold applied laminate tapes; grease based tapes; self-adhesive overwrap tapes; polyethylene cladding; fillers, mastics and putties; heat shrinkable plastics; powder coatings; urethane MCLs; holiday detection; concrete coatings; internal coatings; cathodic protection; stages of pipeline construction; handling, transport and storage; pipeline surveys, health and safety; coating faults; working practices and quality.

Objectives

- To understand the principles of pipeline coatings
- To understand the importance of surface preparation
- To appreciate the difficulties associated with pipeline site coating
- To understand the practical methods of testing and inspection
- To interpret the requirements of standards
- To meet the syllabus requirements for the BGAS-CSWIP Site Coatings Inspector examination

Additional information

Candidates MUST bring:

- 2 passport sized photographs
- a valid eyesight certificate from a doctor or an optician showing satisfactory eyesight for near vision, permitting reading a minimum of Times Roman N4, or equivalent type and size letters, at not less than 300mm on a standard test chart for near vision, in at least one eye, corrected or uncorrected. Candidates for the painting inspector will be required to have had a colour perception assessment by the Ishihara 24 plate test or an equivalent
- a completed application form and full examination fee

NOTE: Renewal can only be made within three months of the expiry date. Any application received after three months of the expiry cannot be considered and can only be renewed by re-examination.

If the applicant is a holder of BGAS-CSWIP Paint Inspector Approval, it should be noted that day 1 of the syllabus will cover items which the applicant may be already conversant in and therefore attendance on these days (although strongly recommended) is entirely at their discretion. Course duration may then be only 4 days. However, should the applicant decide against attendance on this day, there will be no reduction in course fee.

Intellectual Property for Engineers and Technologists Course Code: BMS1

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

1 day

Suitable for

Entry level course ideally suited to Engineers and Technologists in the early stage of their career who are looking to broaden their knowledge beyond their core technical specialisation. Also aimed at individuals directly or indirectly involved with new product development, innovation or simply the generation of new ideas.

The course draws on TWI's extensive experience in developing and managing innovation and the associated intellectual property that goes with it. This is a practical course for engineers designed by engineers.

Entry requirements

Six months experience in industry or a commercial environment would be advantageous but not essential.

Course content

Intellectual Property (IP) is an umbrella term covering different intellectual rights, such as know-how and ideas, for which exclusive rights or protection is available. This course offers a comprehensive introduction to the subject including what IP is, how to protect it and how to exploit it in order to meet business needs. Best practice in managing IP generation is explored together with the steps that should be taken when a 'good idea' is created. Case studies, group and individual exercises are core to the exploration of the topic.

Objectives

At the end of the course the individual should have an understanding of the following:

- Why is IP important including the global business impacts of IP
- The definitions of IP, how it is created and why protection should be considered
- The various types of IP protection; patent, trademark, copyright, design right, other rights
- Interpreting a patent, what is important in the document (basic)
- Corporate policy - how corporate policy affects IP development and exploitation
- Exploitation options - licensing, assignment, sole provider, other - case studies

Additional information

This event has been approved for 6 CPD hours.

CSWIP Cathodic Protection

Levels 1, 2 and 3

Course Code: ATC37-1/2/3

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Suitable for

Ideal for engineers, technicians, and operators who require knowledge of CP techniques, through to more in-depth technical detail, plus an understanding of likely problem areas and an appreciation of cathodic protection methodology.

Certification/Awarding Body

CSWIP

Level 1

Duration
5 days

Course content
Basics of corrosion; terminology, electrode potential, reference cells polarisation diagrams, electrolytes (soil/water composition), methods of controlling corrosion, principles of coating of buried and immersed structures, sacrificial anode systems, impressed current systems; typical designs of CP system, CP materials, potential measurements; monitoring and maintenance.

Level 2

Duration
5 days

Course content
In addition to the knowledge of a Level I Engineer: criteria for CP and their limitations; Pourbaix diagram interpretation; surface film effects; polarisation diagrams; CP design considerations for sacrificial anode and impressed current systems; construction materials specification and quality control; safety considerations, attenuation calculations; commissioning a CP system; potential measurements.

Level 3

Duration
5 days

Course content
In addition to the knowledge of a Level II Engineer: problem areas and trouble shooting of CP systems, investigation of testposts or stations, insulating flanges and monoblocks; cased crossings; low potential readings; interference effects and mitigation. AC interference, DC interference (stray currents) earthing structures; coatings and CP electro osmosis; holiday detection.

EWF/IIW Diploma

An internationally recognised qualification supported by the European Federation for Welding, Joining and Cutting (EWF) and the International Institute of Welding (IIW) for assessing the competence of tasks and responsibilities during welding coordination (BS EN ISO 14731).

BS EN ISO 14731:2006 Welding Coordination - Tasks and responsibilities, specifies that responsible welding coordination personnel shall be able to demonstrate adequate general and specific knowledge in welding and allied processes to perform these tasks. Such knowledge must be the result of **a combination of theory, training and experience**.

Personnel holding EWF/IIW Diploma are qualified to perform welding coordination activities as described in ISO 14731, whose compliance is required by BS EN ISO 3834 (Quality requirements for fusion welding of metallic materials).

In its Part 1 (Criteria for the selection of the appropriate level of quality requirements), BS EN ISO 3834 states that in order 'to ensure sound and effective manufacturing, management needs to understand and appreciate the sources of potential trouble and to implement appropriate procedures for their control' [(1)]. This standard identifies measures applicable in different circumstances, being two of the most representative **contractual situations and assessment of welding quality performance between customers, manufacturers, third parties** etc. In consequence, **the compliance of 14731 and 3834 are priorities in the success of any metallic welding-related business.**

EWF/IIW Welding Diploma - An outline

The EWF/IIW Welding Diploma consists of three different levels: **Specialist (IWS), Technologist (IWT)** and **Engineer (IWE)**. Although the topics covered in each level are similar, the depth and breadth are increased as progress is made towards the engineering level. The goals of each level are in line with the responsibilities outlined in BS EN ISO 14731[(1)].

Specialist (IWS)

'Personnel with basic technical knowledge where the level of technical knowledge needs to be sufficient for the planning, executing, supervising and testing of the tasks and responsibilities within a limited technical field, involving only simple welded constructions'.

Technologist (IWT)

'Personnel with specific technical knowledge, where the level of technical knowledge needs to be sufficient for the planning, executing, supervising and testing of the tasks and responsibilities in
welding fabrication within a selective or limited technical field'.

Engineer (IWE)

'Personnel with comprehensive technical knowledge, where full technical knowledge is required... for the planning, executing, supervising and testing of all tasks and responsibilities in welding fabrication'.

[(1)] These extracts from BS EN ISO 14731:2006 and BS EN ISO 3834 are included to illustrate a particular point. In order to understand fully the requirements of the standard, please consult the complete standard.

Modules

Each level (Specialist, Technologist and Engineer) consists of **four modules:**

- Welding processes and equipment
- Materials and their behaviour during welding
- Construction and design
- Fabrication applications engineering

FAA modules and examinations must be completed as the final module.

There are two supplementary modules only for the Specialist Level:

- Advanced welding processes and equipment
- Practical welding technology

Specialist

WPE1 Welding processes and equipment **(Foundation)** + **AWP1** Advanced welding processes and equipment + **PWT*** Practical welding technology **(Foundation)** + **MAB1** Materials and their behaviour **(Foundation)** + **DAC1** Construction and design **(Foundation)** + **FAA1** Fabrication applications engineering **(Foundation)** → **EWF/IIW International Welding Specialist (EWS/IWS)**

Technologist

WPE2 Welding processes and equipment **(Intermediate)** + **MAB2** Materials and their behaviour **(Intermediate)** + **DAC2** Construction and design **(Intermediate)** + **FAA2** Fabrication applications engineering **(Intermediate)** → **EWF/IIW International Welding Technologist (EWT/IWT)**

Engineer

WPE3 Welding processes and equipment **(Advanced)** + **MAB3** Materials and their behaviour **(Advanced)** + **DAC3** Construction and design **(Advanced)** + **FAA3** Fabrication applications engineering **(Advanced)** → **EWF/IIW International Welding Engineer (EWE/IWE)**

In summary, via the standard route, IWS requires completion of six modules, IWT of ten and IWE of fourteen. Each module lasts one week and finishes with an exam.

* Exemption via application, depending on experience

Entry requirements

Specialist level

- Approved craft diploma in engineering subjects, for instance City and Guilds of London Institute **OR**
- Level 2/3 National or Scottish Vocational Qualifications or other nationally recognised vocations qualifications in engineering subjects

Technologist level

- Higher national Certificate (HNC) in an engineering discipline **OR**
- Professional engineer of incorporated (IEng) status granted by the UK Engineering Council under mature candidates rules, **OR**
- Level 4 National or Scottish Vocational Qualifications or other nationally recognised vocations qualifications in engineering subjects.

Engineer level

- University degree in an engineering discipline, **OR**
- Professional engineer of chartered engineer (CEng) status granted by the UK Engineering Council, **OR**
- Professional engineer of incorporated engineer (IEng) status, granted by the UK Engineering Council, including as a minimum an HNC or Higher National Diploma (HND) in an engineering discipline.

Important notes

- Candidates who in addition to academic qualifications can prove welding experience at the appropriate level may qualify for the alternative route. Under this option, candidates may be exempt from attempting one or more modules. Please contact us for further information.
- Candidates who do not have the academic qualifications required for this programme but can prove experience and knowledge to the relevant level are eligible to do the TWI Diploma in Welding Engineering, whose content and examinations are at the same technical level as the IIW. The TWI Diploma in Welding Engineering also satisfies the requirements of BS EN ISO 14731.

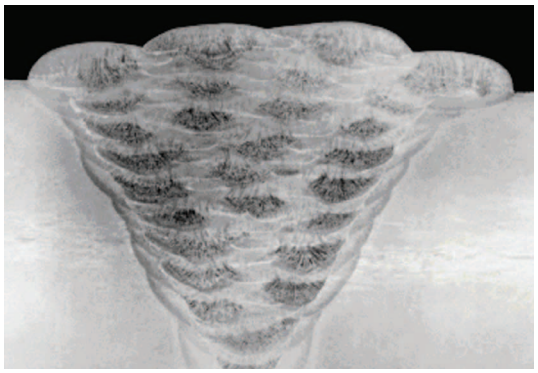
Course content

Module 1: Welding processes and equipment

- General introduction to welding technology
- Oxy-gas welding and related processes
- Electrotechnics - a review
- The arc
- Power sources for arc welding
- Introduction to gas shielded arc welding
- TIG welding
- MIG/MAG and flux cored arc welding
- MMA welding
- Submerged-arc welding
- Resistance welding
- Other welding processes (laser, electron beam, plasma)
- Cutting and other edge preparation processes
- Joining processes for plastics
- Joining processes for ceramics and and composited
- Consumables

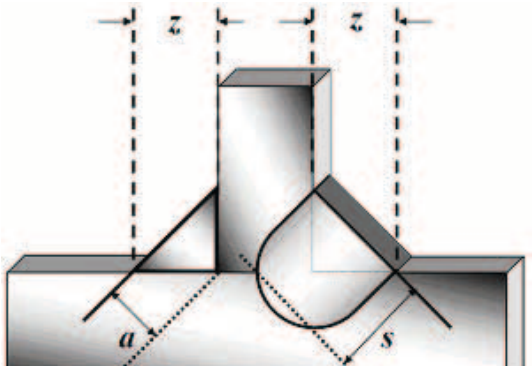
Module 2: Materials and their behaviour during welding

- Manufacture and designation of steels
- Testing materials
- Structure and properties of pure metals
- Alloys and phase diagrams
- Heat treatment
- Structure of the welded joint
- Steels: plain carbon, carbon-manganese steels, fine grained, low alloy, high alloy etc.
- Cracking phenomena in welded joints
- Introduction to corrosion
- High alloy creep resistant and heat resistant steels
- Cast irons and steels
- Non ferrous metals and alloys



Module 3: Construction and design

- Basic theory of structural systems
- Fundamentals of the strength of materials
- Welded joint design
- Basics of weld design
- Behaviour of welded structured under different types of loading
- Design of welded structures with predominantly static loading
- Behaviour of welded structures under dynamic loading
- Design of dynamically loaded welded structures
- Design of welded pressure equipment
- Design of aluminium alloys structures
- Reinforcing-steel welded joints



Module 4: Fabrication, applications engineering

- Introduction to quality assurance in welded fabrication
- Quality control during manufacture
- Residual stresses and distortion
- Plant facilities, welding jigs and fixtures
- Heath and safety
- Measurement, control and recording in welding
- Non destructive testing
- Economics
- Repair welding
- Fitness-for-purpose
- Case studies
- Welding qualifications and procedures

Basic Medic First Aid

Course Code: HMF1

Duration/dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Suitable for

Participants who want a basic understanding of emergency care and to learn basic first aid skills.

Entry requirements

There are no entry requirements for this course.

Course content

MEDIC FIRST AID® BasicPlus is a combined adult CPR, AED, and first aid training program designed specifically for the occupational first aid provider.

This extremely flexible program will help employers meet OSHA and other federal and state regulatory requirements for training employees how to respond and care for medical emergencies at work.

The program is based upon the 2010 International Consensus on Cardiopulmonary Resuscitation (CPR) and Emergency Cardiovascular Care (ECC) Science with Treatment Recommendations (CoSTR) and other evidence-based treatment recommendations.

Certification/Awarding Body

MEDIC FIRST AID

Objectives

This extremely flexible program will help employers meet OSHA and other federal and state regulatory requirements for training employees how to respond and care for medical emergencies at work.

Additional information

Students are evaluated through Instructor observation of the reasonable performance of skills. Performance and written evaluations are available.

Successful Certification Card will be awarded to successful delegate with an internationally recognized certificate period up to 2 years.

IEMA Approved Associate Certificate in Environmental Management

Course Code: HEE1

Duration/dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Suitable for

The Associate Certificate is designed to raise the professional competence of environmental practitioners by developing and assessing their knowledge, understanding and application of environmental management and assessment.

Entry requirements

There are no formal entry requirements for the Associate Entry Examination but candidates should have a level of literacy and numeracy adequate to cope with the examination.

Certification/Awarding Body

IEMA

Course content

Main natural cycles, ecological systems, environmental sustainability; principles of environmental policy, policy instruments and environmental policies; types of law, environmental legislation, penalties and environmental regulators; collection, analysis and reporting on environmental information and data; environmental management and assessment tools; analysis of problems and opportunities to deliver sustainable solutions; development and implementation of programmes for environmental performance improvement; environmental communications; how to influence behaviour and implement change to improve sustainability.

Objectives

- To understand environmental and sustainability principles
- To understand environmental policy issues
- To understand key environmental legislation and compliance measures
- To understand environmental management and sustainable development in a business context
- To be able to collect, analyse and report on environmental information and data
- To be able to apply environmental and management tools
- To be able to analyse problems and opportunities to deliver sustainable solutions
- To be able to develop and implement programmes to deliver environmental performance improvement
- To be able to communicate effectively with internal and external stakeholders
- To be able to influence behaviour and implement change to improve sustainability

Additional information

The assessment is a 2.5 hour written examination (either paper-based or online). Successful completion of the certificate results in the award of IEMA Associate Membership, which is the essential professional qualification for working in an environmental role.

IOSH Managing Safely

Course Code: HIM1

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

4 days

Suitable for

Supervisors, managers and team leaders in any sector and any organisation who are required to effectively and efficiently be responsible for safety management of risks and resources.

Entry requirements

There are no entry requirements for this course.

Certification/Awarding Body

IOSH

Course content

IOSH Managing Safely course is designed to provide participants with a broad overview on health, safety and environmental topics. On completion of this course, participants will gain sufficient knowledge and skills to deal with health and safety issues.

The course covers 8 modules:

- Introducing managing safely
- Assessing risks
- Controlling risks
- Understanding your responsibilities
- Identifying hazards
- Investigating accidents and incidents
- Measuring performance
- Protecting our environment

Objectives

This course will give delegates the knowledge and tools to tackle the health and safety issues they're responsible for.

Importantly, it brings home just why health and safety is such an essential part of their job.

Additional information

The course duration is four days which includes a written multi-choice examination on the last day of the training and a project based written assignment two weeks from the date of the written exam.

Successful candidates will be awarded an IOSH certificate in Managing Safely.

Medic First Aid Train The Trainer

Course Code: HIM2

Duration/dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Suitable for

This course aims at providing participants knowledge and skills necessary to effectively facilitate Medic First Aid International Training courses.

The MEDIC FIRST AID G2010 Instructor Trainer Guide provides the outline of the training process for new MEDIC First Aid Instructors.

Entry requirements

Participants must have attended a Basic Medic First Aid Course

Certification/Awarding Body

MEDIC FIRST AID

Course content

MEDIC FIRST AID Training Philosophies; medical source authorities; MEDIC FIRST AID's integrated learning model; adult learning principles; MEDIC FIRST AID training programs; role of the instructor; MEDIC FIRST AID training materials; introduction to the instructor guide; using instructional pages; showing program video segments; referring to student guide pages; performing real-time demonstrations; facilitating a small group practice; observing reasonable performance; accommodating slow learners or difficult students; facilitating talk-through scenarios; facilitating performance evaluation.

Objectives

This course will help new First Aid instructors in training employees how to respond and care for medical emergencies at work.

NEBOSH International Diploma in Occupational Health and Safety

Course Code: HND1

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

The NEBOSH International Diploma is the qualification for aspiring health and safety professionals building directly upon the foundation of knowledge provided by the NEBOSH International General Certificate. It is designed to provide students with the expertise - wherever in the world they may be working - required to undertake a career as a safety and health practitioner.

Entry requirements

There are no entry requirements for this qualification, though the achievement of the NEBOSH International General Certificate or direct equivalent prior to undertaking the Diploma course is highly recommended.

The standard of English required by students studying for the NEBOSH International Diploma must be such that they can both understand and articulate the concepts contained in the syllabus.

Certification/Awarding Body

NEBOSH

Course content

The NEBOSH International Diploma is modelled on the NEBOSH National Diploma. The key difference between the two is that instead of referring to UK Laws, the International Diploma takes a risk management approach based on best practice and international standards, such as the International Labour Organisation (ILO) codes of practice, with special reference to models such as the ILO's "Guidelines on Occupational Safety and Health Management Systems" (ILO-OSH 2001).

Underpinning knowledge of legal frameworks is included and local laws and cultural factors may form part of the study programme where relevant and appropriate.

The qualification is divided into four units, each of which is assessed separately:

- **Unit IA:** International management of health and safety
- **Unit IB:** International control of hazardous agents in the workplace
- **Unit IC:** International workplace and work equipment safety
- **Unit ID:** International application of health and safety theory and practice

Students may choose to take individual units in any order over a five year period.

Objectives

This qualification provides the core health and safety knowledge which underpins competent performance as an Occupational Health and Safety Practitioner.

Additional information

On successful completion of the qualification, the Diploma holder may apply for Graduate membership (Grad IOSH) of the Institution of Occupational Safety and Health (IOSH), the major UK professional body in the field (www.iosh.co.uk). This is the first step to becoming a Chartered Safety and Health Practitioner as a Chartered Member of IOSH (CMIOSH).

This qualification is also accepted by the International Institute of Risk and Safety Management (www.iirsm.org) as meeting their requirements for full membership (MIIRSM).

Holders of the NEBOSH International Diploma in Occupational Health and Safety may use the designatory letters "IDipNEBOSH" after their name.

NEBOSH International Certificate in Construction Health and Safety

Course Code: HNC1

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

The NEBOSH International Construction Certificate is aimed at Supervisors and Managers within the construction industry who are required to ensure that activities under their control are undertaken safely. It is likely to prove useful for those concerned with the management of buildings who may need to ensure that contractors are working safely.

The qualification is also appropriate for supervisors and managers working in other industries such as utilities, and even broadcasting, where temporary workplaces are a feature of their activities.

Many people take the NEBOSH Construction Certificate as a first step in a career in construction safety management

Entry requirements

No previous health and safety knowledge is required although it is advisable that candidates do have an understanding of the basic practical aspects of the construction industry and delegates will need to be proficient in written English to successfully complete the assessment.

Certification/Awarding Body

NEBOSH

Course content

The NEBOSH International Certificate in Construction Health and Safety is a health and safety award for the construction industry.

The combination of both theoretical and practical application within the syllabus to manage both health and safety from planning, design and construction to use and demolition ensures those awarded with the certificate are well capable to meet challenges to make a difference.

The NEBOSH International Construction Certificate covers Management of Health & Safety, identification and control of a broad range of construction workplace hazards, and the means by which they can be controlled. The qualification has been unitised and the qualification is divided into three units, each of which is assessed separately:

- The Management of International health and safety
- Managing and controlling hazards in International construction activities
- International Construction Health and safety practical application

Objectives

On completion of the course delegates should be able to:

- Understand the factors to consider when carrying out a site assessment; identify construction activity hazards, assess the risks and recommend control measures
- Identify the hazards & and outline appropriate control measures in the following areas: movement of people and vehicles, manual and mechanical handling, work equipment, electrical, chemical and biological, physical and psychological, working at height, excavation work and confined spaces and demolition
- Successfully carry out a safety inspection of a construction workplace identifying hazards, recommending control measures and preparing a management report

Additional information

You may already be one step towards gaining a NEBOSH International Certificate In Construction Health and Safety.

Management of Health and Safety (IGC1) is common to the NEBOSH International Certificate. This enables delegates to combine Unit IGC1 to gain full qualification. Delegates do not need to re-sit Unit IGC1 if already successfully achieved, provided, this unit was gained within the last five years.

NEBOSH International General Diploma in Occupational Health and Safety

Course Code: HNG1

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Managers, supervisors, worker representatives and others who require a knowledge and understanding of health and safety principles and practices. The Certificate provides a sound basis for evaluating risks and hazards in any country, in any business. The NEBOSH International General Certificate is also suitable for those embarking on a career in health and safety, providing a valuable foundation for further professional study.

Entry requirements

There are no entry requirements for this qualification, though a standard of English required by students must be such that they can both understand and express the concepts contained in the syllabus.

Certification/Awarding Body

NEBOSH

Course content

NEBOSH International General Certificate is a globally recognized health and safety qualification which is intended for companies or individuals working to international standards with regards to Health, Safety & Environment as this course focuses on the International Labor Standards (ILO) codes of practice.

The syllabus is divided into 3 units:

- **Unit IGC1:** Management of International Health and Safety
- **Unit IGC2:** Control of International Workplace Risks
- **Unit IGC3:** International Health and Safety Practical Application

Objectives

On completion of this course, candidates should be able to demonstrate understanding and implement good health and safety management across all areas of their operation.

Ensuring that candidates have a sound understanding of the principles of managing risk is a key building block of an effective safety culture.

Additional information

Upon successful completion of the certificate, delegates can apply for a membership with Institution of Occupational Safety and Health (IOSH) and/or International Institute of Risk and Safety Management (IIRSM) as its qualification meets the academic requirements for Technician Membership (Tech IOSH) of IOSH and Associate membership (AIIRSM) of the IIRSM.

Adhesive Bonding

- Technical Workshop (Theory)
- Technical Workshop (Practical)
- Technical Workshop (Combined Theory and Practical)

Course Codes:
ATC104T
ATC104P
ATC104

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

Technical Workshop - 3 days
Technical Workshop - 3 days
Technical Workshop (Combined Theory and Practical) - 5 days

Suitable for

Scientists, engineers, designers and manufacturing personnel presently using or planning to use adhesives. These focussed workshops will help the user understand the underlying science and technology within the broad field of adhesives and provide an opportunity to exploit the benefits of this versatile technology. Newcomers to the field will gain a sound knowledge of the area and practical hands-on experience.

Course content

Polymers, adhesives and adhesions (I,II), surface treatment (general and specific), design and fabrication, quality control, testing (destructive and NDT), dispensing, joint assembly, adhesive curing, durability, health and safety, adhesive applications.

Objectives

- Provision of a learning platform, to acquire fundamental and applied knowledge of adhesive technology
- Opportunity to use dissimilar material combinations for innovative manufacturing
- Establishing applied expertise grounded in theory
- Providing credentials of competence for attendees
- Understanding the importance of adhesive selection and joint design for long term service performance
- Providing the opportunity to discuss specific applications or ahesion problems with TWI experts

Additional information

This modular course is based on the Adhesive Bonder syllabus developed through the European Welding Federation - theory and practical training can be carried out together or separately depending on the attendees' All the workshops will finish with an end of course assessment.

All candidates will receive a TWI Certificate of Attendance.

Resistance Welding

Course Code: WTC22

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Welding engineers, production engineers, QC personnel, setters, operators and maintenance staff.

Course content

Principles of the resistance welding process and equipment; outline of the electrical controls; guidance on the setting-up and control of weld quality; demonstration of the effect of welding parameters, machine characteristics and material on spot welds in steel sheet; consideration of electrode requirements; welding of high strength and coated steels, aluminium etc; testing, monitoring and NDT; maintenance and safety.

Objectives

- To understand the principles of resistance welding
- To appreciate how process parameters and other factors influence quality of resistance welds
- To carry out setting up and troubleshooting tasks more effectively

Additional information

On-site courses in resistance welding processes can be provided by arrangement.

Special courses can be organised for:

- the approval testing of resistance weld setters to BS EN 1418
- flash welding or high frequency tube welding

Aluminium Alloys

Course Code: WTC84A

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

1 day

Suitable for

Engineering staff involved with the design, specification, fabrication, inspection and application of aluminium and its alloys.

Course content

Basic metallurgy and properties of aluminium and its alloys; influence of alloying elements; heat treatable and non-heat treatable alloys; weldability; joint design; metallurgical defects; joint strengths; filler metal composition and selection; applicable welding processes and techniques.

Objectives

- To understand the various grades of aluminium and its alloys
- To appreciate the effect of alloy elements on properties and weldability
- To identify weldable grades and appropriate filler metals
- To appreciate practical implications of welding aluminium and its alloys

C-Mn and Low Alloy Steels

Course Code: WTC84F

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

1 day

Suitable for

Production engineers, welding supervisors, QA/QC personnel and inspection staff.

Course content

Influence of alloying elements; properties of welded joints; weldability of steels - mild and low alloy; use of carbon equivalent formulae; metallurgical defects; cracking mechanisms and control; effects of preheat and/or post-weld heat treatment, choosing appropriate filler material.

Objectives

- To understand the role of metallurgy in welding technology
- To appreciate the effect of alloying elements on carbon steel properties
- To identify weldability problems in typical carbon and low alloy steels
- To understand the causes and significance of metallurgical defects in welds
- To appreciate requirements of preheat and post-weld heat treatment procedures

Low Alloy and Creep Strength Enhanced Ferritic Steels for Advanced Power Plants

Course Code: ATC135

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Welding engineers, welding inspectors, metallurgists, plant managers, maintenance engineers, process engineers, design engineers, regulatory staff and any professional staff who require an appreciation of high temperature alloys welding and fabrication.

Course content

The course is provided over two consecutive days according to the schedule below. The actual scheduling of lectures over the two days may vary, however, all subjects will be covered.

Day 1

- Introduction and objectives
- Introduction to creep
- Other high temperature applications
- Weldability of creep resistant steel
- Welding of creep resistant steel
- Review

Day 2

- Detection of creep damage by NDT methods
- Weld repair (standard)
- Weld repair without PWHT
- Codes and standards
- Industry case studies
- Q&A session

Objectives

Welding and fabrication of high temperature alloys:

- includes all Cr-Mo steel grades (from 0.5Mo to >9% Cr)
- focuses particularly on the high chromium steel grades (P91, P92, P911, P122, X20)
- provides best practice guidelines for consumable selection, welding and repairing high temperature components
- overview of relevant codes and standards
- relevant industry case studies

Materials Weldability

Stainless Steels

Course Code: WTC84S

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

1 day

Suitable for

Engineering staff involved with design, specification, fabrication, inspection or application of stainless steel materials.

Course content

Basic metallurgy and properties of stainless steel; corrosion and oxidation resistance; weldability of highly corrosion resistant grades (duplex, super duplex and high alloy austenitics); weldability of conventional stainless steels (austenitic, ferritic and martensitic); avoidance of weld defects; use of Schaeffler diagram for dissimilar joints; measurements of ferrite levels and ferrite number (FN); weld overlaying and welding clad steels; degradation of stainless steels (pitting, crevice corrosion and stress corrosion cracking); practical considerations for welding stainless steels.

Objectives

- To appreciate the influence of composition on stainless steel properties
- To understand various weldability problems of different grades
- To identify welding conditions necessary to achieve optimum weld area corrosion resistance
- To recognise how stainless steel corrosion resistance can be degraded
- To apply knowledge to welding of dissimilar joints and weld overlays
- To appreciate practical implications of welding stainless steels

Titanium Alloys

Course Code: WTC84T

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

1 day

Suitable for

Engineering staff involved in design, specification, fabrication, inspection and application of titanium and its alloys.

Course content

Basic metallurgy, properties of titanium and its alloys; alloying and its influence on mechanical properties and weldability; weldable alloys; metallurgical effects of welding; filler metal composition and selection; welding processes, techniques and precautions.

Objectives

- To understand various types of titanium alloys
- To appreciate the effects of alloying elements on properties and weldability
- To identify weldable grades and suitable filler materials
- To appreciate practical problems of welding titanium and its alloys

Laboratory Based Metallography

Course Code: TM3

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

3 days

Entry requirements

There are no formal entry requirements although a technical background and some knowledge of metals and alloys would be an advantage.

Suitable for

This course teaches the underlying theories and principles of metallography before moving on to deliver a practical workshop. Candidates will learn essential, practical skills from experts in the field of metallography using industry leading equipment, techniques, and consumables.

This course is ideally suited to technicians and lab managers who want to develop an in-depth understanding of the processes and capabilities of metallography as an analytical technique for quality control, inspection, and failure investigation. This includes the practical skills required to produce good quality samples, representative images without preparation artefacts and an understanding of the equipment and consumables requirements of the modern metallurgical laboratory. It also covers the tools and techniques employed for material characterisation, including hardness testing, image analysis, and quantitative metallography.

The aspects associated with health and safety of procedures, laboratory organisation and storage of chemicals are covered in depth.

Tailored courses: Bespoke courses for groups of six or more can be developed to focus on particular families of materials.

Course content

The course will cover sample preparation and microstructural characterisation of a wide range of materials such as metals, ceramics and polymers. The effect of each step of sample preparation, including choice of etchant, on the finished metallographic sample will be covered. Best practice for digital imaging of the prepared samples using low magnification stereomicroscopes and high magnification compound microscopes will be discussed in detail, including image manipulation and quantitative metallography.

The course also covers other aspects of running an efficient and safe laboratory with high throughput whilst maintaining a high level of quality. These include HSE, lab layout and time saving sample preparation methods.

Objectives

- To experience first-hand the practical aspects of specimen preparation
- To gain a wide appreciation of the processes involved in best practice preparation of metallographic specimens
- To understand the equipment and consumables requirements for lab metallography
- To understand the tools that can be used to analyse specimens and microstructures
- Effective recording and reporting

On-site Non-destructive Metallography and Replication

Course Code: TM4

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Entry requirements

There are no formal entry requirements although a technical background and some knowledge of metals and alloys would be an advantage.

Suitable for

This course teaches the underlying theories and principles of on-site metallography, replication, and portable hardness measurement before moving on to deliver a practical workshop. Candidates will learn essential, practical skills from experts in the field of metallography using industry leading equipment, techniques, and consumables.

This course is aimed at on-site metallographers in the aerospace, power generation, refineries and inspection areas.

Tailored courses: Bespoke courses for groups of six or more can be developed to focus on particular families of materials or particular replication types.

Course content

The course will cover non-destructive replica sample preparation and microstructural characterisation. The effect of each step of sample preparation, including choice of etchant, on the finished metallographic replica will be covered. Best practice for digital imaging of the prepared samples using low magnification stereomicroscopes and high magnification compound microscopes will be discussed in detail, including image manipulation and quantitative metallography.

The course also covers replicas of fracture surfaces, corroded components, and welded joints for observation of fracture morphology, corrosion depth and geometric features, where the components cannot be removed from service for characterisation.

Other field techniques such as portable hardness and percent ferrite determination will also be demonstrated.

Objectives

- To experience first-hand the practical aspects of specimen preparation
- To gain a wide appreciation of the processes involved in best practice preparation of metallographic and geometric replicas
- To develop the skills and know-how to independently produce accurate replicas of microstructures, fracture surfaces and geometric details

Practical Laboratory and Field Metallography Combined Package

Course Code: TM5

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Entry requirements

There are no formal entry requirements although a technical background and some knowledge of metals and alloys would be an advantage.

Suitable for

Technologists, Engineers, Technicians, beginners and more advanced metallographers who want to develop an in-depth understanding of the processes and capabilities of lab based and in-the-field metallography techniques as an analytical tool. The course includes the practical skills required to produce good quality samples, techniques for analysis and an understanding of the equipment and consumables requirements of modern lab based and field metallography.

Anyone who is considering setting up a metallographic capability or operating existing facilities and wanting to broaden knowledge of lab and field best practice. Individuals entering the field of metallography as new discipline.

Course content

The course will cover the following areas: Sample cutting and sectioning; techniques for ferrous and non-ferrous materials; thermal and cold mounting techniques; surface preparation, grinding and polishing in the lab and field; etchants and etching techniques; field replication techniques for carbon and stainless steels; lab and field microscopy and imaging; fixed and portable hardness testing; the use of metallography in failure analysis; quantitative analysis methods; documentation of microstructures and other features.

Objectives

- To experience first-hand the practical aspects of lab and field based specimen preparation
- To gain an appreciation of best practice in the preparation of metallographic surfaces including weld profiles fracture surfaces and corrosion damage
- To understand the equipment and consumables requirements for lab and field based metallography
- To understand the options available for taking metallographic replicas in the field
- To develop techniques required to produce the best results
- To understand the tools that can be used to analyse specimens and microstructures
- Effective recording and reporting

Elecronics Packaging Technology

Course Code: ATC45

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Production line supervisors, die attach operators, packaging engineers and quality personnel requiring greater knowledge and practical training in materials, processes and fault finding, to improve yield, quality and reliability.

Course content

The course will provide attendees with an intensive introduction to the processes used in the manufacture of microelectronic devices and will cover: die attachment adhesive, solder and alternatives; interconnection methods; wire bonding and flip-chip processes; device protection; hermetic sealing and encapsulation.

All processes covered will include a study of material selection; equipment; process control; inspection; rework; reliability and failure mechanisms.

Objectives

- To review the range of available techniques and materials for initial attachment of silicon devices to substrates
- To ensure best practice in manufacturing using die attachment

Additional information

All TWI courses can be tailored by a company's requirements.

Flip Chip Assembly

Course Code: ATC109

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Designers and engineers needing a thorough grounding in the process.

Course content

The course will include but is not limited to: Introduction to flip-chip technology; attachment methods; materials; equipment; quality and reliability issues; inspection; non-destructive examination; competing technologies; practical sessions.

Objectives

- To introduce delegates to flip-chip technology
- To understand the benefits and limitations of the process

Miniature Resistance Welding

Course Code: ATC110

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Design engineers, technicians and operators.

Course content

The course will include but is not limited to: Principles of the resistance welding process; welding equipment; guidance on setting controls and developing weld schedules; control of weld quality; demonstrations of the effect of welding parameters; weld head design; electrode selection; consideration of unusual and dissimilar material combinations; testing, monitoring, NDT; maintenance and safety.

Objectives

- To understand the theory of resistance welding
- To appreciate the variety of resistance based processes
- To enable delegates to improve processes and conduct troubleshooting tasks effectively

Wire Bonding

Course Code: ATC42

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Production line supervisors, wire bonding operators and quality personnel requiring greater knowledge and practical training; and for electronics engineers, designers and technologists seeking greater awareness of this production process.

Entry requirements

Basic operation of wire bonding equipment and the ability to thread 25µm wire into wedge or capillary tools are beneficial

Course content

An introduction to ultrasonic wire bonding for microelectronics interconnection. All aspects of the process are addressed in both theoretical and practical terms: introduction to the theory of the process; quality control issues; practical sessions including ball/wedge and wedge/wedge bonding; mechanical testing; visual inspection; process optimisation and control; troubleshooting.

Course attendees are encouraged to bring samples relevant to their typical applications for discussion and review.

Objectives

- To address theoretical, practical and testing aspects of wire bonding
- To ensure best practice in manufacturing using wire bonding

Additional information

Basic operation of wire bonding equipment and the ability to thread 25µm wire into wedge or capillary tools are beneficial.

All TWI courses can be tailored to a company’s requirements.

Automated Ultrasonic Testing (AUT) Data Interpretation

Course Code: NDT45

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

CSWIP AUT certification is available for candidates holding BS EN ISO 9712 UT certification (e.g. PCN or CSWIP).

Inspectors who do not hold BS EN ISO 9712 Level 2 certification in ultrasonic inspection are required to sit the CSWIP UT Welds Level 2 General Paper (40 multiple choice questions) in addition to the AUT Data Interpretation exam. Please note, no additional UT training will be provided on the course.

Entry requirements

The minimum required duration of training, which includes both theoretical and practical elements, is:

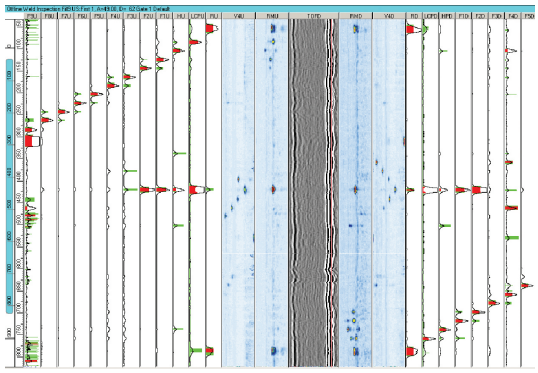
- Level 2 - 40 hours

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 2 - 3 months

Certification/Awarding Body

CSWIP



Course content

Knowledge of phased array technique; advantages/ disadvantages; overview of Pipe Wizard; interpretation of results from pipe girth weld inspections using RD Tech Viewer software; auditing of AUT records.

The course ends with the certification examination.

Objectives

- The accurate reporting of weld condition from AUT data
- Differentiation of defects from geometric features
- Assessment of AUT records against a specification
- Assessment of calibration records
- To meet the CSWIP syllabus requirements

AUT Technician Certification

Course Code: NDT46

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

10 days

Suitable for

This is a mechanized ultrasonic training course for the testing of girth Welds using zonal discrimination with focused search units, using pipeWIZARD (Olympus) or other AUT systems such as Rotoscan (Applus RTD) and Weldstar (GE).

Due to equipment availability this training is only available for AUT inspection companies and their employees.

Course content

Knowledge of phased array technique; advantages/ disadvantages; in-depth knowledge of Pipe Wizard system; interpretation of results; knowledge of software, equipment, troubleshooting etc.

Certification/Awarding Body

CSWIP

Objectives

- To set-up and operate AUT scanners
- To configure software for differing weld configurations
- To calibrate equipment

ACFM Crack Microgauge Operators Course - Level 1

Course Code: ACFM1

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Currently or previously approved 3.4U Inspection Controllers; currently or previously approved CSWIP 3.1U or 3.2U Divers; surface practitioner certificated under PCN or CSWIP; those qualified in relevant engineering science.

Entry requirements

- Be a current or previously approved 3.3U ROV pilot observer

OR

- Be a current or previously approved 3.4U Inspection Controller

OR

- Be a current or previously approved CSWIP 3.1U or 3.2U Diver

OR

- Be a surface practitioner certified under PCN or CSWIP

OR

- Have a qualification in a relevant engineering science

Course content

Overview of NDT techniques; electrical and electromagnetic theory; ACFM detection - identification of cracks; weld inspection by ACFM techniques; sizing for length and depth; reporting; backing-up data.

The course ends with the certification examination.

Certification/Awarding Body

CSWIP

Objectives

- To explain the theoretical principles
- To carry out equipment functioning checks
- To locate and size surface breaking fatigue cracks on uncoated and coated steel welds
- To gain eligibility to sit CSWIP EMD examinations

Additional information

Please note proof of experience and identity will be required prior to the training The candidate can only attempt one examination as part of the package.

ACFM Crack Microgauge Operators Course - Level 2

Course Code: ACFM2

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Currently or previously approved 3.4U Inspection Controllers; currently or previously approved CSWIP 3.1U or 3.2U Divers; surface practitioner certificated under PCN or CSWIP; those qualified in relevant engineering science.

Entry requirements

Be a current or previously certificated Level 1 ACFM operator.

Course content

Welding product technology; electrical and electromagnetic theory; ACFM detection - identification of longitudinal and transverse cracks; instruction writing; Level 2 software commands; sizing for length and depth; reporting; backing-up data.

The course ends with the certification examination.

Certification/Awarding Body

CSWIP

Objectives

- To explain the theoretical principles
- To carry out equipment functioning checks
- To locate and size surface breaking fatigue cracks on uncoated and coated steel welds
- To gain eligibility to sit CSWIP EMD examinations

Additional information

Please note proof of experience and identity will be required prior to the training.

The candidate can only attempt one examination as part of the package.

Non-destructive Testing - Advanced

Digital Radiographic Testing - Level 2

Course Code: NDT28

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Individuals who are looking to expand their current knowledge of radiographic systems and/or are looking at the possibility of introducing a digital system into their place of work/company.

Entry requirements

Course candidates must be qualified to a minimum of Level 1 or 2 Radiographic Testing or Interpretation conforming to EN 473 or ISO 9712.

PCN or CSWIP Level 2 DRT (Weld, Casting or Profile/ Tangential) certification will be offered.

Course content

Principles of digital radiography; equipment standards for CR systems; radiographic techniques with CR; calibration of equipment (use of phantom); image processing using phosphor screens; software specific parameters; calibration of measuring tools; effects of magnification; definition of accuracy constraints and capabilities of CR system; modification of image; use of analysis software; acceptance and reporting.

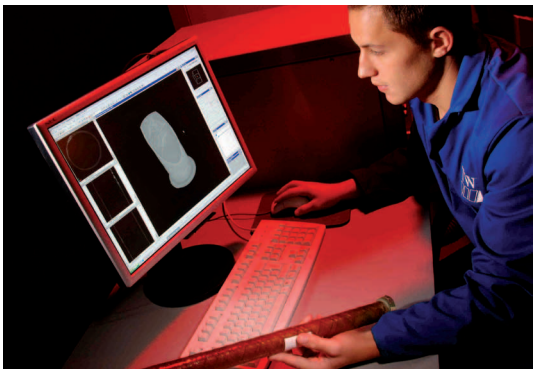
This course ends with the certification exam.

Certification/Awarding Body

CSWIP, PCN

Objectives

- To explain the theoretical background of digital radiography
- To be able to explain current standards with reference to CR systems (BS EN 14784)
- To be able to calibrate a CR system using a phantom
- To be able to explain the image processing of phosphor screens
- To be able to use software specific parameters to assess a digital image
- To be able to recognise the constraints and capabilities of a CR system
- To be able to modify the digital image to optimise defect detection
- To be able to compile a written instruction
- To meet the syllabus requirements of E10.2 training and examinations PCN syllabus



Additional information

Digitised Radiographic Testing (DRT)

The minimum required duration of training, which includes both theoretical and practical elements, is:

- Level 1 – 12 hours
- Level 2 - 24 hours (Direct Level 2 - 36 hours)

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 1 - 1 month
- Level 2 - 3 months (Direct Level 2 - 4 months)

Digitised Radiographic Interpretation(DRI)

The minimum required duration of training, which includes both theoretical and practical elements, is:

- Level 2 - 12 hours

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 2 - 3 months

Non-destructive Testing - Advanced

Eddy Current Testing (ET) — Course Code: NDT31

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

10 days

Suitable for

NDT personnel, inspectors and technicians responsible for, or engaged in, practical application of eddy current testing and writing techniques and instructions for detection of flaws in cast and wrought product, material identification/ determination of properties, coating thickness measurement, tube testing and weld inspections.

Also suitable to personnel engaged in inspection of aerospace materials, components and structure.

Entry requirements

The minimum required duration of training, which includes both theoretical and practical elements, is:

- Level 1 - 40 hours
- Level 2 - 40 hours (Direct Level 2 - 80 hours)

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 1 - 3 months
- Level 2 - 9 months (Direct Level 2 - 12 months)

Course content

Examination of cast forged and wrought products or tubing such as that found in condensers, heat exchangers and air conditioning units. This course covers the techniques of surface inspection and/or internal bore inspection and is supported by examinations complying with BS EN ISO 9712. The course ends with the certification examination.

Certification/Awarding Body

CSWIP, PCN

Objectives

- To detect cracks, surface and near-surface, in aircraft components, structures, tubes and welds
- To detect corrosion and thinning in non-magnetic materials
- To grade and sort materials on the basis of conductivity and permeability
- To write clear and concise inspection instructions and test reports
- To meet the syllabus requirements of CSWIP/PCN Level 2

Eddy Current Inspection of Ferritic Welds

Course Code: NDT31W

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

10 days

Suitable for

NDT personnel, inspectors and technicians responsible for, or engaged in, in-service application of eddy current techniques, writing techniques and instructions for inspection of ferritic welds.

Entry requirements

The minimum required duration of training, which includes both theoretical and practical elements, is:

- Level 1 - 40 hours
- Level 2 - 40 hours (Direct Level 2 - 80 hours)

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 1 - 3 months
- Level 2 - 9 months (Direct Level 2 - 12 months)

Course content

One or two weeks courses and supporting PCN Level 1 and 2 examinations for eddy current inspection of weldments.

Traditionally surface crack detection in ferritic steel welds with eddy current techniques has been difficult due to the change in material properties in the heat affected zone. These typically produce signals much larger than crack signals.

Sophisticated probe design and construction, combined with modern electronic equipment, have largely overcome the traditional problems and now enable the advantages of eddy current techniques to be applied to in-service inspection of ferritic steel structures in the as-welded conditions.

Specifically, the advantage of the technique is that under quantifiable conditions an inspection may now be carried out through corrosion protection systems. This means the costly removal and replacement of the protective coating is now not necessary.

When considering the use of eddy current techniques for coated welds there are a number of variables to assess prior to choosing specific pieces of equipment. These are as follows:

- suitable eddy current probes/coils
- material
- coatings
- weld geometry caused by the weld profile

The course ends with the certification examination.


Courtesy of TRAC Oil & Gas Ltd

Certification/Awarding Body

CSWIP, PCN

Objectives

- To evaluate the variables defined above and define the limitations of examination
- To write clear and concise inspection instructions and test reports
- To meet the syllabus requirements of CSWIP/PCN Level 2

Additional information

Price listed to direct access Level 2 and includes examination and levy fees. For Level 1 or training options, please contact Customer Services.

LRUT Pipes and Pipelines - Level 1

Course Code: NDT48

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

4.5 days

Suitable for

NDT inspectors new to the field of guided wave inspections of pipes and pipelines who will be under the supervision of more experienced and qualified personnel.

Course content

Introduction to UT guided waves; capabilities and limitations of LRUT; corrosion effects in pipework; introduction to GW test equipment; introduction to GW operating software; operation of test equipment; checking test equipment; selection of test conditions; practical data collection; focused tests; assessment of data quality; data handling and storage; troubleshooting.

The course ends with a written and practical test.

Additional information

Course candidates must be qualified to a minimum of Level 1 in conventional ultrasonic testing.

LRUT Pipes and Pipelines - Level 2

Course Code: NDT49

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

4.5 days

Suitable for

Experienced LRUT operators wishing to broaden their knowledge and understanding of GW testing and take on more responsibility for carrying out tests.

Course content

Summary of guided wave screening; properties of guided waves; review of LRUT software; dispersion curves; factors influencing test conditions; instruction writing; principles of interpretation; interpretation examples; interpretation exercises; focusing of guided waves.

The course ends with a written and practical test.

Non-destructive Testing - Advanced

Manual and Encoded Phased Array Inspection of Welds

Course Code: NDT44

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

15 days inc. exam:
10 days phased array only, 3 days analysis software, 2 days examination

Suitable for

Experienced Level 2 qualified ultrasonic technicians looking to expand their knowledge and gain a qualification in manual and encoded phased array ultrasonic testing (PAUT).

Entry requirements

PCN candidates must be qualified to a minimum of BS EN ISO 9712 Level 2 Ultrasonic Testing.

CSWIP certification is available for candidates holding ASNT UT Welds. It will be considered on an individual basis and evidence of training and experience presented to the training centre on application. Additionally, holders of ASNT UT Welds qualification will be required to sit the CSWIP UT Welds Level 2 General Paper.

Certification/Awarding Body

CSWIP, PCN

Course content

Principles of phased array inspection; principles of phased array probes; principles of inspection sensitivity; phased array instrument; scanning with phased array probes; calibration and checks; software for data collection and data analysis; principles of data analysis; software familiarity; use of software tools for defect detection and sizing; data analysis; procedures for verification of flaw existence and position; reporting.

Typical equipment used on the course: Olympus Omniscan, TD Focus Scan, Sonatest Harfang equipment. If your course is equipment specific please contact us to confirm the equipment that will be used for the event.

This course ends with the certification examination.

Objectives

- To explain the theoretical background of phased array applications
- To correctly select probe/wedge to examine welded butt joints
- To calibrate and set up the phased array ultrasonic equipment
- To locate and evaluate flaws in the weld body, HAZ, and parent metal lamination
- To analyse scan data for location and size of defects in typical welded butt joints
- To accurately report weld condition
- To differentiate defects from geometric features
- To compile a written instruction
- To meet the CSWIP/PCN syllabus requirements

Additional information

The minimum required during of training, which includes both theoretical and practical elements, is:

- Level 1 - 80 hours
- Level 2 - 24 hours (Direct Level 2 - 104 hours)

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 1 - 3 months
- Level 2 - 3 months (Direct Level 2 - 6 months)

Candidates with previous training in Phased Array UT may be eligible for a reduction of the total training hours required for PCN and CSWIP certification. Please contact Customer Services for further information.

Candidates are to provide evidence of the training received: a certificate of attendance and a copy of the training syllabus BOTH authenticated by a senior responsible person in the candidates employing organisation or a major client. This shall be passed to the relevant TWI Training Centre for approval at least two weeks prior to the scheduled course start date.

Thermographic Inspection - Level 1

Course Code: NDT60

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

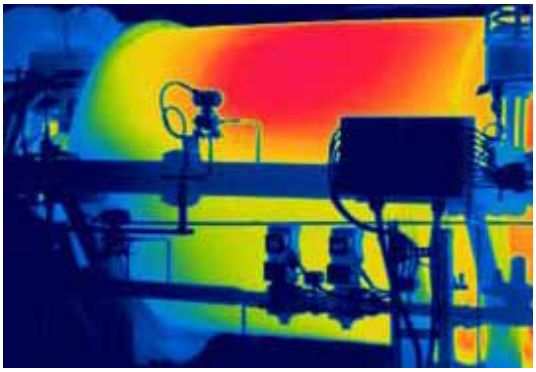
5 days

Suitable for

All engineering disciplines especially those involved with any maintenance or reliability including management, engineers, technicians and craft personnel.

Course content

Correct operation of the infrared imaging system, including adjusting the image, storing and retrieving data, provide proper care and verify the calibration of the instrument; understanding the basics of infrared theory including characterising the object and background; understanding basic heat transfer and to work within the limitations of the technology and follow basic inspection procedures; understanding qualitative thermography to be able to identify various patterns, anomalies and to make simple temperature measurements; familiarisation with the conditions required to carry out various inspections including mechanical, electrical components, energy systems and to consider any associated limitations; understanding basic safety concerns that must be addressed in order to conduct safe thermographic inspections; understanding of the factors that must be addressed when prioritizing potential problems for repair; how to maintain a database and be able to complete a simple test report (BS ISO 18434-1:2008) using the analysis and report generation software developed for their IR system; application of the requirements of relevant codes and standards.



Certification/Awarding Body

CSWIP

Objectives

- Correct infrared camera operation
- To be able to characterise the object and background for accurate temperature measurement
- To be able to identify patterns, shapes and anomalies in identifying problems
- To develop a route plan to collect data
- To develop an infrared inspection report to ISO standard

Non-destructive Testing - Advanced

Time of Flight Diffraction (ToFD) — Course Code: NDT40

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

10 days

Suitable for

Individuals with ultrasonic testing experience, who are looking to expand their knowledge into advanced ultrasonic applications and gain a qualification in Time of Flight Diffraction (ToFD).

Entry requirements

PCN candidates must be qualified to a minimum of BS EN ISO 9712 Level 2 Ultrasonic Testing.

CSWIP certification is available for candidates holding ASNT UT Welds. It will be considered on an individual basis and evidence of training and experience presented to the training centre on application. Additionally, holders of ASNT UT Welds qualification will be required to sit the CSWIP UT Welds Level 2 General Paper.

Course content

ToFD theory and principles of diffraction, ToFD hardware (pulsers, receivers, motor control, encoders), ToFD data acquisition and interpretation, ToFD techniques, ToFD applications, equipment selection, calibration and optimisation, optimising PCS and angles, flaw location and sizing, limitations of detection and resolution, codes and standards, reporting.

The course ends with the certification examination.

Certification/Awarding Body

CSWIP, PCN

Objectives

- To understand the theoretical background and limitations of ToFD applications
- To correctly select probe/wedge to examine welded butt joints
- To calibrate and set up the ToFD ultrasonic equipment
- To locate and evaluate flaws in the weld body and HAZ
- To differentiate defects from geometric features
- To analyse scan data for location and size of defects in typical welded butt joints
- To understand and apply digital processing processes (SAFT, linearization, averaging, filters etc)
- To compile written instructions
- To meet the CSWIP/PCN syllabus requirements

Additional information

The minimum required duration of training, which includes both theoretical and practical elements, is:

- Level 1 - 40 hours
- Level 2 - 40 hours (Direct Level 2 - 80 hours)

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 1 - 1 month
- Level 2 - 3 months (Direct Level 2 - 4 months)

This course will lead to an internationally recognised certification - BS EN ISO 9712.

Non-destructive Testing - Appreciation

Appreciation of Basic NDT Techniques

Course Code: NDT1

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

4.5 days

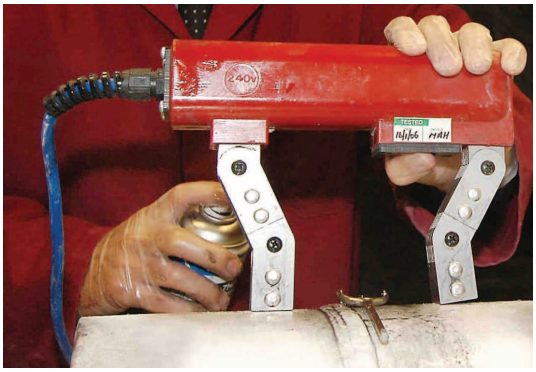
Suitable for

Engineers, surveyors and inspectors requiring a general knowledge of NDT methods and requiring some hands-on experience.

Course content

This NDT training course covers: A basic appreciation of the main NDT methods (Visual Inspection, Magnetic Particle Testing, Penetrant Testing, Radiographic Testing, Ultrasonic Testing and Eddy Current Testing); choice of method in relation to materials, defect type, position and weld geometry; materials sorting methods, proprietary instruments; surface methods; visual Inspection, magnetic particle and penetrant inspection and eddy current testing; methods for internal examination, X-and gamma-radiography, ultrasonic flaw detection.

70% of the course will involve practical demonstrations and hands-on experience.



Objectives

- To appreciate the available methods
- To explain the basic principles of these methods
- To identify the advantages and disadvantages of these, both in application and defect detection capability
- To carry out basic hands-on applications for familiarisation purposes

Non-destructive Testing - Appreciation

Appreciation of Advanced NDT Techniques - Week 1 Course Code: NDT10

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

4 days

Suitable for

The course covers phased array, ToFD, digital radiography and thermography and is aimed at plant engineers, non-destructive testing engineers, materials and corrosion engineers, plant inspectors responsible for managing the integrity of ageing process equipment, pipelines, boilers and storage tanks, wishing to gain an appreciation of advanced NDT techniques.

Entry requirements

There are no entry requirements for this course.

Course content

Phased Array: An overview of phased array inspection principles; the phased array instrument; phased array probes; calibration/checks; inspection sensitivity; principles of data analysis; software familiarity.

Time of Flight Diffraction (ToFD): Introduction into the principles of ToFD inspection, theory and principles of diffraction; ToFD hardware (pulsars, receivers, motor control and encoders); ToFD data acquisition and interpretation; calibration and optimisation; optimising PCS and angles; flaw location and sizing; limitations of detection and resolution.

Digital Radiography: Principles of digital radiography; calibration of equipment; image processing using phosphor screens; overview of software specific parameters; calibration of measuring tools; effects of magnification; definition of accuracy constraints and capabilities of CR system; modification of image; use of analysis software.

Thermography: Principles of infrared imaging; calibration of the instrument; storing and retrieving data; understanding of qualitative thermography in order to identify various patterns; familiarisation with the conditions required to carry out various inspections including mechanical, electrical components, energy systems and to consider any associated limitations.

Objectives

- To appreciate the available methods
- To explain the advanced principles of these methods
- To identify the advantages and disadvantages of these, both in application and defect detection capability

Non-destructive Testing - Appreciation

Appreciation of Advanced NDT Techniques - Week 2 Course Code: NDT11

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

4 days

Suitable for

The course covers long range UT, electromagnetic techniques, shearography and optical methods, acoustic emission and vibration analysis, ultrasonic inspection of austenitic materials and is aimed at plant engineers, non-destructive testing engineers, materials and corrosion engineers, plant inspectors responsible for managing the integrity of ageing process equipment, pipelines, boilers and storage tanks, wishing to gain an appreciation of advanced NDT techniques.

Entry requirements

There are no entry requirements for this course.

Course content

Long Range Ultrasonic Testing: Principles of LRUT, capabilities and limitations; corrosion effects in pipework; introduction to GW test equipment; introduction to GW operating software; operation of test equipment; checking test equipment; selection of test conditions; practical data collection; focused test.

Electromagnetic Techniques: Overview of electrical and electromagnetic theory; principles of ACFM (Alternating Current field Measurement), RFET (Remote Field Eddy current) and MFL (Magnetic Flux Leakage); capabilities and limitations of the techniques, typical applications, equipment.

Shearography and Optical Methods: Basic principles of light and shearography; definition of speckle interferometry, techniques and applications of shearography, interpretation.

Acoustic Emission and Vibration Analysis: Basic principles of vibration analysis, capabilities and limitations, terminology, equipment and software, transducer types and application, data collection procedures, diagnostic tools; principles of acoustic emission testing, capabilities and limitations characteristics of acoustic emission, sources of acoustic emission, sensors, instrumentation and signal processing, applications.

Ultrasonic Inspection of Austenitic Materials: Problems associated with the ultrasonic evaluation of austenitic welds, conventional techniques for overcoming these problems; the application of phased array ultrasonic testing; use of 2D probes.

Objectives

- To appreciate the available methods
- To explain the advanced principles of these methods
- To identify the advantages and disadvantages of these, both in application and defect detection capability

Basic Radiation Safety (BRS)

Course Code: NDT22

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

All staff working or associated with radiation generators and sealed sources, particularly industrial radiography personnel.

Designed to meet the requirements of PCN which states radiography certificates are valid only so long as the holder has been successful in a PCN radiation examination within the past five years and holds valid certification for Basic Radiation Safety or Radiation Protection to supervisor level.

Course content

Source and nature of ionising radiation; relevant basic physics; behaviour of radioactive isotopes; absorption processes; units of activity and dose; radiation damage to the human body; somatic and hereditary damage; stochastic and deterministic effects; early and late effects; principles of radiation protection; methods of radiation protection (time, distance, shielding); dose limits; safe distance and other protection calculations; guidance on the use of SI 3232:1999 and the relevant parts of ACOP; gamma containers and tests on them; packaging, labelling and transport; instrumentation and monitoring; emergency procedures and equipment; Radiation Protection Supervisor will also include the requirements for Radiation Protection Supervisors; knowledge and understanding of the requirements to assess doses; carry out hazard assessments; implement contingency plans and emergency procedures; arrangements for the provision of dosemeters and the keeping of dose records.

The course ends with the certification examination.

Certification/Awarding Body

CSWIP, PCN

Objectives

- To list basic hazards and harmful effects relating to exposure to radiation
- To recognise limitation requirements
- To calculate/evaluate safe distances and check dose levels
- To explain effective uses of shielding and distance
- To devise and execute contingency arrangements
- To experience emergency procedures
- To meet syllabus requirements for CSWIP/PCN

Additional information

Designed to meet the requirements for PCN Level 2 Radiation Safety Endorsement (Radiation Protection Supervisor).

Basic Radiation Safety (BRS) certification should be held by any person who is practising industrial radiography and has been adequately trained in the hazards associated with ionising radiations, the precautions to be taken when employing ionising radiation and the methods of protection.

Price listed includes examination and levy fees.

Non-destructive Testing - Conventional

CSWIP Visual Inspector (Offshore) — Course Code: OVI

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Personnel looking to gain a position within the Oil and Gas Industry or experienced NDT Technicians who wish to gain formal certification for visual inspection of components for in-service deterioration.

A two-week training course is available for personnel who do not have twelve months relevant offshore experience conducting visual inspections on process pipe-work. A one-week training course is available for mature candidates who hold three EN473 L2 NDE approvals and have twelve months offshore experience conducting visual inspection.

Entry requirements

No formal requirements for entry at Level 1. For entry to Level 2, NDT technicians require a minimum of one year relevant offshore experience.

Certification/Awarding Body

CSWIP

Course content

The topics covered include: background knowledge of the structures to be inspected; introduction to weld inspection; introduction to corrosion processes; review of reporting systems; review of relevant legislation; introduction to coating inspection.

The assessments include weld inspection, visual and dimensional assessments of relevant samples together with coating inspection. Successful candidates will be issued with the appropriate CSWIP certification.

Additional information

This course is a pivotal step for the NDT Inspector or Engineer looking to follow a career path leading to Offshore Inspection Engineer or Integrity Engineer and is integrated into the CSWIP Plant Inspector Scheme which has now a modular approach.

Magnetic Particle Testing (MT) — Course Code: NDT30M

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

All NDT personnel, inspectors and technicians engaged in, or responsible for, inspection of castings, forgings or fabricated items during manufacture or in-service in different product sectors.

Suitable for personnel working in the aerospace industry.

Entry requirements

The minimum required duration of training, which includes both theoretical and practical elements, is:

- Level 1 - 16 hours
- Level 2 - 24 hours (Direct Level 2 - 40 hours)

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 1 - 1 month
- Level 2 - 3 months (Direct Level 2 - 4 months)

Certification/Awarding Body

CSWIP, PCN

Course content

Principles of magnetism; magnetic fields; induction; permeability and reluctance; magnetisation; lines of force, methods of testing; interpretation of indications; demagnetisation; practical exercises; methods of assessing sensitivity; instruction writing.

During the Level 2 instruction writing and application, attendees requiring only Level 1 training will carry out practical applications to written instructions.

The course ends with the certification examination.

Objectives

- To explain the basic principles of magnetic particle inspection methods
- To carry out magnetic particle inspection
- To write clear and concise inspection instructions and test reports
- To meet syllabus requirements for CSWIP/PCN Level 2

Additional information

Price listed is for direct access Level 2 and includes examination and levy fees. For Level 1 option, please contact Customer Services.

Non-destructive Testing - Conventional

Penetrant Testing (PT) — Course Code: NDT30P

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

All NDT personnel, inspectors and technicians engaged in, or responsible for, inspection of castings, forgings or fabricated items during manufacture or in-service in different product sectors.

Suitable for personnel working in the aerospace industry.

Entry requirements

The minimum required duration of training, which includes both theoretical and practical elements, is:

- Level 1 - 16 hours
- Level 2 - 24 hours (Direct Level 2 - 40 hours)

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 1 - 1 month
- Level 2 - 3 months (Direct Level 2 - 4 months)

Course content

Materials, methods, compatibility of materials, equipment and safety aspects; practical exercises; methods of assessing sensitivity.

During the Level 2 instruction writing and application, attendees requiring only Level 1 training will carry out practical applications to written instructions.

The course ends with a written and practical test.

Certification/Awarding Body

CSWIP, PCN

Objectives

- To explain the basic principles of penetrant inspection methods
- To carry out penetrant inspection using solvent-removable, water-washable and post-emulsifiable/ removal processes
- To write clear and concise inspection instructions and test reports
- To meet syllabus requirements for CSWIP/PCN Level 2

Additional information

Price listed is for direct access Level 2 and includes examination and levy fees. For Level 1 option, please contact Customer Services.

Non-destructive Testing - Conventional

Radiation Protection Supervisor (RPS) Course Code: NDT22S

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

3 days

Suitable for

All staff working or associated with radiation generators and sealed sources, particularly industrial radiography personnel.

Designed to meet the requirements of PCN which states radiography certificates are valid only so long as the holder has been successful in a PCN radiation examination within the past five years and holds valid certification for Basic Radiation Safety or Radiation Protection to supervisor level.

Entry requirements

Radiation Protection Supervisor (RPS) level is an optional level of certification for holders of PCN level 1, level 2 and level 3 certification of competence for industrial radiography. In addition, it is made available for those appointed by an employer in accordance with regulation 17(4) of the United Kingdom Ionising Radiation Regulations (SI 3232:1999) to supervise work with radiation.

NOTE: Candidates for this examination must:

1. Hold a current PCN BRS certificate or an alternative acceptable to BINDT
2. Have successfully completed a PCN approved course comprising of 24 hours of formal training to RPS level as outlined in the current edition of PCN/GEN Appendix Z1
3. Provide evidence of nine months relevant experience as a holder of a PCN Basic Radiation Safety certificate or an alternative recognised by BINDT

NOTE: The responsibility for appointment of a Radiation Protection Supervisor rests with the employer, whose attention is drawn to regulation 13 of the IRR 99 regarding the duty to consult one or more Radiation Protection Advisers.

Certification/Awarding Body

CSWIP, PCN

Course content

Source and nature of ionising radiation; relevant basic physics; behaviour of radioactive isotopes; absorption processes; units of activity and dose; radiation damage to the human body; somatic and hereditary damage; stochastic and deterministic effects; early and late effects; principles of radiation protection; methods of radiation protection (time, distance, shielding); dose limits; safe distance and other protection calculations; guidance on the use of SI 3232:1999 and the relevant parts of ACOP; gamma containers and tests on them; packaging, labelling and transport; instrumentation and monitoring; emergency procedures and equipment; Radiation Protection Supervisor will also include the requirements for Radiation Protection Supervisors; knowledge and understanding of the requirements to assess doses; carry out hazard assessments; implement contingency plans and emergency procedures; arrangements for the provision of dosemeters and the keeping of dose records.

The course ends with the certification examination.

Additional information

Price listed includes examination and levy fees.

Radiographic Interpretation - Principles (Part A) Course Code: NDT2A

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

4.5 days

Suitable for

Radiographers, inspectors, engineers and surveyors who wish to interpret radiographs but do not have a good understanding of the principles of radiography. (This course forms part of the preparation for PCN Level 2 Radiographic Interpretation examination).

Course content

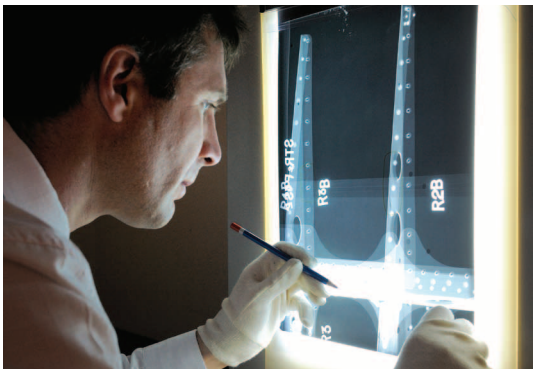
Preparation course designed for personnel responsible for judging the quality of radiograph and reaching informed decisions regarding the identity and extent of the defects revealed. Training in radiographic interpretation is in three optional parts. Part A provides essential knowledge on radiographic theory and practice to enable interpreters to judge radiographic quality. Parts B and C concentrate on practical interpretation of welds and castings respectively.

Principles of X- and gamma-radiography; equipment; safety; selection of films and screens; exposure; processing; characteristics of the image; choice of technique; relevant standards; sensitivity, factors affecting the quality of radiographs.

The course ends with an end of course assessment.

Objectives

- To explain the basic theory of radiography
- To state basic radiation safety principles
- To explain principles relating to selection of films, energy levels and techniques
- To evaluate radiographic sensitivity



Additional information

The NDT2A course is the theory of Radiographic Testing (RT) that covers the production of radiographs and the factors that can alter them, which is required knowledge for the Radiographic Interpretation (RI) certification exam at the end of the NDT2B (Radiographic Interpretation - Light and Dense Metal Welds - Part B) course.

If you have a good understanding of the RT theory or a Radiographic Testing qualification, a distance learning package is available (at additional cost) to carry out 16 hours of self study to meet the 56 training hour requirement of the certification schemes, before attending the Radiographic Interpretation course NDT2B. Please contact the training centre in advance if selecting this training option.

An assessment of theoretical Radiographic Testing (RT) knowledge will be taken on the first day of the course, but only minimal theoretical RT training will be provided during the Rad Interp course (NDT2B).

Please note, previous experience of reading radiographs WILL NOT satisfy this knowledge requirement. If you do not have a thorough understanding of Radiographic Testing theory, it is strongly recommended that you attend the preparation course NDT2A, before taking the Radiographic Interpretation course NDT2B.

Radiographic Interpretation - Metals Welds (Part B) Course Code: NDT2B

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Radiographers, inspectors, engineers and surveyors.

Entry requirements

The minimum required duration of training, which includes both theoretical and practical elements, is:

- Level 1 - not applicable
- Level 2 - 56 hours

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 1 - not applicable
- Level 2 - 6 months

Course content

Weld defects and their components; viewing conditions; identification of radiographs; spurious indications and film artefacts; appreciation of radiographic principles and parameters of interpretation; standards for radiographic practice, interpretation tutorial; acceptance criteria.

The course ends with the certification examination.

Certification/Awarding Body

CSWIP, PCN

Objectives

- To list radiographic techniques
- To state origins of defects
- To recognise and differentiate between film artefacts and defect indications
- To interpret radiographs
- To meet the syllabus for CSWIP/PCN Level 2

Additional information

It is essential that course attendees have a good knowledge of radiographic theory and it is strongly recommended that those without that knowledge attend the Radiographic Interpretation (Part A) course.

If you have a good understanding of the RT theory or a Radiographic Testing qualification, a distance learning package is available (at additional cost) to carry out 16 hours of self study to meet the 56 training hour requirement of the certification schemes, before attending the Radiographic Interpretation course NDT2B. Please contact the training centre in advance if selecting this training option.

An assessment of theoretical Radiographic Testing (RT) knowledge will be taken on the first day of the course, but only minimal theoretical RT training will be provided during the Rad Interp course (NDT2B).

Please note, previous experience of reading radiographs WILL NOT satisfy this knowledge requirement. If you do not have a thorough understanding of Radiographic Testing theory, it is strongly recommended that you attend the preparation course NDT2A, before taking the Radiographic Interpretation course NDT2B.

Radiographic Interpretation - Metal Castings (Part C) Course Code: NDT2C

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

4.5 days

Suitable for

Radiographers, inspectors, engineers and surveyors.

Entry requirements

The minimum required duration of training, which includes both theoretical and practical elements, is:

- Level 1 - not applicable
- Level 2 - 56 hours

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 1 - not applicable
- Level 2 - 6 months

Course content

Casting defects and their origin; foundry practices - sand, permanent mould and precision casting; spurious indications; viewing conditions; identification of radiographs; appreciation of radiographic principles and parameters of interpretation; standards for radiographic practice; acceptance criteria; interpretation tutorials and practice.

Tuition ends with the certification examination.

Objectives

- To prepare radiographic inspection reports
- To state origins of defects
- To recognise and differentiate between film faults and defect indications
- To interpret radiographs

Additional information

It is essential that course attendees have a good knowledge of radiographic theory and it is strongly recommended that those with little or no theoretical radiographic testing knowledge attend Rad Interp (Part A - Principles of Radiographic Testing).

If you have a good understanding of the RT theory or a Radiographic Testing qualification, a distance learning package is available (at additional cost) to carry out 16 hours of self study to meet the 56 training hour requirement of the certification schemes, before attending the Radiographic Interpretation course NDT2C. Please contact the training centre in advance if selecting this training option.

An assessment of theoretical Radiographic Testing (RT) knowledge will be taken on the first day of the course, but only minimal theoretical RT training will be provided during the Rad Interp course (NDT2C).

Please note, previous experience of reading radiographs WILL NOT satisfy this knowledge requirement. If you do not have a thorough understanding of Radiographic Testing theory, it is strongly recommended that you attend the preparation course NDT2A, before taking the Radiographic Interpretation course NDT2C.

Non-destructive Testing- Conventional

Radiographic Testing (RT) - Welds

Course Code: NDT20

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

15 days

Suitable for

NDT personnel, engineers, surveyors, inspectors and quality engineers.

Courses delivered at TWI Abington, near Cambridge are also available for personnel working in the aerospace industry.

Entry requirements

The minimum required duration of training, which includes both theoretical and practical elements, is:

- Level 1 - 40 hours
- Level 2 - 80 hours (Direct Level 2 - 120 hours)

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 1 - 3 months
- Level 2 - 9 months (Direct Level 2 - 12 months)

Course content

Welding processes and weld defects; properties of X- and gamma-rays; sensitometry; film selection; film processing and spurious indications; factors controlling contrast and definition; X- and gamma-ray equipment; ionising radiation hazards; regulations; use of screens and filters; selection of angle of aspect; image quality indicators; defect depth location; castings; reporting.

Candidates receive training relevant to the examination to be taken covering practical, inspection and theoretical aspects as appropriate.

The course ends with the certification examination

Certification/Awarding Body

CSWIP, PCN

Objectives

- To explain the basic theory of X - and gamma radiography
- To select film type and energy levels, select and prepare techniques for a given specimen
- To state the theory of film processing and carry out practical dark-room work
- To have a working knowledge of basic radiation safety (see note in Additional Information)
- To plot and evaluate film characteristics (sensitometry)
- To recognise film faults
- To meet the syllabus requirements for CSWIP/PCN Level 2

Additional information

The course does not cover PCN Level 1 Basic Radiation Safety qualification and it is recommended that it is taken prior to attending this course.

The course does not cover PCN Level 2 Safety Endorsement (Radiation Protection Supervisor).

PCN Radiography certificates are only valid so long as the holder holds any other level of PCN radiation protection certification, or valid radiation safety certification recognised by the British Institute of NDT. For initial radiography candidates, the basic radiation safety examination may be taken at the same time as the radiography examination.

Price listed for direct access Level 2 and includes examination and levy fees. For Level 1 option, please contact Customer Services.

Ultrasonic Corrosion and Erosion Monitoring — Course Code: NDT43

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Ultrasonic Technicians certified to level 2 who wish to gain specific training in the corrosion monitoring of steel products.

Entry requirements

Level 2, Ultrasonics

Course content

The course includes specific product technology in In-Service failure mechanisms including corrosion. The emphasis of the course is practical training and experience on corroded samples similar to those conditions experienced in the Offshore Industry.

Objectives

- To gain relevant practical knowledge of offshore components
- To understand the failure mechanisms in these items during in-service use
- To carry out practical examination of representative components
- To compile test reports for in-service and corrosion defects

Additional information

Specific additional reference material will be given to aid the product knowledge of the candidate.

Ultrasonic Testing (UT) - Thickness Measurement — Course Code: NDT4T

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Course content

Principles of ultrasonics; properties of sound; waves, frequencies, sound beam, attenuation; thickness gauges and flaw detectors, ultrasonic compression probes; calibration blocks, calibration, sensitivity, sizing techniques; practical exercises on various test specimens; testing of parent plates; lamination and thickness measurement; report and instruction writing.

Ultrasonic Testing (UT) - Welds

Course Code: NDT4

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

15 days

Suitable for

All personnel including testers, inspectors, engineers and surveyors who require a thorough and comprehensive introduction to ultrasonic testing of welded joints.

This course is also suitable for personnel working in the aerospace industry.

Entry requirements

The minimum required duration of training, which includes both theoretical and practical elements, is:

Level 1 - 40 hours
Level 2 - 80 hours (Direct Level 2: 120 hours)

The minimum duration for experience prior to or following success in the qualification examination is:

Level 1 - 3 months
Level 2 - 9 months (Direct Level 2: 12 months)

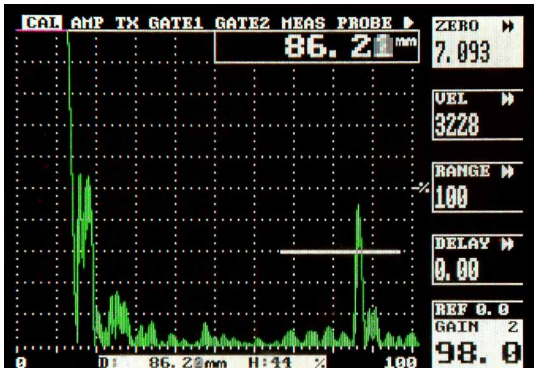
Course content

Basic principles of sound; generation and detection of sound; behaviour of sound in a material; the flaw detector; use of angled beam probes for weld scanning; welding processes and weld defects; practical exercises on test specimens containing simulated flaws; examination of parent plate, butt welds; instruction writing.

The course ends with the certification examination.

Certification/Awarding Body

CSWIP, PCN



Objectives

- To explain the theoretical background of the techniques
- To calibrate ultrasonic equipment
- To measure the thickness of steel plates and determine levels of attenuation
- To locate and evaluate laminations
- To select the correct type of probe to examine welded butt joints in steel plate and aerospace components/structures
- To report on the location and size of defects in typical welded butt joints
- To interpret code requirements
- To meet the syllabus requirements for CSWIP/PCN Levels 1 and 2

Additional information

This direct access Level 2 training course meets the 120 hour training requirement for BS EN ISO 9712 certification.

Level 1 training and examination can be catered for within the Level 2 course if required, contact the test centre for details.

Price listed is for direct access Level 2 and includes examination and levy fees.

For Level 1 options, please contact the test centre.

Non-destructive Testing - Conventional

Visual Testing (VT) — Course Code: NDT30V

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Ideal preparation for inspection engineers, technicians, NDT operators or surveyors who require a knowledge of visual inspection techniques, an understanding of likely problem areas and an appreciation of inspection methodology.

Entry requirements

The minimum required duration of training, which includes both theoretical and practical elements, is:

- Level 1 - 16 hours
- Level 2 - 24 hours (Direct level 2 - 40 hours)

The minimum duration for experience prior to or following success in the qualification examination is:

- Level 1 - 1 month
- Level 2 - 3 months

Course content

Introduction to visual inspection; fundamentals of vision and light; introduction to NDT; visual inspection equipment; factors influencing visual inspection; product technology (welding, casting, forging etc.); practical inspection methodology; inspection, weld repair and heat treatment requirements.

The course ends with the certification examination.

Certification/Awarding Body

CSWIP

Objectives

- To outline the factors influencing visual inspection
- To explain the place of visual inspection in relation to NDT
- To enable candidates to utilise a range of visual inspection equipment
- To meet syllabus requirements for CSWIP Level 2

Additional information

Price listed is for direct access Level 2 and includes examination and levy fees. For Level 1 option, please contact Customer Services.

Non-destructive Testing - Level 3 Training (EN 473)

NDT Practitioner Level 3

Course Code: NDT33

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

4.5 days

Suitable for

Experienced NDT inspection staff, supervisory and research personnel engaged in NDT.

Course content

Designed for experienced senior NDT inspection personnel who wish to attempt EN 473 (PCN or CSWIP) Level 3 certification.

Basic exam - Revision of product technology (materials, cast, wrought, welding, heat treatments, etc); certification scheme information; revision of NDT methods at level 2.

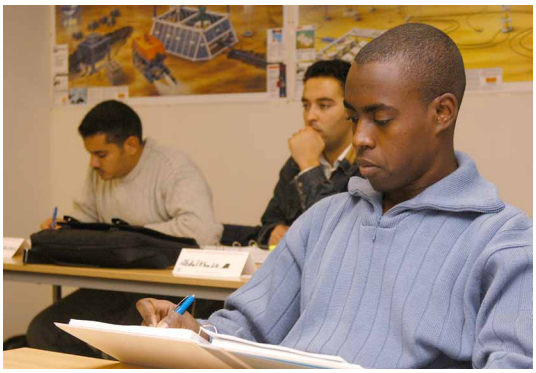
Main method exams - general preparation and revision of chosen method at level 3; sector specific preparation and revision of the NDT method including use of applicable standards; NDT procedure preparation and creation with use of applicable standards and specifications.

Certification/Awarding Body

CSWIP, PCN

Objectives

- To state the responsibilities of a level 3 as directed by the relevant scheme
- To state the parameters relating to inspection of welds, forgings and castings
- To be familiar with the main certification scheme requirements
- To explain the principles of the major complementary NDT methods
- To prepare for chosen method exam at level 3 through revision and assessment in general and sector specific terms
- To devise and write NDT procedures and instructions for the inspection of component and/or weld configurations in the chosen method



Additional information

EN 473 now mandates training hours prior to Level 3 examination. It is strongly recommended that prospective Level 3 candidates ascertain their exact training requirements by contacting the training centre with details of EN 473 qualifications held and other supporting documentation.

Exam exemptions may also be available and must be obtained directly from PCN using form PSL/49, or CSWIP by contact TWI Certification Ltd.

It is strongly recommended that EN 473 Level 2 certification in the method sought is achieved before undertaking Level 3 exams, to significantly reduce the training hour requirements.

Course costs vary according to the training hour requirements and Level 2 qualifications held. For exam only prices, use the 'Examination' drop down link and select the relevant scheme.

Details on the training and experience requirements and possible exemptions for the chosen scheme can be found on their respective website

CSWIP Plant Integrity Management Programme

In this competitive age, the resources of successful plant operators can be stretched when faced with unforeseen problems or when time-investment is required for long-term planning. The key is to identify the most cost-effective practical solution using state-of-the-art assessment tools and techniques.

Recognising the need to ensure that engineers involved in asset integrity management are suitably qualified to deliver optimised plant inspection and assessment, TWI is offering an **internationally recognised CSWIP plant inspector certification scheme at three competency levels (Level 1, 2 and 3).**

TWI has responded to industry's need for plant inspection personnel to gain certification in plant integrity management by offering the Plant Inspection training scheme in a **modular format, giving prospective students the opportunity to follow a clearly defined, structured career path.**

These courses are aimed at:

- plant engineers
- welding/NDT inspectors/practitioners
- materials and corrosion engineers
- plant inspectors

responsible for managing the safety and integrity of ageing process equipment, pipelines, boilers and storage tanks.

The scheme is designed to suit:

- plant inspectors working for manufacturing works (Vendor)
- inspection organisations
- equipment owners and operators
- classification societies
- insurance companies
- safety regulators

The courses have three goals:

- To ensure inspectors and engineers responsible for assessing plant integrity have the essential tools and skills necessary
- To recognise and certify plant inspector competence
- To provide a structured career path for continuing professional development of plant integrity practitioners through formal training/certification

Course fees do not include copies of the associated API or ASME documents. API publications may be purchased from the API Standard Store: www.techstreet.com.

For all courses, students must provide their own copies of the reference standards.

Plant Inspection Level 1

Plant Inspection Level 1 consists of **two five-day modules** and can be accessed from various routes: NDT/welding inspection route or mature candidate route.

An inspector certified to Plant Inspector Level 1 has a wide-ranging basic knowledge of technical issues relating to works (vendor) and in-service inspection of plant.

- The inspector will be able to perform straightforward unsupervised inspections in accordance with an inspection and test plan (ITP) for new equipment or a written scheme of examination (WSE) for in-service equipment which is not subject to statutory requirements (PED, PSSRs, etc...)
- The inspector will be able to choose the inspection method, liaise with technicians performing the test, and provide clear reports, with recommendations, for final assessment by others
- The inspector will be capable of making basic subjective judgements on routine - inspection results but will require assistance when dealing with more technically complex situations

MODULE 1 Part A: Rules/Regulations and Duties of a Plant Inspector

Course content

Roles and duties of the Plant Inspector; QA/inspection; inspection safety; legislation, rules and regulations; basic inspection skills; inspection and test plans; inspection of materials; visual inspection skills; visual examination of welds; inspection and NDT; engineering materials; material degradation and failure.

MODULE 1 Part B: Inspection Methods

Course content

The use of codes and standards; introduction to pressure equipment; pressure vessels inspection; inspection of pipelines; inspection of storage tanks; inspection of paint systems and linings; introduction to risk-based inspection; inspection reporting; corrosion processes.

Plant Inspection Level 2

To be awarded Plant Inspection Level 2, candidates must hold Plant Inspection Level 1 (Module 1: Parts A and B) and gain four of the seven available modules.

- An inspector certified to Plant Inspector Level 2 would be capable of carrying out all duties for which a level 1 inspector is qualified but is able to add a deeper level of technical understanding and interpretation
- The inspector also has a wider scope of knowledge relating to pressure equipment and their manufacturing and test procedure
- A Level 2 inspector can make more detailed comparison of inspection results with code/defect acceptance criteria and justify conclusions using code calculations. In cases where corrosion and other in-service defects are found, the inspector is able to allocate severity levels and contribute input to a risk-based-inspection (RBI) scheme, if applicable

MODULE 2: Damage Mechanism Assessment for RBI and FFS, based on API RP 571

Three-day course covering the latest API recommended practice on in-service damage mechanisms in pressure systems, pipelines and storage tanks, in oil and gas production, refining and petrochemical industries. API RP 571 supports the API RP 580 risk-based inspection (RBI) and the new API RP 579-1/ASME FFS-1 2007 fitness-for-service (FFS) procedures.

Course content

Common damage mechanisms in all major oil and gas production, refining and manufacturing processes and where they can be found; key process parameters, prevention and control and the most appropriate inspection and non-destructive testing methods for these damage mechanisms.

MODULE 3: Risk Based Inspection (RBI), based on API and ASME

Two-day course covering the latest recommended practice for RBI and maintenance planning on pressure systems, pipelines and storage tanks. This course covers Level 1 (qualitative) through to Level 3 (quantitative) RBI methods and will provide practical expertise on how to implement RBI.

Course content

RBI in accordance with API RP 581, API RP 580; reasons for implementing RBI; benefits of using RBI; practical implementation of RBI; planning successful RBI implementation projects; practical likelihood and consequence analysis; preparing inspection plans and optimising maintenance and inspection intervals; implementing risk mitigation actions; overview of other procedures (e.g. RIMAP, ASME) and related API documents (API RP 510, API 570 and API 653).

MODULE 4: Fitness-For-Service (FFS) Assessment, based on API RP 579-1/ASME FFS-1 2007

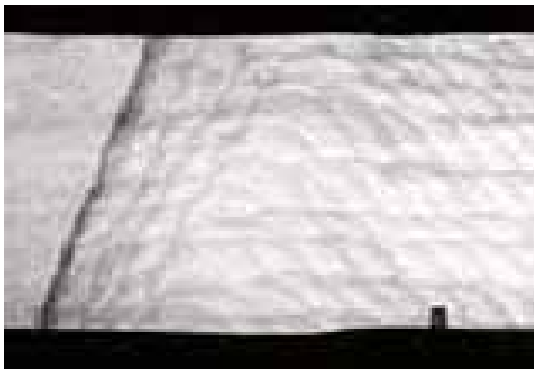
This course has been developed, based around the API/ASME combined standard (API 579 Second Edition) which has been expanded to address material damage mechanisms other than just those commonly found in refining industry equipment.

Four-day course covering Levels 1 and 2 FFS assessments, in accordance with the latest edition of API RP 579-1/ASME FFS-1 2007.

Course content

Introduction to FFS; material properties and the API RP 579 Annexes; stress analysis for FFS; NDT and flaw sizing for FFS; identification of damage mechanisms for FFS; brittle fracture; general metal loss; localised metal loss; pitting; laminations; weld misalignment and shell distortion; crack-like flaws; creep; fire damage; hydrogen blisters; hydrogen damage associated with HIC and SOHIC; dents and gouges; remaining life assessment and life extension examples; repair and remediation options; status of API RP 579 and future developments; interaction with other assessment procedures (e.g. FITNET, BS 7910, R5 and R6) and related API documents (API RP 510, API RP 570 and API RP 653).

MODULE 5: Weld Repair of Pressure Equipment and Piping



One-day course covering the requirements for weld repair in international codes and standards. The course will start with an introduction to main methods of repair (hot and cold). However the main focus of the day will be on welding processes and weld repair, production control and method statements for weld repair, qualifications and inspection - pre and post weld repair and the training will include interactive class exercises.

Course content

Process to derive need for repair, selecting an appropriate repair method, a list of must do's, life of weld repair, type of equipment and industry (time and consequence constraints), codes and standards to make weld repairs or alterations (temper bead repair, mock up vs PQT), proper weld procedure and welder qualifications and use of standard welding procedures (methods and requirements to qualify repair - typical qualification program - types of test - non-ideal conditions - what happens etc., what paperwork needs to be done, who should be notified), appropriate selection of NDE methods, examples and case studies including when weld repairs have gone wrong.

MODULE 6: Pressure Vessel Inspection, based on API RP 510

Five-day course covering a comprehensive introduction to the in-service inspection of pressure vessels based on the requirements of API/ASME standards.

Course content

Extensive overview of API 510 "Body of Knowledge", inspection intervals, corrosion allowances, joint efficiencies, static head and pressure calculations, impact testing, weld size determination, concepts of reinforcement, degradation mechanisms, remaining life calculations, ASME VIII welding and ASME V NDE requirements.

MODULE 7: Piping Inspection, based on API RP 570

Five-day course covering a comprehensive introduction to the in-service inspection of metallic piping systems based on the requirements of API/ASME standards.

Course content

Extensive overview of API 570 "Body of Knowledge", corrosion allowances, inspection intervals, joint efficiencies, pressure testing, impact testing, preheating and heat treatment requirements, remaining life calculations, degradation mechanisms, ASME welding and NDE requirements.

MODULE 8: Aboveground Tank Inspection, based on API RP 653

Five-day course covering a comprehensive introduction to the in-service inspection of above-ground storage tanks based on the requirements of API/ASME standards.

Course content

Extensive overview of API 653 "Body of Knowledge", corrosion allowances, inspection intervals, joint efficiencies, hydrostatic testing requirements, weld size determination, hot tapping, tank shell evaluation, degradation mechanisms, ASME welding and NDE requirements.

Plant Inspection Level 3

To be awarded Plant Inspection Level 3, candidates must hold Plant Inspection Level 2 and gain an additional two modules.

- An inspector certified to Plant Inspector Level 3 would be capable of establishing techniques and procedures; interpreting codes, standards, specifications and procedures; and recommending particular test methods, techniques and procedures to be used
- The inspector shall be deemed to have the competence to interpret and evaluate results in accordance with existing codes, standards and specifications and have sufficient practical technical background to select methods and establish techniques and to assist in establishing acceptance criteria where none are otherwise available
- The inspector will also be able to assume responsibility for a 'user inspector' operation and demonstrate a clear and justified view of the subject of risk

Entry requirements

Direct Entry to Plant Inspection Level 1

Candidates shall hold a minimum of:

- A valid CSWIP Welding Inspector certificate (Level 2)

AND

- Current Level 2 ISO 9712 NDT certificates in two methods

OR

- Candidates shall have obtained a minimum of five years verified work experience in plant inspection

NOTE:

- If the candidate does not hold a valid CSWIP Welding Inspector certificate (Level 2) he/she must either gain the Level 2 approval or gain the Offshore Visual Inspection approval (Supplementary Module S1)
- If the candidate does not hold a current ISO 9712 NDT certification in two methods he/she must either gain the required NDT approvals or attend an NDT appreciation training course (Supplementary Module S2)

Direct Entry to Plant Inspection Level 2

A mature candidate route is available for candidates who hold a minimum of a HNC in a relevant engineering subject or Incorporated Engineer with an appropriate Professional Body and have a minimum of five years' verified experience in plant inspection.

Candidates with the appropriate academic qualification but without the required experience or welding Inspection and NDT certification must successfully complete supplementary modules S1/S2 as appropriate.

In addition to the above requirements, in order to be eligible to attend the Plant Inspector Level 2 training candidates shall successfully complete Level 1 Plant Inspection Module 1 (PART A).

To be awarded Plant Inspection Level 2
Candidates must hold Plant Inspection Level 1, those with the appropriate academic qualifications must hold Plant Inspection Level 1 (Module 1 Part A) and gain four Level 2 modules.

To be awarded Plant Inspection Level 3
Candidates must hold Plant Inspection Level 2 and gain 2 additional modules.

Structural Integrity Assessment

Course Code: ATC65

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

4 days

Suitable for

To provide practising engineers with a firm foundation for the application of BS 7910 to the assessment of flaws using fitness-for-purpose methods.

Course content

The course is provided over three consecutive days according to the following schedule. The actual scheduling of lectures and practical sessions over the three days may vary from that described below but all subjects will be covered.

An additional fourth day is offered for those wishing to receive training in CRACKWISE (TWI software that automates the fracture and fatigue procedures of BS 7910).

Day 1

Failure case studies:
- Examples of actual failures
- Contributing factors and lessons learnt

Fitness-for-purpose methods:
- Concept of fitness-for-purpose methods and engineering critical assessment (ECA)
- Historical background
- Key parameters that influence structural integrity
- Examples of practical applications and benefits

Fracture mechanics theory:
- Key parameters (for driving force and fracture toughness): K, CTOD, J and their role in linear elastic fracture mechanics (LEFM) and elastic-plastic fracture mechanics (EPFM)

Materials issue:
- Awareness of flaw types (mainly in welds) including fabrication and service flaws
- Materials/service issues and their effects on fracture toughness (e.g. time-dependence)

Fracture mechanics testing:
- Testing (especially welds) including preparation of specimens and post-test analysis

Non-destructive testing (inspection):
- Role of NDT in ECA
- Inspection qualification
- Capabilities of major NDT methods

Introduction to BS 7910:
- Background and definitions (flaw types and stress categorisation)

Day 2

Failure assessment diagram (FAD) approach:
- Definition, main parameters, primary and secondary stresses, local and global collapse

Main features and input data to FAD assessments

Exercise

Software for structural integrity assessment:
- Introduction to CRACKWISE
- Workshop cases - fracture assesssment

Fracture assessment using R-curve data

Comparison of Option 1 and 2 FADs
- Workshop cases - fracture assesssment

Day 3

Fatigue of welded structures:
- Background to fatigue design of welded joints
- Factors which affect the fatigue of welded joints

Fatigue assessment procedures in BS 7910:
- Fracture mechanics based calculations of fatigue crack growth

Fatigue quiz

CRACKWISE workshop case - fatigue assessment

Extending the ECA approach:
- BS 7910 annexes
- Non-planar flaws
- Other flaw assessment procedures (including FITNET and API 579-1/ASME FFS-1)

Annexes J, K and Q

Crackwise workshop cases - tearining analysis

Day 4

What is new in the 2013 version of BS 7910

CRACKWISE workshop cases - advanced fracture assessment

Implications of sour service:
- Determination of materials properties
- Relevant published data
- Assessment of flaw tolerance

Fracture assessment of circumferential girth weld flaws:
- Guidance in BS 7910 and DNV-OS-F101
- Guidance in DNV-RP-F108

Additional information

- This course is given by specialists highly experienced in the practical application of fitness-for-purpose methods in a wide range of applications including pressure vessels, pipelines, offshore structures, vehicles, bridges and buildings
- Training time is typically 6 hours per day (9.00 - 17.00 hrs including coffee/tea and lunch breaks)
- Participants are encouraged to bring their own laptops and will be given a version of CRACKWISE software to perform the workshop examples
- Participants receive a full set of course notes and a copy of BS 7910
- Participants receive a Certificate of Attendance

Plastics Welding

Butt Fusion and Electrofusion Welding

Course Code: ATC64

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

1 - 2 days
The specific detail to be included in the training will be discussed prior to a cost being provided.

If required, an examination can be provided following this course leading to CSWIP certification.

Suitable for

Individuals with limited or no previous experience of these welding processes but wishing to learn skills; maintenance staff required to install and repair plastic pipe systems; welding engineers unfamiliar with these processes; engineering apprentices.

Course content

Introduction to common thermoplastics (PVC, PP, PE, PVDF); key processing techniques; joint preparation; defects and how to avoid them; process control, inspection and testing, health and safety; practical butt fusion and electrofusion welding in polypropylene or polyethylene.

Certification/Awarding Body

CSWIP

Objectives

- To understand practical welding - butt fusion and electrofusion To identify plastics materials
- To identify plastics materials
- To implement procedure control and safe operation
- To understand weld properties
- To identify faults/defects and how to avoid them

Certification in Plastics Welding

TWI offers certification aligned to the British and European standard for approved testing of plastics welders (BS EN 13067) and also entry level certification, via the internationally recognised Certification Scheme for Welding and Inspection Personnel (CSWIP). More information is available at www.cswip.com

To discuss your requirements or to book a course please telephone Scott Andrews on 01223 899569 or e-mail: scott.andrews@twi.co.uk

Hot Gas and Extrusion Welding

Course Code: ATC61

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

1 - 5 days
The specific detail to be included in the training will be discussed prior to a cost being provided.

Suitable for

Individuals with no previous experience of manual welding processes but wishing to learn the skills; maintenance staff required to install and repair plastic fabrications; welding engineers unfamiliar with these processes; engineering apprentices.

Course content

Introduction to common thermoplastics (PVC, PP, PE, PVDF); common processing techniques; weld symbols; joint preparation (including hand tools); defects and how to avoid them; process control; inspection and testing; health and safety; introduction to CSWIP certification; practical hot gas welding and extrusion welding.

Certification/Awarding Body

CSWIP

Objectives

- To understand practical welding - hot gas and extrusion
- To identify the common plastics materials
- To implement procedure control and safe operation
- To understand weld properties
- To identify faults/defects and how to avoid them

Certification in Plastics Welding

TWI offers certification aligned to the British and European standard for approved testing of plastics welders (BS EN 13067) and also entry level certification, via the internationally recognised Certification Scheme for Welding and Inspection Personnel (CSWIP). More information is available at www.cswip.com

To discuss your requirements or to book a course please telephone Scott Andrews on 01223 899569 or e-mail: scott.andrews@twi.co.uk

Welding of Lining Membranes

Course Code: ATC68G

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

1 - 3 days
The specific detail to be included in the training will be discussed prior to a cost being provided.

If required, an examination can be provided following this course leading to CSWIP certification.

Suitable for

Individuals with limited or no previous experience of this welding process but wishing to learn the skills; maintenance staff required to install and repair geomembranes; welding engineers unfamiliar with this process; engineering apprentices.

Course content

Introduction to common thermoplastics (PVC, PP, PE, PVDF); key processing techniques; joint preparation; defects and how to avoid them; process control; inspection and testing; health and safety; practical geomembrane welding; good and bad site working practices; BGA/CSWIP certification scheme.

Certification/Awarding Body

CSWIP

Objectives

- To provide a fundamental understanding of the plastics welding techniques and procedures used when site welding a geomembrane liner
- To provide an understanding of the BGA/CSWIP certification scheme
- To provide hands-on experience in the geomembrane welding techniques

Certification in Plastics Welding

TWI offers certification aligned to the British and European standard for approved testing of plastics welders (BS EN 13067) and also entry level certification, via the internationally recognised Certification Scheme for Welding and Inspection Personnel (CSWIP). More information is available at www.cswip.com

To discuss your requirements or to book a course please telephone Scott Andrews on 01223 899569 or e-mail: scott.andrews@twi.co.uk

Process Appreciation

Essentials of Welding Design — Course Code: WTC100

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Project engineers, design engineers and design draughtsmen, and all technical staff who require an understanding of the influence of design in production of acceptable welded fabrications.

Course content

The welded joint; terminology; steps for successful design; features of welding processes; edge preparations; weld symbols; residual stress and distortion; defects; weldability; strength of welded joints; calculation of weld size for static loading; material selection and process control to avoid brittle fracture; design exercises; assessment of the relative fatigue life of welds; fatigue life improvement methods.

This course reviews the terminology and explains concisely the basic principles of effective welding design.

Objectives

- To recognise how welding imposes limitations on design
- To appreciate the importance of weldability problems in materials selection
- To design a welded joint to provide adequate access for a given process
- To make static stress assessments
- To understand fatigue behaviour of welded joints
- To select materials to avoid brittle fracture

An Introduction to Friction Stir Welding — Course Code: ATC210

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Anyone with an interest in friction stir welding whether familiar with the technology or not. It will appeal to both managers and engineers from industry sectors involved in fabrication or metal components. Attendees involved in research and development in joining of materials will benefit from seeing FSW first hand and learning about current capabilities and areas of active development.

Course content

The course will be an intensive mixture of classroom lectures, tutorials and practical demonstrations using both video footage and live demonstrations on TWI's equipment. There will be opportunities for individual discussions with TWI engineers.

Among the topics to be discussed will be history of the process, licensing, patents and standards, process fundamentals, process advantages and disadvantages, process control, comparison with other processes, machine technology, tool technology, materials and weld performance issues, quality control, economic benefits, current/planned applications.

Attending the course will give students the necessary knowledge to make balanced decisions about the process and to deal with confidence with suppliers of equipment or friction stir welding process providers/users.

Objectives

At the end of the course, attendees will:

- Understand current FSW technology
- Assess FSW compared to other joining processes
- Have a practical appreciation of different types of FSW equipment and fixturing
- Understand FSW weld parameters/programs and their influence on weld quality
- Appreciate relevant quality control techniques related to FSW

Additional information

Classroom times are typically five hours per day (8.30-14.30 hrs) with lunch and other breaks. In addition, over two hours of practical training will be provided per day on a range of FSW equipment involving thick section, high temperature and robotic FSW. There will be a strict limit of 12 students per course to maintain quality standards, comprehension and small practical groups. A comprehensive set of course notes will be provided to the attendees.

Process Appreciation

Introduction to Welding and NDT

Course Code: WTC17

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

4.5 days

Suitable for

Engineering, management and supervisory staff who need to understand the potential problems and avoidance procedures for welding and cutting operations. It is especially appropriate for graduate staff who need systematic training in the subject.

Course content

Terminology; review of commonly used welding processes and NDT methods; features and control of welding processes; use and control of consumables; approval testing; inspection procedures and techniques; welding imperfections and their causes and interpretation; comparative studies in practical application of welding and NDT; hands-on experience of welding and NDT.

Objectives

- To provide a basic understanding of the principles of welding processes
- To provide a basic understanding of the principles of visual weld inspection
- To give an overview of the main NDT methods used to inspect welds
- To provide an opportunity to carry out practical NDT inspection on welded samples

Additional information

Some practical elements of the training will require dust coats and safety boots. Although some are available at the training centre, candidates are advised to bring their own PPE clothing. Gloves, goggles and other relevant PPE will be provided.

Process Appreciation for Production Engineers, Designers, Supervisors, Technicians - MIG/MAG/FCAW

Course Code: WTC88

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

3 days

Suitable for

Individuals with no previous experience of these manual welding processes, designers, production and maintenance engineers/technicians, engineering apprentices.

Course content

Theory and practical sessions, with approximately 75% demonstrations and hands-on sessions; appreciation of the welding processes and fundamental basic knowledge. Health & safety, setting up equipment, welding process parameters, process related defects and how to avoid them, welding consumables.

Objectives

- To understand practical welding
- To appreciate new process parameters and other factors influencing weld quality and productivity
- To gain a basic technical and practical insights and hands-on experience
- To recognise the health and safety issues associated with welding activities
- To be familiar with process related defects and how to avoid them

Additional information

The course will provide underpinning knowledge for those pursuing NVQs and the CSCS Card (Construction Skills Certification Scheme).

Manual Metal Arc Welding — Course Code: WTC86

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

3 days

Suitable for

Individuals with no previous experience of these manual welding processes, designers, production and maintenance engineers/technicians, engineering apprentices.

Course content

Theory and practical sessions, with approximately 75% demonstrations and hands-on sessions; appreciation of the welding processes and fundamental basic knowledge. Health & safety, setting up equipment, welding process parameters, process related defects and how to avoid them, welding consumables.

Objectives

- To understand practical welding
- To appreciate new process parameters and other factors influencing weld quality and productivity
- To gain a basic technical and practical insights and hands-on experience
- To recognise the health and safety issues associated with welding activities
- To be familiar with process related defects and how to avoid them

Additional information

The course will provide underpinning knowledge for those pursuing NVQs and the CSCS Card (Construction Skills Certification Scheme).

Oxyfuel Gas Cutting - Certificate of Competence — Course Code: WTC89

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

All personnel involved in workshop fabrication, maintenance and site dismantling activities who wish to reach a level of competence

Course content

Theory and practical sessions with approximately 75% demonstrations and hands-on sessions; principles of oxy-fuel gas cutting process, health and safety, setting up equipment, lighting up and shutting procedure, basic cutting techniques - straight line, bevels, severing activities, plate and pipe, solid bar; end of course technical and practical assessment for TWI's Certificate of Competence; theory and practical sessions with approximately 75% of hands-on sessions and demonstrations.

Objectives

- To understand the principles of oxy-fuel gas cutting process
- To understand the advantages and limitations of the process
- To recognise the health and safety issues associated with oxy-fuel gas cutting activities
- To demonstrate competence in setting-up, safe use and practical application

Additional information

The course will provide underpinning knowledge for those pursuing NVQs and the CSCS Card (Construction Skills Certification Scheme).

TIG Welding

Course Code: WTC87

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

3 days

Suitable for

Individuals with no previous experience of these manual welding processes, designers, production and maintenance engineers/technicians, engineering apprentices.

Course content

Theory and practical sessions, with approximately 75% demonstrations and hands-on sessions; appreciation of the welding processes and fundamental basic knowledge. Health & safety, setting up equipment, welding process parameters, process related defects and how to avoid them, welding consumables.

Objectives

- To understand practical welding
- To appreciate new process parameters and other factors influencing weld quality and productivity
- To gain a basic technical and practical insights and hands-on experience
- To recognise the health and safety issues associated with welding activities
- To be familiar with process related defects and how to avoid them

Additional information

The course will provide underpinning knowledge for those pursuing NVQs and the CSCS Card (Construction Skills Certification Scheme).

TWI Diploma in Welding Engineering

TWI has for many years offered the EWF/IIW Welding Engineering Diploma course and many candidates have successfully completed this programme. Some potential course participants with the right foundation knowledge and extensive experience have, however, been prevented from receiving appropriate education in welding engineering because of the level of academic qualifications required to access the EWF/IIW programme.

To develop experienced individuals to help satisfy the industry shortage of qualified welding engineers, TWI offers the TWI Diplomas in Welding Engineering, Welding Technology and Welding exclusively to those who do not satisfy the access requirements for the EWF/IIW programme.

Unlike the current EWF/IIW diplomas, the TWI Diploma entry requirements are based on applicants' experience and knowledge rather than on academic qualifications.

Applicants who are able to satisfy the access conditions for the EWF/IIW diplomas will continue to be enrolled on that programme automatically.

The TWI Diploma course content and level is designed to assist participants in satisfying the needs of industry and the welding knowledge requirements of two important standards: BS EN ISO 14731 'Welding Co-ordination - Tasks and Responsibilities'; and BS EN ISO 3834 'Quality Requirements for Fusion Welding of Metallic Materials'.

The TWI Diplomas in Welding and Welding Technology provide a significant contribution to the TWI/Open University Foundation Degree in Materials Fabrication and Engineering (http://www3.open.ac.uk/study/undergraduate/qualification/g18.htm).

You will be awarded 90 credits for your TWI Diplomas and you will study an additional 150 credits from Open University modules to complete the foundation degree. Study via this route with the Open University also opens up the opportunity to take additional modules and gain an engineering degree at BSc, BEng or MEng level.

The TWI Diploma courses are designed to provide professional development routes for those candidates who currently do not satisfy the EWF/IIW access conditions for the International/European Welding Engineer diploma. If you would like to explore how the TWI Diplomas can support your education in welding engineering, please contact us.

ACFM Crack Microgauge Operators Course - Level 1

Course Code: ACFM1

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Currently or previously approved 3.4U Inspection Controllers; currently or previously approved CSWIP 3.1U or 3.2U Divers; surface practitioner certificated under PCN or CSWIP; those qualified in relevant engineering science.

Entry requirements

- Be a current or previously approved 3.3U ROV pilot observer

OR

- Be a current or previously approved 3.4U Inspection Controller

OR

- Be a current or previously approved CSWIP 3.1U or 3.2U Diver

OR

- Be a surface practitioner certified under PCN or CSWIP

OR

- Have a qualification in a relevant engineering science

Course content

Overview of NDT techniques; electrical and electromagnetic theory; ACFM detection - identification of cracks; weld inspection by ACFM techniques; sizing for length and depth; reporting; backing-up data.

The course ends with the certification examination.

Certification/Awarding Body

CSWIP

Objectives

- To explain the theoretical principles
- To carry out equipment functioning checks
- To locate and size surface breaking fatigue cracks on uncoated and coated steel welds
- To gain eligibility to sit CSWIP EMD examinations

Additional information

Please note proof of experience and identity will be required prior to the training The candidate can only attempt one examination as part of the package.

ACFM Crack Microgauge Operators Course - Level 2

Course Code: ACFM2

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Currently or previously approved 3.4U Inspection Controllers; currently or previously approved CSWIP 3.1U or 3.2U Divers; surface practitioner certificated under PCN or CSWIP; those qualified in relevant engineering science.

Entry requirements

Be a current or previously certificated Level 1 ACFM operator.

Course content

Welding product technology; electrical and electromagnetic theory; ACFM detection - identification of longitudinal and transverse cracks; instruction writing; Level 2 software commands; sizing for length and depth; reporting; backing-up data.

The course ends with the certification examination.

Certification/Awarding Body

CSWIP

Objectives

- To explain the theoretical principles
- To carry out equipment functioning checks
- To locate and size surface breaking fatigue cracks on uncoated and coated steel welds
- To gain eligibility to sit CSWIP EMD examinations

Additional information

Please note proof of experience and identity will be required prior to the training.

The candidate can only attempt one examination as part of the package.

CSWIP 3.1U - NDT Inspection Diver

Course Code: DIS1

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Holders of an HSE surface supplied air qualifications or HSE equivalent; holders of an HSE approved in-date full commercial diver medical certificate.

Entry requirements

- Hold an HSE surface supplied air qualifications, or HSE equivalent
- Hold an HSE approved in-date full commercial diver medical certificate

Course content

This underwater NDT inspection course covers: theoretical instruction to CSWIP approved syllabus; general underwater and close visual inspection; recording by video and still photography; cathodic protection measurements; ultrasonic digital thickness measurements; end-of-course assessment.

Certification/Awarding Body

CSWIP

Objectives

- To explain theoretical principles of subsea visual inspection
- To be proficient in practical visual subsea inspection techniques
- To gain eligibility to sit the CSWIP 3.1U examination

CSWIP 3.2U - NDT Inspection Diver

Course Code: DIS2

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Holders of a current CSWIP 3.1U certificate; holders of an HSE approved in-date full commercial diver medical certificate.

Entry requirements

- Must hold current CSWIP 3.1U certificate
- Hold an HSE approved in-date full commercial diver medical certificate

Course content

Theoretical instruction to CSWIP approved syllabus; advanced underwater NDT techniques; magnetic particle inspection; weld toe grinding; overview of electro-magnetic techniques.

Certification/Awarding Body

CSWIP

Objectives

- To explain theoretical principles relating to subsea NDT inspection
- To be proficient in practical NDT subsea inspection techniques
- To gain eligibility to sit the CSWIP 3.2U examination

CSWIP 3.3U - ROV Inspector

Course Code: DIS3

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

9 days

Suitable for

Manned submersible pilots/15 operational dives; ROV pilots or observers/100 logged hours; those qualified in a relevant engineering science/60 days at offshore site; current or previously approved CSWIP 3.1U/3.2U divers/3 years' experience; surface practitioners certificated under PCN or CSWIP. Please see Entry Requirements below.

Entry requirements

- Be a manned submersible pilot or observer, having completed a minimum of 15 operational dives

OR

- Be a ROV pilot or observer having completed a minimum of 100 logged hours of underwater inspection work experience as pilot or observer

OR

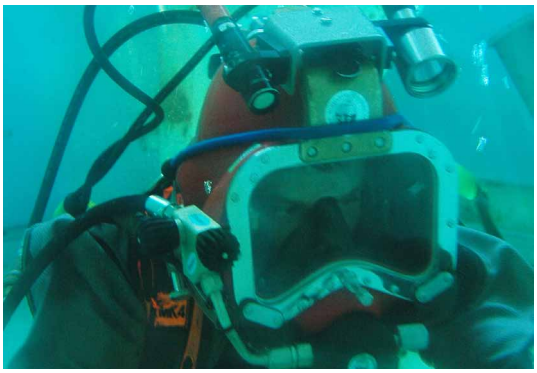
- Have a qualification in a relevant engineering or science subject which should not be less than an HNC level or equivalent and a minimum of 12 months subsea engineering related work, including a minimum of 60 days spent at an offshore site

OR

- Be a current or previously approved CSWIP 3.1U or 3.2U Diver Inspector who has held such certification for a minimum of three years, with a minimum of 100 logged hours of underwater inspection work

OR

- Be a surface practitioner certified under PCN/CSWIP in ultrasonic testing, magnetic particle or penetrant testing or equivalent approval accepted by the CSWIP In-Service Inspection Management Committee, who has a minimum of three years documented experience in the application of NDT methods related to offshore facilities and to have spent a minimum of 30 days at an offshore work site gaining familiarity with underwater techniques



Course content

Quality assurance; closed circuit television; calibration of equipment; cathodic protection systems; interpretation and recording methods.

Certification/Awarding Body

CSWIP

Objectives

- To explain theoretical principles relating to remotely applied subsea inspection methods
- To have basic understanding of quality assurance methods
- To be competent to co-ordinate data retrieved from ROVs
- To gain eligibility to sit the CSWIP 3.3U examination

Additional information

8 day course and 1 day exam (date to be arranged when booking and subject to availability). Fee includes exam. The course only (8 days) is also available - please contact Customer Services for further information.

Note for UK customers:
In Middlesbrough, the course and exam are conducted on 9 consecutive week days. In Aberdeen, the course and exam are conducted on 9 consecutive days including week-ends.

CSWIP 3.4U - Underwater Inspection Controller

Course Code: DIS4

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

12 days

Suitable for

Holders of a qualification in relevant engineering or science subject for a minimum of 60 days spent at an offshore site; currently or previously approved CSWIP 3.3U inspectors who have held this certificate for a minimum of one year, with a minimum of 300 logged hours of underwater inspection work; currently or previously approved CSWIP 3.1U or 3.2U diver inspectors who have held certification for a minimum of 100 logged hours of underwater inspection work; surface NDT practitioners certificated under PCN or CSWIP and with a minimum of 30 days at an offshore worksite with familiarity of underwater inspection techniques. Please see Entry Requirements below.

Entry requirements

- Have a qualification in a relevant engineering or science subject which should not be less than HNC level or equivalent and a minimum of 12 months subsea engineering related work, including a minimum of 60 days spent at an offshore site OR
- Be a current or previously approved CSWIP 3.3U ROV Inspector who has held this certification for a minimum of one year, with a minimum of 300 logged hours of underwater inspection work OR
- Be a current or previously approved CSWIP 3.1U or 3.2U Diver Inspector who has held such certification for a minimum of three years, with a minimum of 100 logged hours of underwater inspection work OR
- Be a surface NDT Practitioner certified under PCN/ CSWIP in ultrasonic testing, magnetic particle or penetrant testing or equivalent approval accepted by the CSWIP In-Service Inspection Management Committee, who has a minimum of 3 years documented experience in the application of NDT methods related to offshore facilities and to have spent a minimum of 30 days at an offshore work site gaining familiarity with underwater inspection techniques

Course content

Advanced NDT techniques; recording and processing data; computer data based reporting systems; interpretation and recording methods; quality assurance; intervention techniques; inspection, planning and briefing.

Certification/Awarding Body

CSWIP

Objectives

- To be competent to plan and co-ordinate sub-sea inspection programmes
- To be proficient in recording and processing data produced by subsea inspection campaigns
- To gain eligibility to sit the CSWIP 3.4U examination

Additional information

10 day course and 2 day exam (date to be arranged when booking and subject to availability). Fee includes exam.

Note for UK customers:
In Middlesbrough, the course and exam are conducted on 12 consecutive week days. In Aberdeen, the course and exam are conducted on 12 consecutive days including week-ends.

Inshore Diving Tender — Course Code: DIS10

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

1 day

Suitable for

Open to all

Course content

Basic explanation of health and safety legislation; scope and areas covered by the code; explaining definitions within the regulations; explanation of roles and responsibilities within the Dive Team focusing on the role of a Diver Tender; general diving methods and equipment; description of functions of various plant and equipment relating to a dive site; glossary of terms and comprehensive check list; safety considerations working with or in the vicinity of various hazards; description of various diving dress and their functions used within the industry; instruction on the various diving hats and locking systems used within the industry; practical application which would involve dressing commercial divers under supervision at our underwater facility in Middlesbrough, UK.

Objective

- To give an insight of the roles & responsibilities required by a tender when working on commercial diving projects Inland/Inshore

MMA Wet Welding to AWS D3.6 Codings — Course Code: DIS5

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

10 days

Suitable for

Professional divers who wish to further their experience in MMA wet welding techniques. Candidates must hold an in-date HSE approved divers medical certificate.

Course content

Theoretical instruction including weld terminology, weld design, weld defects and applications; dry practical exercises including bead-on-plate and fillet welds; comprehensive tuition on underwater wet welding techniques and practical exercises; welding test to AWS D3.6 Class B coding witnessed by Lloyd's Register of Shipping.

Certification/Awarding Body

Lloyd's Register of Shipping

Objectives

- To explain the theoretical principles of MMA welding
- To train students to pass welder approval qualifications that are witnessed by Lloyd's Register of Shipping

Additional information

9 day course and 1 day exam (date to be arranged when booking and subject to availability). Fee includes welder qualification testing to AWS D3.6 Class B that is witnessed by Lloyd's Register.

Note: Certification issued by TWI Certification Ltd and Lloyd's Register of Shipping.

Refresher 3.1U/3.2U

Course Code: DIS1-2R

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

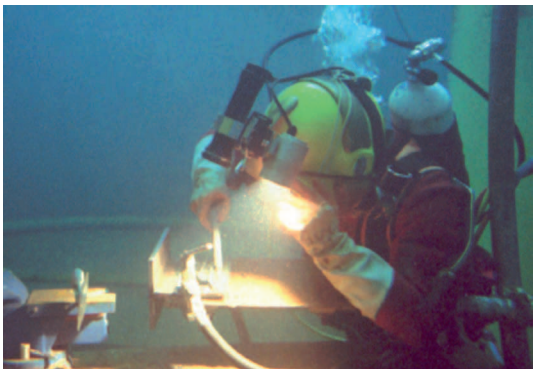
10 days

Suitable for

Candidates wishing to refresh their knowledge before taking the examination.

Course content

Practical and theoretical training for experienced divers wishing to renew their CSWIP certificates. These courses are individually designed to meet the customers' requirements.



Refresher 3.3U/3.4U

Course Code: DIS3-4R

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

10 days

Suitable for

Candidates wishing to refresh their knowledge before taking the examination.

Course content

Practical and theoretical training for ROV inspectors and inspection co-ordinators wishing to renew their CSWIP certificates. Courses are individually designed to meet the customers requirements.

Welder Training and Qualification

For a Skilled and Competent Workforce

We offer:

- Tailor-made courses for companies or self sponsored individuals at basic, refresher and advanced levels covering the major industry sectors (oil, gas & chemicals, power, automotive, aerospace, construction...)
- A range of bespoke courses in the following:

  - Manual Metal Arc Welding
  - TIG Welding
  - MIG/MAG/FCAW
  - Certificate of Competence in Oxy-fuel Gas Cutting

- Our training is delivered by Registered Master Welding Instructors and all qualification tests are witnessed by CSWIP approved welding inspectors
- Delivery in our purpose built training workshops in Abington or on-site at customers premises worldwide
- All common arc welding processes
- Product simulated workmanship exercises
- TWI is able to witness approval tests, provide full NDT and mechanical test house facilities
- Welder/Operator qualification testing to: ASME IX, BS EN 287/9606, CAA BCAR A8-10, BS 4872 Parts 1 & 2, BS EN 1418
- Procedure qualification testing to: ASME IX, BS EN ISO 15614, ANSI/AWS D1.1, BS EN 13134
- Assistance to identify test type and determine the range of approval to minimise the number of approved tests
- Training offered under publicly funded schemes such as ReACT

The qualification documentation is issued and authenticated by TWI Certification Ltd, officially recognised by DTI/UKAS Pressure Equipment Directive (PED)

For further information, please contact: trainexam@twi.co.uk

Achieving Compliance with ISO 3834

Course Code: WTC15

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Auditors whether involved in 1st , 2nd or 3rd party audits against ISO 3834.

Welding Engineering and Quality Managers in fabricating companies, or manufacturers using welding as a production process, seeking to understand the requirements of ISO 3834.

Course content

Review of ISO 3834 series of standards and their relevance to fabrication and manufacture by welding, the relationship between ISO 3834 and ISO 9001; establishing compliance with ISO 3834 by audit; planning, conducting and reporting ISO 3834 audits, guidance on the categorisation of non-conformity and agreeing corrective action; establishing compliance with ISO 14731 by assessment of welding co-ordination function; certification to ISO 3834, the available options and mechanisms by which certification bodies are accredited for ISO 3834, the role of the European Welding Federation and the European Co-operation for Accreditation.

Objectives

- To explain the reasons for the ISO 3834 series of standards and their relationship to ISO 9001
- To select the appropriate part of ISO 3834
- To describe documentation and criteria for assessing compliance with ISO 3834
- To establish compliance with ISO 3834 for welding co-ordination personnel
- To understand certification and accreditation in relation to ISO 3834
- Guidance for auditors in relation to ISO 3834

Additional information

The course is delivered by presentation and group exercises. Individuals wishing to become registered as Assessors under TWI Certification Ltd's Welding Fabricator Certification Scheme must attend this course. A professional interview will also be required. Four hours preparation work is required for all participants before attending this course.

Appreciation of Engineering Quality Documentation Review

Course Code: WIS21

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

3 days

Suitable for

Personnel involved in compiling and reviewing mechanical/ engineering quality documentation for client acceptance. Inspectors, engineers, document controllers looking to expand their current knowledge of Quality Control activities.

Course content

Analytical review of engineering documentation: material test certificates; Post Weld Heat Treatment (PWHT); NDE; pressure testing; visual, weld audit and weld history reports; fundamental knowledge requirements for QC personnel to carry out document review; in-depth assessment of documentation.

Objectives

- To be able to identify and quantify fabrication or procedural non-compliances against specified procedures

Additional information

Course entry is not restricted, however it is recommended that students have some knowledge/experience of the engineering/ construction industry.

Welding Co-ordination and Supervision

Certificate in Welding Supervision

Course Code: WTC19

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Welding personnel who wish to enhance their level of knowledge in areas related to welding supervision.

Course content

This welding supervision course covers: supervisory aspects - welding safety; production planning and control, communication, organisation. Management including case study assignments. Technical aspects - welding process control, procedures, welder approval and competency; weldability aspects of different materials; defects in welds.

The course, whilst self-contained, complements the Welding Inspector course, which should be taken for candidates wishing to gain CSWIP approval as specified in appropriate documentation available from the CSWIP office. For candidates not required to meet CSWIP, this course is ideal for experienced personnel and features continuous assessments which form part of the requirements for TWI's Certificate in Welding Supervision.

Objectives

- To understand the supervisory and technical requirements necessary for a Welding Supervisor
- To appreciate the day-to-day activities of a Welding Supervisor
- To recognise some of the metallurgical problems associated with welding
- To recognise QA/QC and inspection requirements
- To appreciate the welding technology for adequate process control
- To gain a qualification in accordance with BS EN 719

Additional information

Full CSWIP registration requires training, suitable experience and examination success; therefore, please enclose a detailed CV with course enrolment form.

Welding Co-ordination and Supervision

CSWIP Welding Quality Control Co-ordinator

Course Code: WIS20

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Welding inspection and quality personnel. This qualification is a natural career progression for experienced inspection personnel who wish to demonstrate their level of competence in the field of Quality Control management.

Certification/Awarding Body

CSWIP

Entry requirements

All candidates must attend a CSWIP approved training course prior to examination.

Candidates wishing to take the examination must have the following as a **minimum**:

- A current valid CSWIP 3.2 Senior Welding Inspector certification plus three years experience related to the duties and responsibilities or international equivalent OR
- A current valid CSWIP 3.1 Welding Inspector certification with 10 years documented experience related to the duties and responsibilities or an international equivalent
- Have a minimum 5 years documented experience working at a position with full responsibility for all welding related quality control functions, including supervision of the welding inspection staff

Prior knowledge requirements:

- Application of the requirements of codes and standards
- Identification of relevant material, components
- Knowledge of heat treatment procedures and recording systems
- Knowledge of hydrostatic test methods, safety and best practice and pneumatic testing
- Awareness of destructive mechanical testing
- Knowledge of quality related procedures and practices
- Health and safety requirements and practices
- Knowledge of associated manufacturing processes and operations
- Use and application of inspection quality test plans/ written schemes of examination

Course content

Planning; inspection test plans (quality plans); review and acceptance of: material certification, mechanical testing reports, welding procedures qualifications, welder qualifications, PWHT reports and procedures, pressure testing reports, NDT reports, as built drawing, engineering query, non conformance reports, final certification.

Additional information

Enrolment on this course does not constitute reservation of an examination. All courses may be followed by a CSWIP Welding Quality Control Co-ordinator examination for candidates with appropriate experience as specified in CSWIP document CSWIP-QCC-20-08.

AWS CWI to CSWIP Welding Inspector — Course Code: WIS7

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Course content

The training modules have been set up to provide training and instruction in the requirements for the bridging examination for present holders of AWS CWI (Certified Welding Inspector) requiring CSWIP 3.1 approval and Welding Inspector certification.

CSWIP 3.0 - Visual Welding Inspector - Level 1 — Course Code: WIS1

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Welders, operators, line inspectors and foremen who undertake visual examination of welded joints; quality control staff associated with welding; all staff who need basic training in welding inspection coupled with a qualification in this field.

Entry requirements

Although there is no specific experience requirement it is recommended that candidates possess a minimum of six months' welding related engineering experience and two years industrial experience.

In addition, candidates must comply with Clause 1.3.4 of CSWIP document WI-6-92 available at www.cswip.com

Course content

This welding inspection course covers: visual inspection procedures; relevant codes of practice, terms and definitions; welding processes and typical welding defects; weld measurements; typical documentation and requirements; practical inspection and reporting. All CSWIP requirement documents are available at www.cswip.com

Certification/Awarding Body

CSWIP

Objectives

- To identify various weld imperfections (defects)
- To understand the relevant welding technology related to visual inspection
- To understand the need for documentation in welding
- To be aware of codes and standards related to inspection requirements
- To carry out inspection of parent materials and consumables
- To carry out visual inspection of welds, report on them and assess their compliance with specified acceptance criteria
- To pass the CSWIP 3.0 Visual Welding Inspector qualification

Additional information

Examination applicants must submit a detailed CV/résumé when booking this course.

Enrolment on this course does not constitute reservation of an examination. All courses may be followed by a CSWIP Welding Inspector examination for candidates with appropriate experience as specified in CSWIP document WI-6-92. All CSWIP requirement documents are available at www.cswip.com

CSWIP 3.0 Plus - Visual Welding Inspector with Practical Module - Level 1

Course Code: WIS6

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

4 days

Suitable for

Welders, operators, line inspectors and foremen who undertake visual examination of welded joints; quality control staff associated with welding; all staff who need basic training in welding inspection coupled with a qualification in this field.

This course is designed for those that require some knowledge of practical welding to enhance their understanding of the inspection of welded products, therefore this course combines two days of workshop related activities with a further 2 days of welding inspection before the CSWIP 3.0 exam.

This course but without the practical module is also available: CSWIP 3.0 - Visual Welding Inspector - Level 1 (2 days).

Entry requirements

Although there is no specific experience requirement it is recommended that candidates possess a minimum of six months' welding related engineering experience and two years industrial experience.

In addition, candidates must comply with Clause 1.3.4 of CSWIP document WI-6-92 available at www.cswip.com

Course content

This welding inspection course covers: visual inspection procedures; relevant codes of practice, terms and definitions; welding processes and typical welding defects; weld measurements; typical documentation and requirements; practical inspection and reporting. All CSWIP requirement documents are available at www.cswip.com.

The practical element will cover participation in structured practical welding exercises to include health and safety, process advantages and limitations, joint preparation and fit up conditions, causes and avoidance of welding defects.

Certification/Awarding Body

CSWIP

Objectives

- To gain a knowledge of practical welding to enhance attendees' understanding of the inspection of welded products
- To identify various weld imperfections (defects)
- To understand the relevant welding technology related to visual inspection
- To understand the need for documentation in welding
- To be aware of codes and standards related to inspection requirements
- To carry out inspection of parent materials and consumables
- To carry out visual inspection of welds, report on them and assess their compliance with specified acceptance criteria
- To pass the CSWIP 3.0 Visual Welding Inspector qualification

Additional information

- Attendees will need to supply their own flame-proof overalls and steel cap safety boots
- Examination applicants must submit a detailed CV/ résumé when booking this course.
- Enrolment on this course does not constitute reservation of an examination. All courses may be followed by a CSWIP Welding Inspector examination for candidates with appropriate experience as specified in CSWIP document WI-6-92. All CSWIP requirement documents are available at www.cswip.com

CSWIP 3.1 - Welding Inspector - Level 2

Course Code: WIS5

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Inspection engineers and supervisory staff. The course is ideal for inspectors requiring preparation for the CSWIP examinations - Welding Inspector.

Those with little or no previous welding experience are advised to attend the Certificate in Visual Inspection of Welds course to prepare for this course.

Entry requirements

- Welding Inspector for a minimum of 3 years with experience related to the duties and responsibilities listed in Clause 1.2.2 of CSWIP document WI-6-92, under qualified supervision, independently verified

OR

- Certified Visual Welding Inspector (Level 1) for a minimum of 2 years with job responsibilities in the areas listed in 1.2.1 and 1.2.2 of CSWIP document WI-6-92

OR

- Welding Instructor or Welding Foreman/Supervisor for a minimum of 5 years

In addition to all the above, candidates must comply with Clause 1.3.4 of document WI-6-92 available at www.cswip.com

Course content

The duties and responsibilities of a welding inspector; fusion welding processes; typical weld defects; types of steel; carbon-manganese, low alloy and stainless steels; hardening of steels; weldability; heat treatment; parent metal defects; visual inspection; testing parent metals and welds; destructive tests; NDT techniques; welder and procedure approval; codes and standards; outline of safe working practices; practice in examination questions; continuous and end-of-course assessment. In addition, candidates meeting the CSWIP requirements for eligibility complete the relevant CSWIP examination on day 5.

Certification/Awarding Body

CSWIP

Objectives

- To understand factors which influence the quality of fusion welds in steels
- To recognise characteristics of commonly used welding processes in relation to quality control
- To interpret drawing instructions and symbols to ensure that specifications are met
- To set up and report on inspection of welds, macrosections and other mechanical tests
- To assess and report on welds to acceptance levels
- To confirm that incoming material meets stipulated requirements and recognise the effects on weld quality of departure from specification
- To be in a position to pass the Welding Inspector - Level 2 examinations

Additional information

CSWIP Welding Inspector examination - All candidates must attend a CSWIP approved course of training prior to examination. Enrolment on this course does not constitute reservation of an examination. All courses may be followed by a CSWIP Welding Inspector examination for candidates with appropriate experience as specified in CSWIP document WI-6-92. All CSWIP documents are available at www.cswip.com.

CSWIP 3.2 - Senior Welding Inspector - Level 3 Course Code: WIS10

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

5 days

Suitable for

Experienced welding inspectors and quality control staff, especially those who are proceeding to the CSWIP Senior Welding Inspector examination. It is essential that course members have a knowledge of the subjects covered in the course Welding Inspector before joining this course.

It is the responsibility of the examination candidates to either hold CSWIP Welding Inspector 3.1 or consider attending the Welding Inspector course and examination (WIS5E) prior to this course/examination.

Entry requirements

- Certified Welding Inspector (Level 2) for a minimum of 2 years with job responsibilities in the areas listed in 1.2.1, 1.2.2 and 1.2.3 of CSWIP document WI-6-92

OR

- 5 years' authenticated experience related to the duties and responsibilities listed in Clause 1.2.3, independently verified.

In addition to the above, candidates must comply with Clause 1.3.4 of document WI-6-92 available at www.cswip.com

Course content

Function and responsibilities of a senior welding inspector; defects in welds; weld symbol interpretation; interpretation of NDT reports; documentation of welding; approval and certification procedures; general principles of supervision; case studies; planning; organisation; interpretation of fractured surfaces; auditing; practice in typical examination questions; course assessments.

Certification/Awarding Body

CSWIP

Objectives

- To understand the various facets of welding inspection and quality control
- To assess the validity of a welding procedure
- To recognise origins of weld defects
- To interpret features of a fracture surface and prepare detailed reports
- To scrutinise and correct inspection reports
- To plan, organise and supervise use of skilled inspectors and NDT personnel
- To conduct pre-, during and post welding audits
- To be in a position to pass the relevant examination

Additional information

Enrolment on this course does not constitute reservation of an examination. All courses may be followed by a CSWIP Welding Inspector examination for candidates with appropriate experience as specified in CSWIP document WI-6-92. See CSWIP document available for download from the CSWIP website.

Although this course covers most of the syllabus for the examination it does not include training in interpretation of radiographs. Examination candidates who do not possess a current CSWIP or PCN Radiographic Interpreter's certificate should attend the Interpretation of Radiographs - Part B (light and dense metal welds) course and examination.

Welding Inspection Refresher - Practical and Theory — Course Code: WIS2

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

1 day

Suitable for

The course is ideal for inspectors requiring preparation for the practical part of the CSWIP 10 year renewal examinations for Welding Inspector level 1, 2 or 3.

Course content

The training modules have been set up to provide training and instruction in the requirements for the various bridging examinations available. All CSWIP requirement documents are available at www.cswip.com

Objectives

- To identify various weld imperfections (defects)
- To understand the relevant welding technology related to visual inspection
- To carry out visual inspection of welds, report on them and assess their compliance with specified acceptance criteria
- To pass the CSWIP Welding Inspector qualification (Renewal)

Additional information

- Examination applicants must submit a detailed CV/ résumé when booking this course
- Enrolment on this course does not constitute reservation of an examination. All courses may be followed by a CSWIP Welding Inspector examination for candidates with appropriate experience as specified in CSWIP document WI-6-92. All CSWIP documents are available from www.cswip.com
- Also (AWS-CSWIP) or (CSWIP-AWS) or (CSWIP 10 year renewals 3.1/3.2) or (CSWIP 3.0 refresher) or (BGAS to CSWIP 3.1)

SAIW Level 1 to CSWIP Welding Inspector Level 2 — Course Code: WIS7-SAIW1

Duration

3 days

Course content

The training modules have been set up to provide training and instruction in the requirements for the bridging examination for present holders of SAIW (South African Institute of Welding) requiring CSWIP 3.1 approval and Welding Inspection certification.

SAIW Level 2 to CSWIP Welding Inspector Level 3 — Course Code: WIS7-SAIW2

Duration

3 days

Course content

The training modules have been set up to provide training and instruction in the requirements for the bridging examination for present holders of SAIW (South African Institute of Welding) requiring CSWIP 3.2 approval and Welding Inspection certification.

ASME IX Welding Standards

Course Code: WTC75

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Engineers, inspectors, supervisors responsible for approval testing.

Course content

This course will give attendees an understanding of how to construct a procedure and welder qualification. In addition, it will show how procedures are developed to give the optimum range of approval utilising all essential variables. There will be classroom examples to work through.

Objectives

- To understand the approval standards
- To understand detailed requirements of approval tests
- To have the knowledge to supervise welder and weld procedure approval tests
- To organise and supervise the necessary laboratory tests
- To interpret test results and identify where reapproval is necessary
- To understand how to complete the required documentation

European Welding Standards

Course Code: WTC90

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2 days

Suitable for

Welding co-ordinators (BS EN 719) and other specialists involved in the qualification of welding procedures, and/or welders and welding operators.

Course content

Understanding how to use the latest European Standards for Welding Procedure Qualification (BS EN ISO 15607, 15609, 15614 Parts 1 & 2) and Welder Qualification (BS EN ISO 287 Parts 1 & 2).

A thorough examination of the relevant standards, together with class exercises, will give attendees a sound knowledge of how procedures and welders can be qualified, how to conduct procedure qualification tests, testing of qualification welds, what documentation is required for the qualification records, how essential variables influence test requirements and production welding, how to write qualified Weld Procedure Specification for production welding.

Objectives

- To allow students to qualify welding procedures and/or welders
- To give students the required knowledge to allow them to write WPS

Certification of competence for critical engineering occupations

CSWIP is an internationally recognised mark of competence for people engaged in welding and inspection related jobs in manufacturing, construction, operating or repairing high integrity welded structures, plant or components. CSWIP also certify NDT in accordance with ISO 9712. It is a world leader in its field with over 40,000 certified individuals worldwide.

BGAS-CSWIP

The system is primarily designed for inspectors involved in one or more of a number of activities related to pipelines. BGAS-CSWIP qualifications are highly regarded pipeline specific qualifications which complement the well-known CSWIP inspection qualifications. Both are internationally recognised.

EWF/IIW - European Welding Federation/International Institute of Welding

European/International Welding Specialist
European/International Welding Technologist
European/International Welding Engineer

TWI Diploma in Welding Engineering

This diploma is aimed at candidates who do not hold the academic entry requirements for the EWF/IIW diploma.

American Society for Nondestructive Testing

ASNT offers NDT certification schemes for individuals leading to qualifications/approvals in NDT at ACCP Levels 2 and 3 and for companies (SNT-TC-1A).

Personnel Certification in Non-Destructive Testing

The PCN scheme, an internationally recognised scheme for the certification competence of NDT personnel, is accredited as meeting the requirements of European Standards ISO/IEC 17024 and EN 473, and international standard ISO 9712. In addition, the aerospace sector examinations meet the requirements of EN 4179.

We also offer specific courses leading to AWS qualifications

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New venues added regularly.
For up-to-date information:
www.twitraining.com

1338 - August 2013