

# Welder Training and Certification

for compliance with regulations, standards and industry requirements

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**Associate Director Professional Affairs The Welding Institute**

**Chief Executive TWI Certification Ltd**

- **Not centrally regulated**
- **Voluntary compliance**
- **Multiple means of compliance**
- **Formal, informal and non-formal education**
- **Vocational education and training**
- **Competence**

# What is competence?

**Demonstrated personal attributes  
and demonstrated ability  
to apply knowledge and skills**

**ISO 19011:2002**

## **Clause 7.2: The organization shall:**

- a) determine the necessary competence of person(s) doing work under its control that affects the performance and effectiveness of the quality management system;**
- b) ensure that these persons are competent on the basis of appropriate education, training or experience;**
- c) where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken;**
- d) retain appropriate documented information as evidence of competence.**

**The manufacturer shall have at his disposal sufficient and competent personnel for the planning, performing and supervising of the welding production according to specified requirements.**

**Welders and welding operators: Welders and welding operators shall be qualified by an appropriate test.**

Welder	Education	Training	Experience	OJT/Famil
	Certificate, Diploma, NVQ	Vocational Training	>1 yr welding	Induction QHSAW EN 287-1/ISO 9606-1 WQT
	NWTS, EW Diploma	NWTS, EW Diploma	NWTS, EW Diploma	Induction QHSAW
	Welding Apprenticeship	Welding Apprenticeship	Welding Apprenticeship	Induction QHSAW

**“But the test of job knowledge is not mandatory”**

**EN 287-1/ISO 9606-1 Certificate may be marked;**

**“Job knowledge – Not tested”**

**Two-page, broad definition, covers all sectors, in two levels;**

## **LEVEL 2 GENERAL WELDER (ARC PROCESS)**

**General Welders are fully competent in manual welding using at least one arc process. General Welders are required in a number of sectors for example, the steelwork construction sector**

<https://www.gov.uk/government/publications/apprenticeship-standard-welder-level-2>

## **LEVEL 3 MULTI POSITIONAL WELDER (ARC PROCESS)**

**Multi-Positional Welders are fully competent in manual welding using at least one arc process in all welding positions. Multi-Positional Welders are required in a number of sectors for example, the oil and gas sector**

<https://www.gov.uk/government/publications/apprenticeship-standard-welder-level-3>

Welding Filler Material Groups	Welding Process(es)				
	TIG (GTAW)	MIG/MAG (GMAW)	MMA (SMAW)	TIG (GTAW) root & MMA (SMAW) Fill	FCAW
Carbon & Low Alloy steel (up to 4% total alloy content)	Module 1	Module 6	Module 11	Module 15	Module 19
High Alloy Ferritic /Martensitic Steels	Module 2	Module 7	Module 12	Module 16	Module 20
Austenitic Stainless Steels	Module 3	Module 8	Module 13	Module 17	Module 21
Nickel and NI Alloys	Module 4	Module 9	Module 14	Module 18	N/A
Aluminium & Al Alloys	Module 5	Module 10	N/A	N/A	N/A

## Level 2

The employer selects **TWO** options from the table, covering **TWO** welding positions (**FLAT, HORIZONTAL, VERTICAL , OVERHEAD**). The scope of the specific part of the theoretical knowledge tests (Table 2) and the practical skill tests will be in accordance with the **MODULES SELECTED BY THE EMPLOYER**.

## Level 3

The employer selects **THREE** options from the table, covering **ALL** welding positions (**FLAT, HORIZONTAL, VERTICAL , OVERHEAD**) in **PIPE OR PLATE**. The scope of the specific part of the theoretical knowledge tests (Table 2) and the practical skill tests will be in accordance with the **MODULES SELECTED BY THE EMPLOYER**.

Process Section (Duration)		Welding	MMA (SMAW)	TIG (GTAW)	MIG/MAG (GMAW) FCAW
<b>General Theoretical Training (includes questions on Carbon and low alloy steels)</b>					
<b>A</b>	Basic welding equipment and processes (A.1-A.9 modules from IAB-089) (20 hours)	55 minutes (40 questions)			
	Making weled joints (B.1-B.9modules from IAB-089) (18hours)	40 minutes (36 questions)			
<b>Welding Process Specific Theoretical Training</b>					
<b>B</b>	MMA (SA.1-SA.3modules from IAB-089) (5 hours)	10 min (10 questions)			
	TIG (ST.1- ST.3 modules from IAB-089) (5 hours)		10 min (10 questions)		
	MIG/MAG/FCAW (SM.1-SM.4modules from IAB-089) (7 hours)				15 min (14 questions)
<b>Materials Specific Theoretical Training</b>					
<b>C</b>	High alloy steel (8 hours)	20 minutes (16 questions)			
	Austenitic stainles steel (PSS.1-PSS.4 modules from IAB-089) (8 hours)	20 minutes (16 questions)			
	Nickel (8 hours)	20 Minutes (16 questions)			
	Aluminium (PAL.1-PAL.4 modules from IAB-089)(8 hours)	20 minutes (16 questions)			

- **Multiple choice examination papers**
- **Suit the skill/knowledge of the modules selected**
- **Examinations are conducted by the Assessment Organisation.**

# Module Selection Example

If skill/knowledge **MODULE 13** from (Table 1) is selected, the following would be the options for the apprentice for each section:

- A** = ALL general theoretical training would apply
- B** = ONLY MMA (SMAW) specific theoretical training would apply
- C** = ONLY austenitic stainless steel specific theoretical training would apply

Welding Filler Material Groups	Welding Process(es)				
	TIG (GTAW)	MIG/MAG (GMAW)	MMA (SMAW)	TIG (GTAW) root & MMA (SMAW) Fill	FCAW
Carbon & Low Alloy steel (up to 4% total alloy content)	Module 1	Module 6	Module 11	Module 15	Module 19
High Alloy Ferritic/Martensitic Steels	Module 2	Module 7	Module 12	Module 16	Module 20
Austenitic Stainless Steels	Module 3	Module 8	<b>Module 13</b>	Module 17	Module 21
Nickel and Ni Alloys	Module 4	Module 9	Module 14	Module 18	Not applicable
Aluminium & Al Alloys	<b>Module 5</b>	Module 10	Not applicable	Not applicable	Not applicable

It is only necessary **TO PASS SECTION A ONCE**, it is not repeated for the other skill/knowledge modules selected.

If another module selected from Table 1 was **MODULE 5**, then the apprentice's other skill/knowledge modules would be:

- B** = TIG (GTAW) specific theoretical training
- C** = Aluminium specific theoretical training

<b>A</b>	<b>General Theoretical Training (includes questions on Carbon and low alloy steels)</b>				
	Basic welding equipment and processes (A.1-A.9*)(20 hours)		55 minutes (40 questions)		
	Making welded joints (B.1-B.9*) (18hours)		40 minutes (36 questions)		
<b>B</b>	<b>Welding Process Specific Theoretical Training</b>				
	MMA (SA.1-SA.3*) (5 hours)	10 min (10 questions)			
	TIG (ST.1- ST.3*)(5 hours)		10 min (10 questions)		
	MIG/MAG/FCAW (SM.1-SM.4*) (7 hours)			15 min (14 questions)	
<b>C</b>	<b>Materials Specific Theoretical Training</b>				
	High alloy steel (8 hours)	20 minutes (16 questions)			
	Austenitic stainless steel (PSS.1-PSS.4*) (8 hours)	20 minutes (16 questions)			
	Nickel (8 hours)	20 Minutes (16 questions)			
	Aluminium (PAL.1-PAL.4*)(8 hours)	20 minutes (16 questions)			

During the course of their training, it is **RECOMMENDED** that apprentices complete interim theoretical examinations, set by the Training Body using their own questions, based on the curriculum given in References 1 and 6, in order to **PREPARE** them for the final theoretical test.

There are three areas to be assessed, these are;

## 1. A THEORETICAL KNOWLEDGE TEST

- Multiple choice question papers
- Generic questions relevant to all welders
- Specific questions relevant to the theoretical module selected by the employer

## 2. A PRACTICAL AND ORAL EXAMINATION

- For level 2 – two practical tests and an oral examination
- For level 3 – three practical tests and an oral examination
- The welds need to be in the most difficult position for the level selected
- The practical tests (codes) use different processes, positions and materials

The welding specifications are;

- ✓ EN ISO 9606 (1 - 4)
- ✓ ASME IX
- ✓ AWS D1.1

## 3. A PROFESSIONAL INTERVIEW – END POINT ASSESSMENT

- This is used to determine the apprentice's knowledge relevant to their role
- To assess the apprentice's occupational behaviours meet the requirements specified in the Apprenticeship Standard

**TWI Certification Ltd: provides CSWIP role-specific competence assurance certification of personnel**

**[www.cswip.com](http://www.cswip.com)**



- **Wholly-owned subsidiary**
- **Independent certification body**
- **Industry-led**
- **UKAS-accredited (ISO/IEC 17024 & 17065)**
- **Recognised Third Party Organisation**
- **CSCS approved**
- **Internationally recognised**
- **Registered Apprentice Assessment Organisation**

# Welder Training Organisation

Approved facilities  
delivering competent  
welder training

In-house training  
increases revenue  
cuts external costs

Enhanced customer  
confidence in welding  
training provision

Welder and Brazer  
Trainer/Lecturer  
competence  
assurance & CPD



Attracting and  
safeguarding student  
enrolments

## The Benefits of CSWTO

Employer  
engagement and  
networking

Increased profile  
and reputation

Confidence in  
the delivery of  
training



[www.cswip.com](http://www.cswip.com)

- **Requirements for the Certification of Welding Instructors and Specialist Welding Instructors - Document No. CSWIP-WInst-1-91**
- **Requirements for the Certification of Welding Examiners for the Approval of Welder Qualifications in accordance with the Relevant Standard - Document No. CSWIP-WEX-23-13**

# Professional Registration

**Credibility**

**Recognition**

**Status**

**Respect**

**Transferability**

**Achievement**

**Mobility**

**Progression**

**Compliance**



	K	S	E	B	X
	Knowledge	Skills	Experience	Behaviours	Extras
<b>Welding and Welding Coordination Roles</b> Coordination of manufacturing operations for all welding and welding-related activities, including welding inspection. ISO 14731 defines responsibilities of welding coordinators. ISO 14731 is referred to by ISO 3834 for quality control of fusion welding of metallic materials. Welding of railway vehicles and components; EN 15085 refers to ISO 3834 and ISO 14731. Structural steelwork: EN 1090 refers to ISO 3834 and ISO 14731.			Relevant Scope	CPD & Code of Conduct (CSWIP Rules and Rules of Professional Conduct)	Endorsements and procedure-specific competence assurance
Plate and Fillet Welders, and Re-Bar Welders	Level 2 NWTS CP2 Craftsman Welder/EW		Welding apprenticeship or other WBL		ISO 9606-1 (supersedes EN 287-1) and EN ISO 17660
Pipe Welders	Level 3 NWTS CP3 Master Welder/EW		Welding apprenticeship or other WBL	EngTech TechWeldI	ISO 9606-1 (supersedes EN 287-1)
					ASME/AWS
Welding Operators (Mechanised and automated welding)				EngTech TechWeldI	ISO 14732 (supersedes EN 1418)
Heat Treatment Operators (PWHT)	CSWIP Heat Treatment Assistant Operator/Operator/Senior Operator certification				
Weld Testing Personnel (NDT)	CSWIP (ISO 9712) certification: Level 1, 2 or 3: MT/PT/ET/RT/UT/AUT/PAUT/TOFD				Endorsements: Critical Defect Sizing, Data Interpretation
	ISO 9712 CSWIP Employer-specific/procedure-specific performance-based certification (ENIQ)				
Welding Inspectors	CSWIP 3.1 Welding Inspector certification				
	CSWIP 3.2.1 Senior Welding Inspector certification			EngTech TechWeldI	CSWIP 3.2.2 Radiographic Interpreter
	IWIP-B	CSWIP 3.1 Welding Inspector certification			
	IWIP-S	CSWIP 3.2.1 Senior Welding Inspector certification		EngTech TechWeldI	CSWIP 3.2.2 Radiographic Interpreter
Welding Supervisors	CSWIP Welding Supervisor certification			EngTech TechWeldI	
Welding Coordinators	EWS/IWS diploma	C-EWS/C-IWS certificate			
	EWT/IWT diploma	C-EWT/C-IWT certificate			
	EWE/IWE diploma	C-EWE/C-IWE certificate			
	CSWIP 3.2 Senior Welding Inspector certification + EngTech TechWeldI				
	CSWIP Welding Quality Control Coordinator certification + EngTech TechWeldI				
	EngTech TechWeldI				
	IEng MWeldI				
CEng MWeldI					

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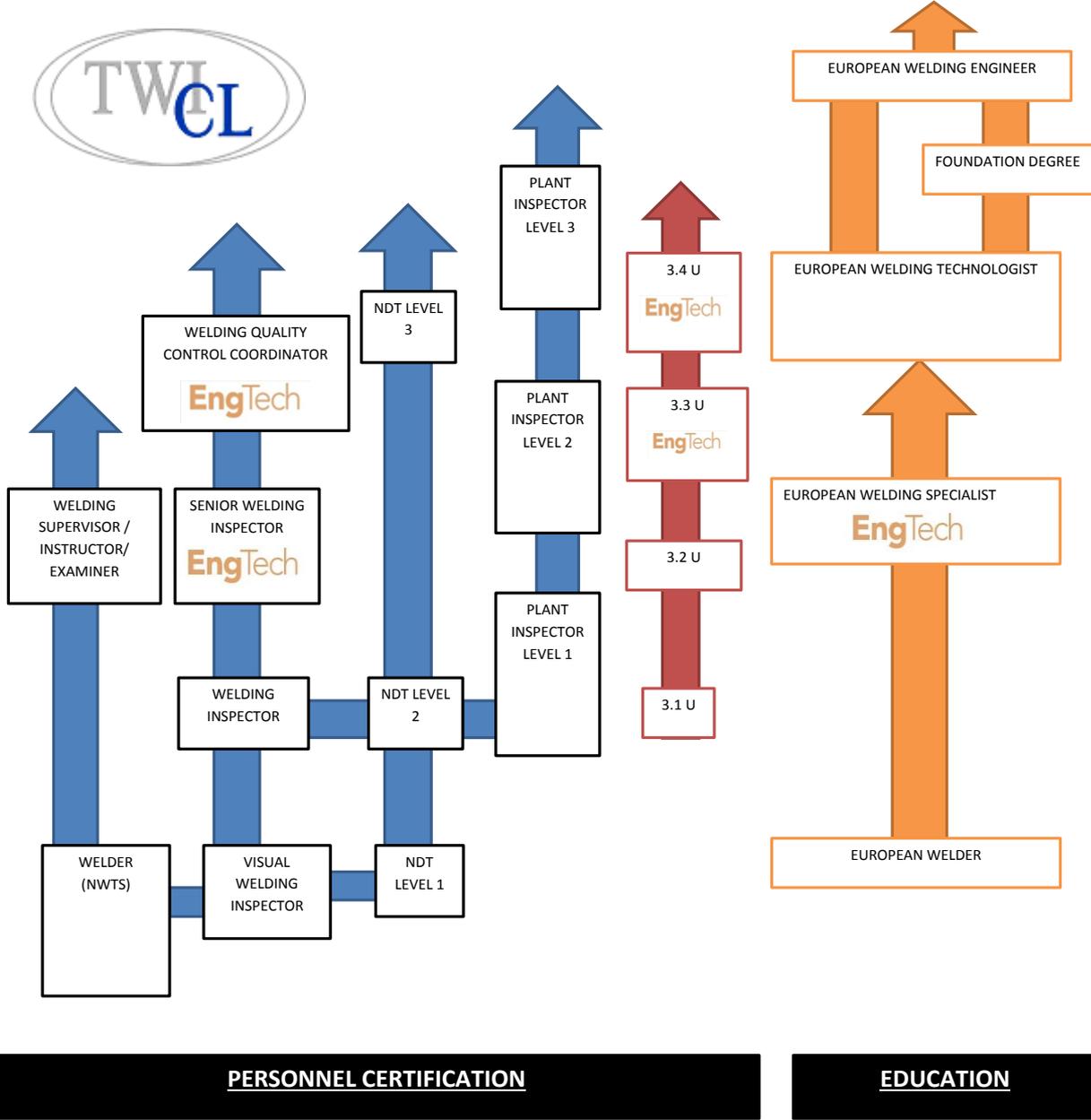
**Transferability**

**Achievement**

**Mobility**

**Progression**

**Compliance**



**PERSONNEL CERTIFICATION**

**EDUCATION**

# Professional Registration

**Credibility**

**Recognition**

**Status**

**Respect**

**Transferability**

**Achievement**

**Mobility**

**Progression**

**Compliance**

## Level 2 to Level 8

## School Leaver to PhD



## Apprenticeship to NSIRC



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