



## Scheme for the Certification of Welders and Welding Operators in accordance with ISO 17024

**8.1– Certification of Welder Qualifications to National & International Standards**– certification of welder qualifications.

### 8.2 Scheme elements:

**a) Scope of certification** – Tech Inspections undertakes the witnessing of welders and welding operators carrying out a range of welding processes and subsequently certifies them against a range of International standards if competency is demonstrated through the successful completion of a weld test.

We assess the competency of candidates by examining them as they perform a weld test against a Weld Procedure Specification or Preliminary Weld Procedure Specification (WPS or pWPS). Competency is assessed via two stages – initially a Visual Inspection of the weld using applicable standards see Appendix 1, and our internal procedure TI P5 Visual Inspection. Once Visual Inspection is successfully completed, the test piece produced is sent to a UKAS accredited test house for testing to the applicable standards, see Appendix 2. If the test piece passes this stage, then we proceed to certify the candidate against the relevant standard.

**b) Job and Task Description** – Candidates perform welds in various processes i.e. MAG, MIG, TIG etc see Appendix 3.

**c) Required Competence** – There is no defined competence requirements in order to undertake welder qualifications, based on the experience and knowledge of the Technical Manager we are aware that a welder with less than 6 months experience may struggle to achieve a satisfactory weld. Therefore, we have implemented a knowledge test to assess their competency where less than 6 months experience cannot be evidenced. We also use this where the welder has been out of the industry for 2 years for more.

**d) Abilities** - There are no specific abilities needed although we look for fine motor skills and good vision in order to successfully complete the welder qualifications. If any alterations or special adjustments are needed the candidate must make us aware prior to the visit.

**e) Prerequisites** – Whilst not a barrier to examination taking place, we prefer candidates to have at least 6 months welding experience prior to undertaking the weld test – if this has not been achieved we will perform a knowledge test to confirm understanding prior to commencing the test.

Other prerequisites include:

- Suitable pWPS or WPS
- Photographic identification of the candidate in original format (no prints or photocopies)
- Calibrated welding machine (certificate required)
- Consumable and Material certs where required, not mandatory for approvals

- Suitable area for welding – the area shall be evenly illuminated, sufficient access to the test piece is achievable and away from the main working area where possible. Areas to be tested shall be free from scale, oil, grease, weld spatter, machining marks, dirt, heavy and loose paint and any other foreign matter that can affect the visual inspection. No unnecessary personnel should be in the immediate vicinity.
- Suitable area for conducting knowledge test – the area should be quiet, away from distractions and there should be no access to aids i.e., phones, smart watches and books.

**f) Code of Conduct** – Upon application the candidate must sign the TI F50 Application and Contract for Inspection/Examination stating that should there be any significant changes to their ability to weld in accordance with their certification they must inform us as soon as possible. The candidate must not be under the influence of drugs and alcohol. If the candidate is taking prescription drugs that may affect their performance, they must make us aware prior to commencing the test.

### **8.3 Scheme certification processes:**

**a) Criteria for initial certification and recertification** – Initial Certification is carried out via an onsite examination during which the welder needs to produce a weld within the confines of the procedure and which is capable of passing both qualitative and quantitative tests as required by Tech Inspection procedure TI P5 and applicable National standards. Tech Inspections performs the recertification of welders after a predisposed time period as stipulated in the appropriate standard. See Appendix 4.

During the interim the certificate can be prolonged by a competent person if the relevant criteria are met as per ISO 9606-1 Clause 9.3 Revalidation of welder qualification.

**b) Assessment methods for initial certification and recertification** - the process for both remains the same as both require the witnessing of a weld taking place and the subsequent testing of the welded item at the test house.

**c) Surveillance methods and criteria** - surveillance activity would be undertaken by the employer and prolongation signed off by Tech Inspections.

**d) Criteria for suspending and withdrawing certification** - The criteria for suspending or withdrawing certification has been defined in Pol 7 certification, suspension and withdrawal policy and the process for suspending or withdrawing a qualification is defined in QP-11 Certification, suspension or withdrawal procedure.

**e) Criteria for changing the scope or level of certification** – In the event that any of the applicable standards undergo significant change or in the event of a new standard being introduced, then the scope or level of certification will be reviewed and changed accordingly.

**8.4 Development and review of the certification scheme the following elements have been included:**

**a) The involvement of appropriate experts** – There is no requirement for external expertise as the technical manager is sufficiently qualified and experienced to be the expert lead under the scope of the scheme. Tech Inspections maintains a quality management system that involves all the required policies and procedures which address the requirements of BS EN ISO/IEC 17024.

Individual	Qualification/Experience
Dominic Moran EngTech Techweldl – Technical Director	CSWIP WQCC, CSWIP Snr Weld Ins 3.2
Michelle Dingwall AWeldl – Operations & Quality Manager	CSWIP 3.0, ISO 9001 Internal Auditor, ISO 17024 awareness
TWI The Welding Institute	Regular Industry updates

**b) the use of an appropriate structure that fairly represents the interests of all parties significantly concerned without any interest predominating** – The scheme has been written to incorporate the requirements of all interested parties. There are no predominating interests. Tech Inspections Ltd uses an impartial external expert to review feedback received from clients, along with complaints, appeals and their resolutions to evaluate that the needs of all parties are being addressed. This is done annually as part of the management review process.

Interested Party	Interest	What is the control method
Clients	Accredited workforce	Accredited examination body
Welder	Successful outcome of welder qualification	Strictly implemented process
Examiners	Understanding their requirements	Training and Communication
UKAS	Conformance to standard requirements	Management System and Surveillance visits.
Administration team	Understanding of the process	Training, Communication and Management System

**c) the identification and alignment of prerequisites with the competence requirements** – The sole prerequisite based on competency is to ensure a minimum exposure of 6 months to the welding industry , if this requirement is not met, then a Knowledge test must be undertaken. All other prerequisites are documentation requirements and not related to competency.

**d) the identification and alignment of the assessment mechanisms with the competence requirements** –. Documentation used to identify the assessment processes are as follows:

- QP-09 – The Welder Qualification Operating Procedure
- QP-08 - Handling, Storage, Packaging, Preservation and Delivery Procedure



- TI P5 - Visual procedure
- TI F58 – Imperfect designation check sheet

As per QP-09, a contract review is carried out at appointment booking during which we identify the candidate's competency levels.

**e) A job or practise analysis** – A Gap analysis was carried out on the existing management system prior to the accreditation project being launched, this has been completed and all competence requirements, prerequisites and recertification requirements have been identified and addressed.

**8.5 Reviewed and validation of the Scheme on an on-going systematic basis** – The certification scheme shall be reviewed as a minimum on an annual basis at the Management Review Meeting with all relevant department heads involved. As part of the management review meeting an independent meeting including an external and impartial expert to review the certification scheme where the interests of all parties will be considered. Should there be any material changes to the standards against which the scheme certifies individuals then additional reviews will be undertaken, as necessary. The system will be audited annually.

**8.6 Ownership of the certification scheme** –Tech Inspections Ltd is the sole owner of the scheme.



## Appendices:

Appendix 1: Acceptance Criteria Standards

Appendix 2: Testing Standards

Appendix 3: Weld processes

Appendix 4: Initial Certification and Recertification.



## Appendix 1

### Acceptance Criteria Standards

BS EN ISO 5817	Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding
BS EN ISO 10042	Arc-welded joints in aluminium and its alloys. Quality levels for imperfections
AWS D1.1	Structural welding code - steel
AWS D1.2	Structural welding code - aluminium
BS 4872	Specification for approval testing of welders when welding procedure approval is not required.
ASME IX	Boiler and Pressure Vessel Code

This list is not definitive, and we may be able to work to other standards after consultation with the client.

## Appendix 2

### Testing Standards

ISO 9606-1	Qualification test of welders. Fusion welding. Steels
ISO 9606-2	Qualification test of welders. Fusion welding. Aluminium and Aluminium Alloys
ISO 9606-4	Qualification test of welders. Fusion welding. Nickel and Nickel Alloys
ISO 9606-5	Qualification test of welders. Fusion welding. Titanium and Titanium Alloys, Zirconium and Zirconium Alloys
BS 4872-1	Specification for approval testing of welders when welding procedure is not required. Fusion welding of steel
BS 4872-2	Specification for approval testing of welders when welding procedure is not required. TIG or MIG welding of aluminium and its alloys
BS EN 14732	Welding Personnel. Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials
ASME IX	Boiler and Pressure Vessel Code
AWS D1.1	Structural welding code - steel
AWS D1.2	Structural welding code - aluminium

This list is not definitive, and we may be able to work to other standards after consultation with the client.

### Appendix 3

#### Weld processes

111	manual metal arc welding	(SMAW)
114	self-shielded tubular cored arc welding	(FCAW-S)
121	submerged arc welding with solid wire electrode (partly mechanized)	(SAW)
125	submerged arc welding with tubular cored electrode (partly mechanized)	(SAW)
131	MIG welding with solid wire electrode	(GMAW)
135	MAG welding with solid wire electrode	(GMAW)
136	MAG welding with flux cored electrode	(FCAW)
138	MAG welding with metal cored electrode	(GMAW)
141	TIG welding with solid filler material (wire/rod)	(GTAW)
142	autogenous TIG welding	(GTAW)
143	TIG welding with tubular cored filler material (wire/rod)	(GTAW)
145	TIG welding using reducing gas and solid filler material (wire/rod)	(GTAW)
311	oxyacetylene welding	(OAW)

This list is not definitive, and other processes can be used.



## Appendix 4

### Initial Certification and Recertification

Tech Inspections Ltd requalifies welder approvals in line with requirements set out in the relevant standards.

As per the below excerpt from **BS EN ISO 9606-1:2017** we default to 9.3 a) unless otherwise requested. 9.3 c) is not acceptable in accordance with PE(S)R 2016/PED 2014/68/EU

#### 9.3 Revalidation of welder qualification

Revalidation shall be carried out by an examiner/examining body.

The skill of the welder shall be periodically verified by one of the following methods.

- a) The welder shall be retested every 3 years.
- b) Every 2 years, two welds made during the last 6 months of the validity period shall be tested by radiographic or ultrasonic testing or destructive testing and shall be recorded. The acceptance levels for imperfections shall be as specified in Clause 7. The weld tested shall reproduce the original test conditions except for thickness and outside diameter. These tests revalidate the welder's qualifications for an additional 2 years.
- c) A welder's qualifications for any certificate shall be valid as long as it is confirmed according to 9.2 and provided all the following conditions are fulfilled:
  - the welder is working for the same manufacturer for whom he or she qualified, and who is responsible for the manufacture of the product;
  - the manufacturer's quality programme has been verified in accordance with ISO 3834-2 or ISO 3834-3;
  - the manufacturer has documented that the welder has produced welds of acceptable quality based on application standards; the welds examined shall confirm the following conditions: welding position(s), weld type (FW, BW), material backing (mb) or no material backing (nb).

#### 9.4 Revocation of qualification

## **BS EN ISO 9606-2:2004**

### **9.3 Prolongation of qualification**

Welder's qualification test certificates according to this document can be prolonged every two years by an examiner/examining body.

Before prolongation of the certification takes place, 9.2 needs to be satisfied and also the following conditions need to be confirmed:

- a) All records and evidence used to support prolongation are traceable to the welder and identifies the WPS(s) that have been used in production;
- b) Evidence used to support prolongation shall be of a volumetric nature (radiographic testing or ultrasonic testing) or for destructive testing (fracture or bends) made on two welds during the previous six months. Evidence relating to prolongation needs to be retained for a minimum of two years;
- c) The welds satisfy the acceptance levels for imperfections as specified in Clause 7;
- d) The test results mentioned in 9.3 b) shall demonstrate that the welder has reproduced the original test conditions.

## **ASME BPVC IX:2019**

### **QW-322.1 Continuity and Revocation of Qualification.**

*(a) Continuity.* The performance qualification of a welder or welding operator shall remain valid, provided no greater than 6 months have passed since the qualified welding process was last used under the supervision and control of the qualifying or participating organization(s) as identified in QG-106.2 and QG-106.3, respectively, by the

- (1) welder using manual or semiautomatic welding, or
- (2) welding operator using machine or automatic welding

*(b) Revocation.* When there is a specific reason to question the welder's or the welding operator's ability to make welds that meet the specification, the qualifications that support the welding he is doing shall be revoked. All other qualifications not questioned remain in effect.

### **QW-322.2 Renewal of Qualification.**

*(a) Renewal of qualification that has expired under the rules of QW-322.1(a) may be achieved for any process by welding a single test coupon of either plate or pipe, of any material, thickness or diameter, in any position, as required by QW-301 and successfully completing the testing required by QW-302. This successful test renews the welder or welding operator's previous qualifications for that process for those materials, thicknesses, diameters, positions, and other variables for which he was previously qualified.*

*Providing the requirements of QW-304 and QW-305 are satisfied, renewal of qualification under QW-322.1(a) may be done on production work.*



(b) Welders and welding operators whose qualification(s) have been revoked under the provisions of QW-322.1(b) above shall requalify. Qualification shall utilize a test coupon appropriate for the revoked qualification(s). The coupon shall be welded as required by QW-301 and tested as required by QW-302. Successful completion of the qualification test restores the revoked qualification(s).

## **AWS D1.1M:2015**

### **4.2.3 Period of Effectiveness**

**4.2.3.1 Welders and Welding Operators.** The welder's or welding operator's qualification as specified in this code shall be considered as remaining in effect indefinitely unless:

(1) the welder is not engaged in a given process of welding for which the welder or welding operator is qualified for a period exceeding six months, or

(2) there is some specific reason to question a welder's or welding operator's ability (see 4.24.1).

**4.2.3.2 Tack Welders.** A tack welder who passes the test described in Part C or those tests required for welder qualification shall be considered eligible to perform tack welding indefinitely in the positions and with the process for which the tack welder is qualified unless there is some specific reason to question the tack welder's ability (see 4.24.2).

## **BS EN ISO 14732:2013**

### **5.3 Revalidation of qualification**

Revalidation shall be carried out by an examiner/examining body.

The competence of the welding operator or weld setter shall be periodically verified by one of the following methods:

- a) The welding operator or weld setter shall be retested every six years.
- b) Every three years, two welds made during the last six months of the validity period shall be tested by radiographic or ultrasonic testing or destructive testing and the results shall be recorded. The acceptance levels for imperfections shall be as specified in the application standards. The weld tests shall reproduce the original test conditions. These tests revalidate the qualification for an additional three years.
- c) A qualification for any certificate shall be valid as long as it is confirmed in accordance with 5.2 and provided all the following conditions are fulfilled:
  - the welding operator or weld setter is working for the same manufacturer for whom he or she qualified and who is responsible for the manufacture of the product;
  - that the manufacturer's ISO 3834-2 or ISO 3834-3 quality requirements have been proven by verification;
  - that the manufacturer has documented that the welding operator or weld setter has produced welds of acceptable quality based on application standards.

## **BS 4872-1**

### **6 Reapproval of welder**

The reapproval of a welder shall be required if any of the following apply:

- a) the welder is to be employed on work outside the extent of his current approval (see 3.1);
- b) the welder changes his employer without the transfer of his approval test certificate;
- c) six months or more have elapsed since the welder undertook any welding;
- d) there is some specific reason to question the welder's ability.

**NOTE** Reapproval every two years is recommended.