



WELDING FABRICATOR CERTIFICATION SCHEME

DOCUMENT CS/1: SCHEME DESCRIPTION AND BENEFITS

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Issued under the authority of the Governing Board for Certification
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CSWIP is administered by TWI Certification Ltd
The use of the UKAS Accreditation Mark indicates accreditation in respect of those activities covered by
Accreditation Certificate No 25

1 GENERAL BACKGROUND

In quality terms, welding is identified as a 'Special Process' which means that it requires specialist management, personnel and procedures. This has led to a number of developments, notably the publications of BS EN ISO 3834. This document prescribes requirements to provide assurance of welding and fabricating competence, and includes the feature of welding co-ordination in which companies must nominate competent Welding Co-ordinators (Welding Engineers, Welding Supervisors, etc who take responsibility for welding functions on behalf of their employers. Separate documents are available on the Certification of people with Welding Coordination responsibilities through CSWIP and/or through the European Welding Federation (EWF)/International Institute of Welding (IIW).

The standard may be referenced by application standards or contractual specifications. Equally they provide a basis for independent assessment of a fabricator's welding competence and capability.

The certification of manufacturing companies which demonstrate compliance with recognised quality management systems such as ISO 9001 is well established but this provides little indication of the capability of a fabricating company in terms of competence to produce a type of product, operate fabrication processes or work with various materials. Clearly a similar independent certification to prove compliance with ISO 3834 can benefit welding fabricators by providing an authoritative third party reference of commercial value. For the purchasers, it provides a means of identifying fabricating companies whose competence for particular types of work had been independently assessed, providing greater confidence in their ability to deliver specific products of the required quality.

The Welding Fabricator Certification Scheme (WFCS) provides such a facility for all companies in which welding is an important feature of manufacture whether they have ISO 9001 certification or not. It provides for third party assessment of the control of welding, competence and capability leading to entry on the Register of Fabricating Companies held by TWI. It is an expert scheme in that the Assessors authorised under the scheme are required to satisfy stringent criteria and are formally Registered.

The WFCS also satisfies the criteria laid down by the European Federation for Welding, Joining and Cutting (EWF) who have recognised the value of ISO 3834 and defined requirements for a unified European certification scheme. Details of all companies certified under the EWF system are published on the EWF web site.

The WFCS is accredited by the United Kingdom Accreditation Service as complying with criteria laid down by the European Co-operation for Accreditation (EA). These criteria relate specifically to ISO 3834 certification activities and are designed to ensure that the special requirements of the standard are fully addressed in conformity assessments.

2 OUTLINE OF THE WELDING FABRICATOR CERTIFICATION SCHEME (WFCS)

ISO 3834 define management quality requirements for fusion welding. They incorporate the following parts:

ISO 3834	Quality Requirements for Fusion Welding of Metallic Materials
Part 1:	Criteria for the Selection of the Appropriate Level of Quality Requirements
Part 2:	Comprehensive Quality Requirements
Part 3:	Standard Quality Requirements
Part 4:	Elementary Quality Requirements
Part 5:	Documents with which it is necessary to confirm to claim conformity to the quality requirements of 3834-2, 3834-3, 3834-4.
Part 6:	Guidelines on implementing ISO 3834.

Parts 2 and 3 of these documents also make reference to BS EN ISO 14731 Welding Co-ordination, Tasks and Responsibilities.

The scheme is administered by the Welding Fabricator Certification Management Committee (WFCMC) of the Governing Board for Certification of TWI Certification Ltd. Assessments may be carried out by

Participating Assessment Bodies (PABs) operating within prescribed rules. Companies which are already certificated to ISO 9001 may therefore be able to use the same Certification Body for an assessment under this scheme.

Companies which meet the requirements of the Scheme are entered on the Register and the EWF website. All Registered Fabricators receive a Certificate of Registration from both TWI Certification Ltd and EWF and are able to use the scheme logo.

3 BENEFITS FOR REGISTERED COMPANIES

- Clear, high profile independent verification of its compliance with ISO 3834, EWF, EA, and UKAS requirements.
- Independent confirmation of competence for its welding and fabricating capabilities and staff in a defined scope of activity.
- Welding quality management and fabrication capability assessments carried out by specialist assessors registered by TWI Certification Ltd.
- Increased national and international business potential through demonstrated compliance with internationally recognised welding quality requirements.
- Companies who do not wish to have their Quality Management system certificated to the full requirements of ISO 9001 can have their welding quality system and competence assessed against ISO 3834 and registered under the Scheme.

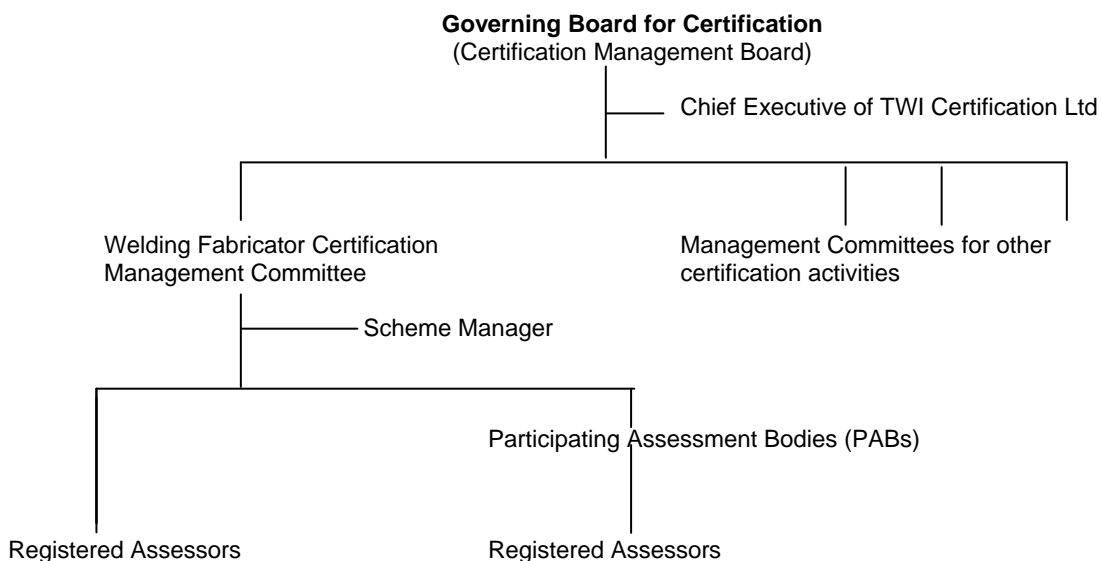
Special guidance on the application of the scheme to rail welding is given in Appendix 1.

4 BENEFITS FOR CLIENTS OF REGISTERED COMPANIES

- Expertly led, independent, vendor assessment.
- In-depth, authoritative evaluation of fabricator's capability.
- • Consistent assessment.
- • Uniform presentation of information and data.

5 ORGANISATIONAL STRUCTURE

The certification management structure of TWI Certification Ltd is as follows:



6 SCHEME OPERATION

Applicant companies are audited by assessment teams specifically approved by the Scheme Manager. Assessors have proven welding knowledge and experience, and this ensures that assessment is expertly directed and that the results are authoritative.

Following successful assessment of the applicant company, the Lead Assessor reports the data and the result to the Scheme Manager. The data will be entered on the Register, and published on the EWF website. Registered companies are issued with a Certificate of Registration from both TWI Certification Ltd and EWF.

7 LEVELS OF CERTIFICATION - RELATIONSHIP WITH ISO 9001

ISO 3834 lays down three levels of quality requirements for companies engaged in welding: Comprehensive, Standard and Elementary; which may be applied in conjunction with ISO 9001.

The Scheme can be operated to meet these variable requirements as follows:

a) **Where Certification to ISO 3834 only is requested**

The assessment will be carried out using a team of assessors specially approved and registered in accordance with the rules of the Scheme.

b) **Where the Fabricating Company already has ISO 9001 Certification**

The Assessment Team will concentrate on ensuring that the requirements of the Scheme are met but will not normally review elements of the ISO 9001 system that duplicate ISO 3834 requirements. In this way duplication of effort, conflict and expense are minimised.

8 STEPS TO CERTIFICATION

The process for applicant companies involves the following stages:

- a) Submission of the application form to a PAB or direct to TWI Certification Ltd together with the application fee, quality management documentation and evidence of any existing certification.
- b) Appointment/approval of Assessment Team by Scheme Manager.
- c) Preliminary evaluation by the Lead Assessor to establish quality system status and scope of manufacturing facility.
- d) Notification to applicant company with quotation and assessment documentation for completion by the company.
- e) Planning of the assessment by Assessment Team.
- f) Assessment is carried out by the approved Assessment Team. During the assessment, interviews will be conducted with welding co-ordination personnel and verification of fabrication capability obtained.

9 CERTIFICATION AND REGISTRATION OF APPLICANT COMPANIES BY TWI

a) **Registration**

Lead Assessor will submit all relevant information to the Scheme Manager for inclusion on the Register. This may include the following information:

- current product range

- welding processes
- materials and thickness ranges
- forming, machining and cutting facilities
- NDT facilities
- heat treatment facilities
- maximum handling size and weight
- transportation limitations
- personnel
- welding co-ordination personnel
- training facilities
- sub-contracting (relevant to fabrication)
- major use and control of sub-contractors
- special equipment/techniques available.

This information will be publicly available.

b) Certification

A company which has demonstrated compliance with these requirements shall be issued with a Certificate and Schedule identifying the relevant information. Two certificates are awarded, one from TWI Certification Ltd and one from EWF.

c) Surveillance of Registered Fabricators

Surveillance visits will be performed at least once each year so that the Company can demonstrate ongoing compliance with the appropriate part of the standard.

d) Reassessment

Reassessment against ISO 3834 is required every five years.

10 NOTIFICATION OF CHANGE OF CAPABILITY

The Registered Fabricator shall notify the Scheme Manager immediately when there is any reduction in the facilities or capabilities assessed. Changes of welding co-ordination personnel shall be notified and any new appointees' documentation will be reviewed for adequacy.

An increase in the capability may be notified between assessments or surveillance visits, and will be entered as provisional on the database, until verified.

11 SCHEME DOCUMENTATION

- CS/1 Scheme Description and Benefits
- CS/2 Requirements for Participating Assessment Bodies
- CS/4 Capability Assessment

12 FURTHER INFORMATION

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APPENDIX 1

Guidance on the certification of rail welding contractors and subcontractors in accordance with ISO 3834

TWI Certification Ltd offers a certification scheme for companies seeking to demonstrate compliance with ISO 3834 'Quality requirements for welding.' This scheme is unique in that it is accredited by UKAS and by the European Welding Federation. It is called the Welding Fabricator Certification Scheme.

ISO 3834 requires all the company's welding and related operations to be controlled in an appropriate way and all people with welding responsibilities to be competent. In rail welding terms the range of operations will be quite broad. It may include a range of processes, for example: aluminothermic welding, arc welding, and flash welding; and it may include a range of applications, for example: new rail, maintenance, repair, switches and crossings, transition pieces, etc. Operations before and after welding that will need to be covered will include: identification of rail and welding materials, rail marking, cutting and edge preparation, rail alignment, pre-heating, shearing off excess metal, grinding, heat treatment, inspection, weld sentencing, and matters relating to health and safety. Therefore, many of the areas listed in the ISO 3834 scheme documentation which, at first sight, may not appear relevant to rail welding, do need attention. But there may be some areas which the contractor does not cover and therefore, after due consideration, the contractor may be able to declare that they are not applicable.

It will continue to be necessary for rail welding contractors and subcontractors to comply with relevant Railtrack Group Standards and Line Specifications, and process suppliers' documentation. Certification in accordance with the Welding Fabricator Certification Scheme criteria will not replace this requirement in whole or in part.

The scheme and the standard on which it is based (ISO 3834) is primarily designed for 'conventional' welding fabricators or manufacturers of welded products. Therefore the vocabulary used in the scheme documentation is designed to match what is commonly used in those sectors. In a number of cases, it does not match what is commonly used in the rail welding sector.

In terms of specific terminology the following may be helpful.

- For 'manufacturer' or 'fabricator,' read 'contractor'
- For 'purchaser,' read 'client' or 'customer'
- For 'design review,' read 'operation review'
- For 'welders' (or 'welding operators'), read 'welders and welders assistants'
- For 'manufacture,' read 'welding or related operations.'

Additional guidance on the interpretation of the various clauses of ISO 3834 Part 2 are given in the following table:

Welding Quality Requirements in ISO 3834-2 Applied to Rail Welding

Element of ISO 3834-2	Areas of Rail Welding Activity				
	New Rail	Rail Replacement	Rail Rectification	New Switch Blades and Crossings	Rectification of Switch Blades and Crossings
Contract Review	Review required to ensure scope of work is within the contractor's/subcontractor's capability and competence of personnel				
Design or 'Operation' Review	Assessment to be made to ensure the work can feasibly be carried out, there are no limitations that cannot be resolved and that equipment is functional and the personnel involved will work within their scope of competencies				
Subcontracting	Subcontractors must be authorised for the work they are to undertake and their personnel must be properly authorised				
Welders, Welding Operators, Welding Assistants	All personnel carrying out welding of rail for operational use must be qualified and in possession of a permit to weld covering the processes and activities they will undertake				
Welding Co-ordination Personnel (People with appropriate knowledge for the welding and associated activities undertaken)	Management and supervisory personnel responsible for the control of welding and associated activities such as storage and maintenance of equipment, inspection, quality management, storage of welding consumables and rail, shall be competent for the tasks they perform and shall be able to demonstrate this competency. Each shall have defined job descriptions and identified areas of responsibility. Those who have authority for signing on behalf of the company for welding and quality matters shall be clearly identified.				
Inspection Personnel including welders who release track for operational use	Welding is a safety critical process in the rail industry and those responsible for inspections and for sentencing welding activities as satisfactory, whether as inspectors or other personnel, such as welders, shall be suitably trained and qualified in the inspection activities they are required to carry out				
Equipment for Production or Welding Operation Activities	There shall be sufficient equipment to prepare, cut, align, weld, provide weld cooling control, handle loads, fettle, grind and inspect, including appropriate jigs and fixtures, for all welding related activities carried out				
Equipment Maintenance	Equipment used for welding and associated activities has to be maintained and be fully serviceable when in use				
Production or Operational Plan	Work that has to be carried out needs to be clearly identified and the processes involved detailed where these are not already covered in operating procedures and practices. Programmes need to be defined in sufficient detail to enable the time involved to be assessed and the programmes designed to be completed in the period of rail possession				
Welding Procedure Specification (WPS) or Process Instructions	Documented procedures are required for all welding operations and associated activities. Where appropriate, the procedures shall follow the requirements of BS EN ISO 15614 series (formerly BS EN 288) . If this standard is not suitable, other standards or authorised specifications shall be used				
Welding Procedure or Process Approval	All procedures for welding and for associated processes shall be qualified and separately approved by the rail authority				
Work Instructions	All personnel carrying out welding and/or associated activities shall be issued with adequate instructions for the activities they perform. Additional instructions may be prepared to highlight critical procedural requirements				
Documentation or Procedures for the Control of Relevant Quality Activities and Documents	Documentation shall exist detailing the requirements for all welding and associated processes. Additional documentation in the form of procedures or other suitable formats shall describe the management processes required to operate the ISO 3834 standard. These shall also include internal audits, assessment of performance and how nonconformity and weak performance are to be corrected or improved				

Batch Testing of Welding Consumables	Batch testing of welding consumables and portions is not necessary unless specified in writing as a contractual requirement. The batch identification of welding consumables and portions are to be recorded in welding consumable records	
Storage of Parent Materials	Parent rail material shall be stored and handled to avoid unacceptable damage or deterioration	Parent switch blades and crossings shall be stored and handled to avoid unacceptable damage or deterioration
Post Weld Heat Treatment	Post weld heat treatment of rail is not normally a requirement after welding has been completed. If through a change in practice or materials, heat treatment becomes necessary, suitable equipment shall be installed and PWHT procedures used	
Storage and Handling of Welding Consumables	Welding consumables and portions shall be stored and handled to avoid damage or deterioration. This is normally in accordance with the manufacturer's recommendations. Welding consumables may require special treatments before they are used. Such treatments are to be clearly specified when they are necessary and procedures maintained to describe what is to be done with treated but unused welding electrodes as well as the disposal of used welding items at site.	
Inspection Before, During and After Welding	Requirements for inspections at whatever stage of welding shall be identified and documented. Where special equipment, such as gauges, has to be employed for measurement or test, this shall be identified and its operation described.	
Non-conformances	Non-conformances include rejected welds, damaged equipment or welding consumables and failures in the management system controlling welding activities. Where these occur, a record of the incident is to be made and the incident corrected	
Calibration of Measuring Equipment	Measuring equipment used for welding process control or inspection and measurement of welds is to be calibrated regularly. Records are to be established that provide traceability to national measurement standards and show that the accuracy achieved for each equipment meets the accuracy requirements specified	
Identification of Material/Welds	Materials shall only be welded if they are correctly identified. Welds shall be marked in accordance with requirements of the rail authority	
Traceability of Welds and Materials	Traceability requirements, including marking welds logging relevant details, are to be carried out in accordance with the requirements of the rail authority	
Quality Records	Quality records shall be produced and maintained for those areas detailed in ISO 3834-2 augmented by any specific records required by the rail authority. The duration of retention of records shall be defined by the rail authority but, in the omission of the rail authority, shall not be less than 5 years	