IIW Scheme for Certification of Welding Inspection Personnel

IIW Guideline for Implementation of IIW Scheme for Certification of Welding Inspection Personnel

IAB-360r1-25

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Guideline for Implementation of IIW Scheme for Certification of Welding Inspection Personnel

Prepared and issued by the IAB-International Authorisation Board

Under the authority of the IIW-International Institute of Welding

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DEFINITIONS AND ACRONYMS

In the scope of this document, the following definitions apply:

ANB	Authorised Nominated Body.
ANB Authorisation	The award of an IIW Certificate gained by the ANB following audit and authorisation by IIW, in accordance with the IIW requirements.
Appeal	A formal objection, by a person or organisation, to a decision made by the ANB or IAB such that the decision in question undergoes a formal review by the ANB or IAB respectively.
Applicant	Person who has submitted an application to be admitted into the certification process
Candidate	Applicant who has fulfilled specified prerequisites and has been admitted to the certification process
Certification	The procedure leading to a written testimony of an individual's competence demonstrated by examination and assessment of experience and subsequent surveillance to confirm that the competence has been retained.
Complaint	An expression of dissatisfaction, by a person or organisation, with some element of the ANB's or IAB's performance. If the complaint is in relation to a decision made by the ANB or IAB, it would normally be treated as an appeal, see below.
Decision making Personnel	Group or the individual that takes the final decision on granting, maintaining, recertifying, extending, reducing, suspending or withdrawing certification
IAB Lead Assessor	A person elected by IAB Group B, who is responsible for leading an ANB assessors team.
IAF	International Accreditation Forum.
IIW PCS	IIW Personnel Certification Scheme.
IIW Requirements	The conditions required by IIW to be an ANB.
IIW Rules	The rules described in this document.
Inspection	conformity evaluation of welding variables by observation and judgment accompanied as appropriate by measurement or testing
Inspector	person either appointed by the manufacturing organization or a 3rd party responsible and competent to perform inspection

Management Team The **Management Team** of the International Authorisation Board.

REFERENCES

For this document, the following references, latest revision, are considered:

ISO/IEC 17024	Conformity assessment - General requirements for bodies operating certification of persons
ISO 14731	Welding coordination — Tasks and responsibilities
IAB 041/SV	International Welding Inspection Personnel – Minimum requirements for the education, examination and qualification.
IAB 252/SV	IIW Guideline for International Welding Engineers, Technologists, Specialists and Practitioners - Minimum Requirements for the Education, Examination and Qualification.

All appropriate IIW IAB Operating Procedures

Forward

IIW – IAB the International Authorisation Board of the International Institute of Welding established in 2000, has the purpose of offering internationally recognized qualifications and certification of personnel services and certification of Companies services in the field of welding and allied technologies.

Competence assurance in welding and related technologies contributes to public safety and the quality of life by ensuring that manufactured goods and welded constructions operate safely and reliably.

The International System for Education, Training, Qualification and Certification Scheme of Personnel (International System) was implemented by IIW-IAB in 2000 for welding personnel and has since then enlarged its scope to include also the certification Welding Inspectors and of companies.

The International System is now used in more than 40 countries and is continuing to grow rapidly worldwide.

The International Education, Training, Qualification System and Certification Scheme, managed by IIW IAB, is an open system that ensures that any person or any Manufacturer, anywhere in the world, has unrestricted access to education, training, qualification and certification in welding and related technologies, in accordance with international standards, (e.g. ISO, etc).

The IIW IAB System is underpinned by a rigorous quality assurance regime which ensures the required standards are met uniformly throughout the world in an impartial and non-discriminatory way, complying with international trade legislation.

In order to comply with these requirements, the International System's operation is based on a network of Authorised Nominated Bodies (ANBs) and Authorised Nominated Bodies for Company Certification (ANBCCs), each specializing in a specific scope, and needing to comply with the IIW IAB quality assurance system.

Preface

Safety and profit depend on technical control of welding operations. Key staff in all welding related activities needs to have an appropriate level of competence in welding technology and its application. In addition to employing competent and tested welders, manufacturers should ensure that engineers, designers, technicians, and inspectors who deal with welding matters have proven relevant competence. This is increasingly becoming a contract requirement and follows a trend that is expected to accelerate as new Standards for welding come into force. As a reference, ISO 14731 "Welding Co-ordination - Tasks and Responsibilities" requires people with welding or welding related responsibilities, including welding Inspection, to be able to demonstrate that they are competent to carry out those responsibilities. In turn, ISO 14731 is a key component of ISO 3834 "Quality Requirements for Fusion Welding of Metallic Materials", an International standard that is widely quoted in product standards and specifications.

This IIW Personnel Certification Scheme provides a way to assess and recognize job competence. It defines the profile of education, knowledge, experience and responsibility required for a range of welding and inspection tasks and provides a professional assessment procedure. Certification is concerned with current competence rather than historical attainment and periodic renewal is required. Therefore, the scheme provides a convincing way of supporting companies seeking to achieve compliance with ISO 14731.

IIW appoints organisations in each IIW member country, to act on behalf of IIW and these organisations are assessed and monitored against these Rules. These organisations are known as the Authorised Nominated Bodies (ANBs) and are responsible for ensuring that the certification rules are maintained. In this, the objective is that certified personnel at a specified level will have achieved the same minimum level of knowledge and competence, irrespective of the country in which they have been certified. Certificates awarded by ANBs under these rules are mutually recognised.

These Rules establish the mechanism by which the IIW Welding Inspection Personnel Certification is implemented, such that the requirements are applied uniformly.

It is recognised that the accreditation provides the basis for the harmonisation of any kind of assessment, correct determination of competence and impartiality. Therefore, accreditation by an IAF Member in accordance with ISO/IEC 17024 is a requirement for any Organisation delivering any personnel certification products.

These rules are meant to be the "Certification Scheme" as specified by ISO accreditation standard.
The IIW is the Scheme Owner and has delegated liability and responsibility to the ANBs for the operation of this certification scheme, therefore accreditation is required for all ANBs.

ANBs keeps full responsibility and liability on the implementation of this Certification Scheme and on the certificates awarded to candidates.

These Rules are prepared and updated by the IAB Group B and approved by the IAB Board.

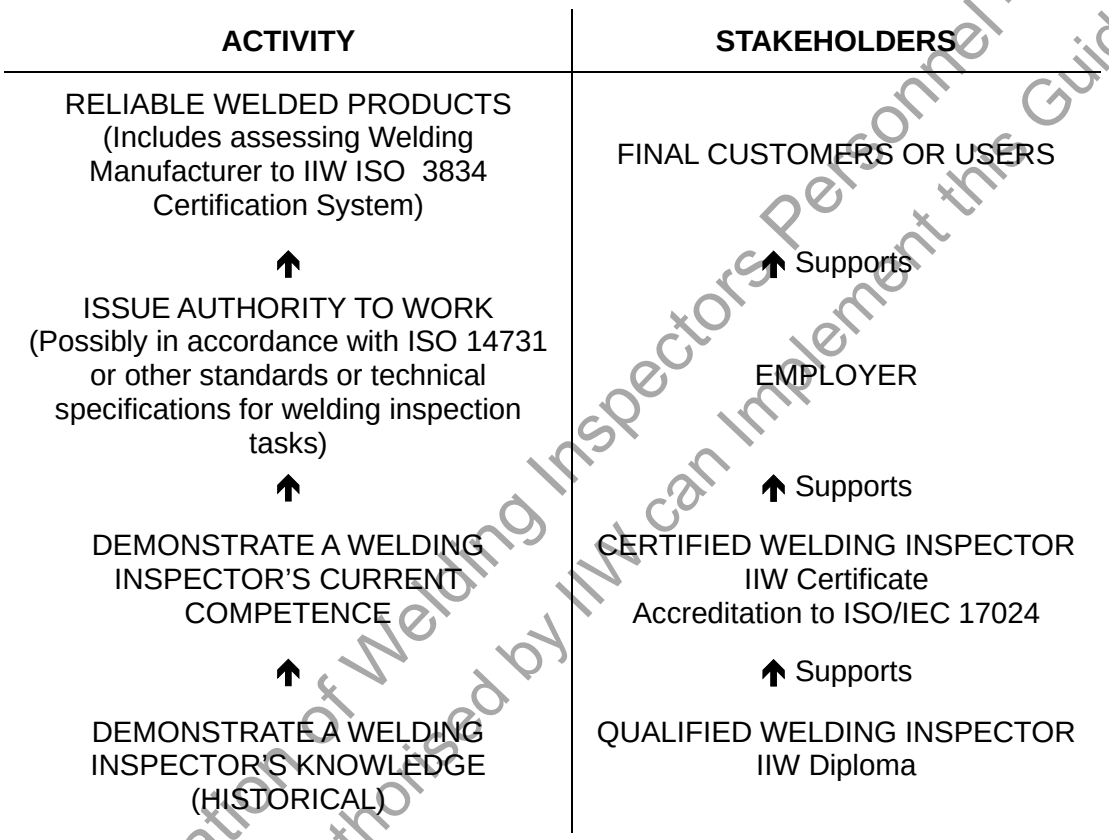
These Rules shall be updated and reissued every three years and there is an obligation on all ANBs to implement the changes within one year of the date of issue.

Due to the principle of mutual recognition between IIW and EWF, whenever IIW qualification and/or certification of welding coordination personnel is mentioned, the correspondent EWF qualification and/or certification is considered equivalent.

The position of the scheme in relation to other IIW activities is shown in Figure 1. It must be remembered that the employer is the only entity that can issue the authorisation to work: IIW is only in a position to assist and support this process in a way that is convincing to the employers' customers,

particularly in relation to ISO 14731. Employers may also require some third party certification of their welding operations and one route to achieve this is through certification of compliance with ISO 3834 via the IIW Manufacturers Certification Scheme; this includes an assessment of the company's welding inspection personnel. Although it does not require the welding inspectors to hold any particular qualification or certification, possession of a relevant IIW diploma and certificate (see below) will assist in the process of company certification.

Figure 1



1 General

Job competences for welding Inspection activities are generally related to the following tasks (not limited to and as an example):

a) Inspection and testing before welding. Capability in assessing:
   i. the suitability and validity of welders' and welding operators' qualification/certificates;
   ii. the suitability of the welding procedure specification;
   iii. the identity of the parent material;
   iv. the identity of welding consumables;
   v. joint preparation (e.g. shape and dimensions);
   vi. fit-up, jigging and tacking;
   vii. any special requirements in the welding procedure specification (e.g. prevention of distortion);
   viii. the preheating temperature;
   ix. the suitability of working conditions for welding, including the environment.

b) Inspection and testing during welding; capability in assessing:
   i. essential welding parameters (e.g. welding current, arc voltage and travel speed);
   ii. the preheating/interpass temperature;
   iii. the cleaning and shape of runs and layers of weld metal;
   iv. back gouging;
   v. the welding sequence;
   vi. the correct use and handling of welding consumables;
   vii. control of distortion;
   viii. any intermediate examination (e.g. checking dimensions).

c) Inspection and testing after welding; capability in:
   i. the use of visual inspection (for completeness of welding, weld dimensions, shape);
   ii. the use of non-destructive testing;
   iii. the use of destructive testing;
   iv. evaluating the form, shape, tolerance and dimensions of the construction;
   v. understanding the results and records of post-operations (e.g. post-weld heat treatment, ageing).

The certification of Welding Inspection Personnel attests that individuals have fulfilled certain requirements, including:

a) the appropriate level of knowledge and skills in welding inspection
b) working continuously on specified welding inspection tasks and exercise specified responsibilities appropriate to the level of certification
c) the capability in applying welding inspection knowledge, including the use of a given welding fabrication and inspection code for the appropriate level
d) keeping up to date with welding inspection knowledge.

1.1 Level of certification

Three levels of certification are defined:

Certification Title	
Certified International Welding Inspector – Basic level	CIWI-B
Certified International Welding Inspector – Standard level	CIWI-S
Certified International Welding Inspector – Comprehensive level	CIWI-C

Table 1

1.2 Required competences

1.2.1 Certified International Welding Inspector – Basic level

A welding Inspector certificate holder at "Basic" level is competent to effectively perform the following tasks using a given fabrication and inspection code:

- Conduct direct unaided visual inspection to identify and evaluate welding imperfection according to acceptance criteria;
- Verify, witness and understand all welding related activities in fabrication, including (but not limited to) the following points:
  - Verify the adequacy of information on NDT reports (VT, PT, MT, RT, UT) for conventional techniques;
  - Verify data and adequacy of material certificates (base and filler materials);
  - Verify identification and traceability of the materials during the fabrication process;
  - Verify the compliance of raw materials and consumables against the applicable standards, codes and specifications;
  - Verify the implementation of the WPS in production for conventional applications (e.g. arc welding processes, steels);
  - Verify the implementation of PWHT specifications in production;
  - Witness welder qualification tests including testing of the specimens or test coupons;
  - Witness production test coupons;
- Read and understand an Inspection Testing Plan;
- Read and understand the construction drawings in relation to inspection activities; and
- Report any of the above actions to a qualified supervisor

1.2.2 Certified International Welding Inspector – Standard level

A welding Inspector certificate holder at "Standard" level is competent to effectively perform the following tasks (in addition to CIWI-B) using a given fabrication and inspection code:

- Supervise the activities of the CIWI-B;
- Develop and provide instructions to CIWI-B;
- Develop, comment and review Quality Control Plans and Inspection and Testing Plans based on product standards, codes, specifications, drawings and regulatory requirements;
- Witness procedure qualification tests including testing of the specimens;
- Verify the compliance of WQPRs and WPSs and welder qualifications and approvals against the applicable standards, codes and specifications for conventional applications (e.g. arc welding processes, steels, aluminum alloys);
- Verify the compliance of PWHT specifications against the applicable standards, codes and specifications;
- Verify the compliance of raw materials and consumables certificates against the applicable standards, codes and specifications;
- Take decisions on acceptance of quality documents related to welding fabrication (e.g NDT, material testing, production testing, etc.);

- Take decisions based on quality documents (e.g NDT, material testing, production testing, etc.) according to the requirements defined for the construction;
- Verify radiographic films quality adequacy (no interpretation);
- Identify and verify the relevant NDT techniques for a welded construction; and
- Report on all the above actions.

1.2.3 Certified International Welding Inspector – Comprehensive level

A welding Inspector certificate holder at "Comprehensive" level is competent to effectively perform the following tasks (in addition to CIWI-B/S) using a given fabrication and inspection code:

- Manage the whole of the Welding Inspection activities;
- Supervise the activities of the IWI-S and IWI-B;
- Develop and provide instructions to IWI-S and IWI-B;
- Act as a technical expert for the Inspection function;
- Develop, comment and review Quality Control Plans and Inspection Testing Plans for applications not covered by product standards, codes, specifications, drawings and regulatory requirements;
- Manage inspection activities for non-conventional applications with reference to materials, processes, and advanced destructive testing and NDT techniques

2 Prerequisites to apply for Certification process

In order to be eligible for certification a applicant shall comply with the following requirements:

a) Minimum academic education
b) Welding technology and inspection knowledge
c) Experience in welding inspection job functions
d) Vision acuity
e) Completed application form and supporting documents.

2.1 Minimum academic education

Applicants seeking initial certification, must meet the following minimum academic education.

CIWI-C Level
Applicants should have a primary degree in an engineering discipline, e.g.:

- a relevant qualification from an accredited program in accordance with the Sydney Accord for professional or
- qualification of engineering technologists, or
- a Short Cycle Bologna Framework engineering qualification, or
- an engineering qualification at EQF Level 5,
- or equivalent, at the discretion of ANB.

CIWI-S Level
Applicants should have a specific technical education higher than a professional worker, e.g. a relevant qualification from an accredited program:

- in accordance with the Dublin Accord for the professional qualification of engineering technicians, or
- an engineering qualification at EQF Level 4 or,
- equivalent, at the discretion of ANB

CIWI-B Level
Applicant should have educational backgrounds in science or engineering, to professional workers.

2.2 Welding technology and Inspection knowledge

It is essential for applicants to understand the welding technology and inspection knowledge appropriate to the level of certification sought. Table 2 specifies the recommended level of knowledge.

Certification Level sought	Recommended Level of Knowledge
Certified International Welding Inspector – Basic level	As specified in IAB-041r6-24/SV-01 for Basic Level
Certified International Welding Inspector – Standard level	As specified in IAB-041r6-24/SV-01 for Standard Level
Certified International Welding Inspector – Comprehensive level	As specified in IAB-041r6-24/SV-01 for Comprehensive Level

Table 2

Appendix 2 provides applicants with a self-assessment tool to understand and evaluate their level of existing knowledge. This appendix, duly filled in and signed, shall be attached to the application.

2.3 Experience in welding inspection job functions

The applicant must demonstrate recent satisfactory experience and current competence. The applicant must provide documentary evidence of experience gained as welding Inspector as follows:

Certification Level	Experience
Certified International Welding Inspector – Basic level	a minimum of one year of experience in the two-year period prior to application
Certified International Welding Inspector – Standard level	a minimum of two years of experience in the three-year period prior to application
Certified International Welding Inspector – Comprehensive level	minimum of three years of experience in the four-year period prior to application

Table 3

The experience is defined as the time in which applicants have been involved in welding inspection related tasks. Clause 1.2 indicates the scope of acceptable tasks that can be considered as applicable to satisfy experience requirements.

The list referred to in clause 1.2 is intended as a guide only and other activities may be acceptable. It is the applicant's responsibility to give an accurate account of his/her scope of responsibilities and activities in the application.

2.4. Visual Acuity

The applicant shall provide documentary evidence of satisfactory visual acuity in accordance with the following requirement: near vision shall permit reading a minimum of Jaeger number 1 or Times Roman N 4.5 or equivalent letters (having a height of 1,6 mm) at not less than 30 cm with one or both eyes, either corrected or uncorrected.

ANB may consider replacing that requirement by compliance with an appropriate alternative, e.g. Tumbling E chart or ISO 18490 can be used as a guidance.

Any record about visual acuity shall be dated back not more than 12 months the date of application.

2.5. Completed application form and supporting documents.

For new certification and for recertification an application form shall be used (see appendix 1).

3 Examination

3.1 General

The examination is aimed at assessing knowledge and capability of candidates in applying previous knowledge and experience in welding inspection activity, with particular focus on the use of fabrication and inspection standards/codes, regardless the type.

Candidates must demonstrate that they have been assessed by an ANB with examinations in accordance with table 4.

3.2 The Examinations

a) WTE: **W**elding **T**echnology **E**xam to assess the welding technology knowledge (in accordance with IAB-041r6-24/SV-01 or later, or IAB 252/SV), at the appropriate level in accordance with table 4. This exam shall be a written multiple-choice questionnaire, administered and harmonized according to relevant IIW IAB procedures (see appendix 3). The minimum passing grade shall be 60%.

b) WIE: **W**elding **I**nspection **E**xam to assess the welding inspection knowledge (in accordance with IAB-041r6-24/SV-01 or later), at the appropriate level in accordance with table 4. This exam shall be a written multiple-choice questionnaire, administered and harmonized according to relevant IIW IAB procedures (see appendix 3). The minimum passing grade shall be 60%.

c) PE: **P**ractical **E**xam relevant to welding inspection skills (in accordance with IAB-041r6-24/SV-01 or later) at the appropriate level in accordance with table 4. This exam shall be a written examination of the candidate's practical capabilities of performing welding inspection tasks.
This practical exam shall be administered and harmonized according to relevant IIW IAB procedures (see appendix 3).
Candidates must score 50% correct for each part of the exam and achieve an average score of all parts no less than 60% correct.

d) ASE **A**pplication of **S**tandards **E**xam at the appropriate level in accordance with table 4. This shall be a written exam administered and harmonized according to relevant IIW IAB procedures (see appendix 3). The minimum passing grade shall be 70%.

Table 4 specifies the required examinations for all levels.

Certification level sought	Required Examination for Direct Access
CIWI-B	WTE-B WIE-B PE-B ASE-B
CIWI-S	WTE-B +WTE-S WIE-B +WIE-S PE-S (*) ASE-S (**)
CIWI-C	WTE-B + WTE-S + WTE-C WIE-B + WIE-S + WIE-C PE-S (*) ASE-C (***)
(*) Includes PE-B (**) Includes ASE-B (***) Includes ASE-S	

Table 4

3.3 Administration of Examinations

a) Candidates seeking direct access to a certification level shall successfully complete all of the examinations for the desired level in accordance with table 4, within 1 year counting from the date of the first exam. Candidates who have successfully completed examinations in accordance with IAB-041r6-24/SV-01 (or later) will receive credits for those examinations. In any case such exams shall not be considered if taken more than 4 years before the date of application for certification.
b) ASE should be the final exam.
c) Only two re-tests are permitted for each type of exam. Afterwards the candidate shall be considered as a new applicant.
d) Exam related standards and tools shall be made available to the examinee.

4 Certification

The following list specifies the general certification requirements.

- Knowledge self-assessment §2.2
- Experience §2.3+table 3
- Visual acuity §2.4
- Knowledge exam §3 a) and b)
- Practical exam §3 c)
- Standards based exam §3 d)

4.1 Decision on certification and awarding of the certificate

Each application for certification, including all records of compliance with the requirements referred to in clause 4, shall be reviewed by decision-making staff who take(s) the final decision.

The ANB must record the decision and inform the candidate of the related result. Following the satisfactory decision, the certificate can be awarded. The ANB shall issue and forward to the candidate the Certificate (appendix 4).

4.2 Validity of the certificate

The certificates have a validity of three years from the date of the decision on certification; prior to expiration, it is the responsibility of the certified Inspector to apply for recertification in due time to complete the process, to retain the certified status.

5 Recertification

The recertification process shall comply with the following table

Recertification period	Recertification process	Remarks
Every three years (*)	Paper assessment	See clause 5.1
Every ninth year (*)	Paper assessment and examination	See clause 5.1 and 5.2
(*) for continuous certification period (no interruption in the certification period)		

Table 5

The recertification process on every third and sixth year can only be performed by the ANB which last certified the Inspector.

For the recertification process every ninth year, certified Inspectors are allowed to have the paper assessment and examination performed at ANB other than the one which last certified the Inspector.

Each application for recertification shall be reviewed. The final decision on recertification will be taken by decision-making staff. In cases of doubt the candidate may be required to undergo an interview.

Only a candidate with a satisfactory assessment result can be awarded the certification. The ANB must record the decision and inform the candidate of the related result. In the case of a positive result, the ANB shall also issue and forward to the candidate the Certificate (appendix 4).

The application for recertification should be sent ANB before the date of expiration and shall be sent not later than 12 months from the date of expiration. The recertification date shall be the “date of decision” on recertification, but the expiry date will be three years from the date of previous expiration.

5.1 Paper Assessment

Paper assessment requires:

- evidence of relevant job experience
- Maintaining and developing knowledge
- Vision acuity

Information on the activities of the certificate holder during the previous three years, both in terms of job experience and in keeping up to date with welding and inspection technology, shall be provided.

5.1.1 Relevant job experience

The candidate is required to demonstrate reasonably continuous operation in inspection technology during the previous three years at the appropriate level. In this context ’reasonably continuous’ means that any lack of involvement in tasks referred to in clause 1.2, during the three years period has not exceeded a total of 12 months duration.

5.1.2 Maintaining and developing knowledge

Candidates are required to demonstrate that they are maintaining and updating their knowledge relevant to the areas in which they practice, for example by implementing a personal system for professional development. This is an important feature of certification, because a person's capability is dependent on the knowledge base from which he/she operates. Technology does not stand still and, therefore, the individual's knowledge-base must be continuously developed and refined during his/her working career in order to remain competent.
20 hours of training/seminars related to welding and inspection technology in the three years period, are required as a minimum.

5.1.3 Vision Acuity

See clause 2.4.

5.2 Examination

The examination for recertification every ninth year consists of a practical and a Standards based examination (see clause 3, item c) and d))

6 Career Progression

Individuals holding a valid CIWI certificate may progress to the next higher level by compliance with the following requirements (Table 6).

Requirements	Career Progression	
	Basic to Standard	**Standard to Comprehensive**
Academic education	2.1 (***)	NA
Knowledge	2.2	2.2
Experience	Two years after gaining Basic Level certificate	Three years after gaining Standard Level certificate
Examination	Entry exam (***) WTE-S, WIE-S PE-S (*), ASE-S (**)	WTE-C WIE-C ASE-C (****)
(*) Includes PE-B (**) Includes ASE-B (***) for candidates not complying with clause 2.1, See Appendix 3, table A3.4 (****) Includes ASE-S		

Table 6

7. Rubber Stamp

In order to enable persons who have gained an IIW Certificate to publicly demonstrate their level of certification on relevant documents, IIW has arranged for the provision of a personalised rubber stamp. IAB Group B has decided on the layout and dimensions of the stamps. The officially approved IAB rubber stamps are only available via the IIW approved Authorised Nominated Bodies (ANB). Persons who wish to take advantage of this arrangement may contact their ANB for the details.

8 Rules of Professional Conduct and complaints

Persons certified according to the IIW Certification Scheme are obliged to follow these rules. The Rules of Professional Conduct include any further rules given by the Authorised Nominated Body responsible for the certification.

- Certified persons shall take all reasonable actions to ensure that they discharge their professional responsibilities in an objective, thorough and competent manner, ensuring the safety of others at all times
- Certified persons are obliged to keep up-to-date in the areas of technology in which they practice
- All information given to support the application for certification and for recertification must be correct and not misleading
- The certificate must only be used as intended for, and within the scope of, certification
- Certified persons and/or their employers must not use the certificate, nor part of it, nor must they knowingly allow it to be used in a manner that may be considered fraudulent
- Certified persons or their employers must not make incorrect references to the certification scheme or misleading use of certificates in advertisements, catalogues, etc
- Certified persons are obliged to keep a record of any complaint made against them within the technical field covered by the certificate
- Certified persons must not bring the IIW or the Authorised Nominated Body into disrepute
- Certified persons must follow any rules given for use of system logos and officially approved IAB rubber stamp.
- ANBs keep full responsibility on the implementation of the IIW certification scheme and on the certificates awarded to candidates. ANBs responsibility is limited to the application, examining, issuing certificates and handling complaints. This certification is not intended to replace the final responsibility of the employer for the ability of an individual to perform a given task.

The certificate remains the property of ANB.

Complaints against IIW certified Inspectors shall be directed to the ANB which issue the current certificate. Complaints must be accompanied by supporting objective evidence. Each ANB must have in place procedure to manage complaints.

Failure to follow these Rules of Professional Conduct may result in withdrawal of the certificate issued.

The penalties for fraudulent use of certificates may in addition include reporting the matter to the relevant authorities.

An Authorised Nominated Body is obliged to publish details of withdrawn certificates and inform other ANBs.

A certificate holder whose certificate has been withdrawn due to failure of the certificate holder to follow these Rules of Professional Conduct can only apply as a new applicant for a new certification after a period of minimum 5 years. An Authorised Nominated Body is allowed to deny re-issuing of a certificate.

APPENDIX 1 - APPLICATION FOR INITIAL CERTIFICATION/RECERTIFICATION

1. PERSONAL DATA

Application for:

Initial Certification □	Recertification □ (3 years) □ (6 years) □ (9th year)

Last name:	Name:	
Home Address: _____ _____ Postcode _____		
Telephone: Home	Telephone: Business	e-mail address

Details of EWF/IIW Diploma for Welding Coordination or Welding Inspection (if any)		
Title:	Number:	ANB and issuing date:

Details of IIW Inspector Certificate held (if applicable)			
Title:	Number:	Date of first issue:	Expiry Date:

Level of certification sought:

Certified International Welding Inspector – Basic Level	
Certified International Welding Inspector – Standard Level	
Certified International Welding Inspector – Comprehensive Level	

Attachments

CV □
Certificate of Vision Acuity □
Other _____

The undersigned applicant:

- will abide by the terms of Certification given in the notes at the end of this form
- has read and understood the level of knowledge required for the certification (IAB 360, 2.2)
- accepts that the data indicated on the certificate can be made available to public by the ANB

Signed:_____ Date:_____

APPENDIX 1 (continue)

2. MAINTAINING AND DEVELOPING KNOWLEDGE
(for recertification only. See document IAB 360, clause 5.1.2)

2.1 Please indicate briefly how you keep up-to-date with developments in welding inspection technology

_____
_____
_____
_____

2.2 Give examples with dates of activities within the last three years that have helped you to keep up to date (e.g. training courses and seminars attended), and provide evidence (e.g. copies of attendance certificates)

_____
_____
_____
_____
_____
_____

APPENDIX 1 (continue)

3. RECORD OF RECENT PROFESSIONAL WELDING INSPECTION EXPERIENCE
(See document IAB 360, clause 1.2 or 5.1.1)

This section should record the principal features of your job specification for the posts which you have held during the past three years and should show your specific welding inspection responsibilities. Please indicate whether the responsibility is direct or delegated in each case. If more than two posts are involved, continue on a photocopy of this page

CURRENT JOB TITLE _____
Employed from (date) _____
Employer _____
Contact person for confirmation: name_____ email _____ phone _____
By selecting from the attached list, indicate below the products, materials and processes for which you have responsibility:

Principal products_____
Materials involved_____
Welding processes used _____
Codes and standards _____
_____

CURRENT JOB SPECIFICATION Principal features showing welding Inspection responsibilities	Welding Inspection responsibilities are: Direct	 Delegated

APPENDIX 1 (continue)

PREVIOUS JOB TITLE _____
Dates employed from _____to _____
Employer _____
Contact person for confirmation: name_____ email _____ phone _____
By selecting from the attached list, indicate below the products, materials and processes for which you have responsibility:
Principal products _____
_____
Materials involved _____
Welding processes used _____
Codes and standards used _____
_____

PREVIOUS JOB SPECIFICATION Principal features showing welding Inspection responsibilities	Welding Inspection responsibilities are: Direct	Delegated

Notes to candidates:

i. Certified persons are required to abide by the Rules of Professional Conduct (IAB 360 relevant clause), failure to do so may result in withdrawal of the certificate.
ii. Certification requires recertification. On each occasion the certified person must complete this Application Form.
iii. Lists of certificate holders are made available to the public by the ANB upon request.
iv. The certificate holders accept that the data indicated on the certificate can be made available to public by the ANB upon request

Appendix 2 – Knowledge Self-Assessment

The following tables support applicants in making a self-assessment of their knowledge. For each item a grading system from 1 to 4, is proposed, as follow:

Level of knowledge	**Score**
without any knowledge	0
entry level: I am familiar with some of the term and definitions	1
medium level: I am aware of the general principles	2
advanced level: I am able to use/apply in the job	3
professional level: I am able to teach and coach	4

Concerning table A2.1 (Welding Technology), it is supposed to be consistent with the required level of knowledge to apply for certification an average, for each given Module, equal or higher than:

- 1,5 for CIWI-B
- 2,5 for CIWI-S
- 3,5 for CIWI-C

Concerning table A2.2 (Welding Inspection), it is supposed to be consistent with the required level of knowledge to apply for certification an average, for each given Subject, equal or higher than

- 1,5 for CIWI-B
- 2,5 for CIWI-S
- 3,5 for CIWI-C

Table A2.1 – Welding Technology Module

Sub Module	Item		Score
Sub-Module I - Welding processes and equipment			
	I,I	General introduction to welding technology	
	I.II	Oxy-gas welding and related processes	
	I.III	Electrotechnics, a review	
	I.IV	The Electric Arc	
	I.V	Power sources for arc welding	
	I.VI	Introduction to gas shielded arc welding	
	I.VII	TIG Welding	
	I.VIII	MIG/MAG and Flux Cored Welding	
	I.IX	MMA Welding	
	I.X	Submerged-Arc Welding	
	I.XI	Resistance Welding	
	I-XII	Other Welding Processes (plasma; electron beam; LASER, electro-slag, friction; friction stir, magnetically impelled arc butt (MIAB); magnetic pulse welding, ultrasonic; explosive; diffusion; aluminothermic; high-frequency; stud, cold-pressure welding, hybrid processes, etc)	
	I.XIII	Cutting and other edge preparation processes	
	I.XIV	Surfacing and Spraying	
	I.XV	Fully mechanised processes and robotics	

	I.XVI	Brazing and soldering	
	I.XVII	Joining processes for plastics	
	I.XVIII	Joining processes for ceramics and composites	
Sub-Module II - Materials and their behaviour during welding			
	II,I	Manufacture and designation of steels	
	II.II	Testing Materials and the weld joint	
	II.III	Structure and properties of pure metals	
	II.IV	Alloys and Phase Diagrams	
	II.V	Iron - Carbon Alloys	
	II.VI	Heat treatment of base materials and welded joints	
	II.VII	Structure of the welded joint	
	II.VIII	Plain Carbon and Carbon-Manganese Steels	
	II.IX	Fine - grained steels	
	II.X	Thermomechanically treated steels (TMCP -steels)	
	II.XI	Cracking phenomena in welded joints	
	II.XII	Application of structural and high strength steels	
	II.XIII	Low-alloy steels for very low temperature application	
	II.XIV	Low alloy creep resistant steels	
	II.XV	Introduction to corrosion	
	II.XVI	High-alloyed (stainless) steels	
	II.XVII	Introduction to wear	
	II.XVIII	Protective layers	
	II.XIX	High alloy creep resistant and heat resistant steels	
	II.XX	Copper and copper alloys	
	II.XXI	Nickel and nickel alloys	
	II.XXII	Aluminium and aluminium alloys	
	II.XXIII	Other metals and alloys	
	II.XXIV	Joining dissimilar materials	
Sub-Module III - Construction and design			
	III,I	Basic theory of structural systems	
	III.II	Fundamentals of the strength of materials	
	III.III	Welded Joint design	
	III.IV	Basics of weld design	
	III.V	Behaviour of structures under different types of loading	
	III.VI	Behaviour of structures with dynamic loading	
	III.VII	Design of dynamically loaded welded structures	
	III.VIII	Design of welded pressure equipment	
	III.IX	Design of structures of aluminium and its alloys	
	III.X	Reinforcing-steel welded joints	
	III.XI	Introduction to fracture mechanics	

Sub-Module IV - Fabrication, applications engineering			
	IV.I	Introduction to quality assurance in fabrication	
	IV.II	Quality control during manufacture	
	IV.III	Welding Stresses and Distortion	
	IV.IV	Plant facilities, welding jigs and fixtures	
	IV.V	Health and Safety	
	IV.VI	Measurement, Control and Recording in Welding	
	IV.VII	Non Destructive Testing	
	IV.VIII	Economics	
	IV.VIX	Repair Welding	
	IV.X	Fitness for Purpose	

Table A2.2 – Welding Inspection Module

Subject	Item		Score
Quality Assurance / Quality Control in Inspection			
	V.I	Role of Welding Inspection Personnel	
	V.II	Management of inspection function	
	V.III	Responsibilities in inspection; organization of inspection functions; planning and scheduling of key activities; records and record keeping. inspection personnel management;	
	V.IV	Quality Assurance Principles in Welding	
	V.V	Construction and quality standards	
	V.VI	Inspection before, during and after welding.	
	V.VII	Welders/Welding Operators and Welding Procedures approval	
	V.VIII	Material certificates: essential features and data	
	V.IX	Objectives of the different destructive testing methods	
	V.X	Objectives of destructive testing in relation to welder and procedure qualification	
Weld Imperfections			
	VI.I VI.II	Review of weld imperfection, their cause and characteristics,	
	VI.III	in particular: porosity and cavities; imperfect and profile shapes; arc strikes; cracks; inclusions; lack of fusion; lack of penetration; lamellar tearing; overlap; poor surface condition; seams and laminations; spatter; undercut.	
	VI.IV	Imperfection classification according to EN ISO 6520	
	VI.V	Evaluation and features of weld imperfections: form; surface; size; location; orientation;	
	VI.VI	Significance of defects in relation to service performance	
	VI.VII	Compliance with specifications	
	V.VIII	Acceptance/rejection criteria	
Non Destructive Testing Methods			
	VII.I	Objectives of non destructive testing methods	
	VII.II	Visual inspection: tools; checking before welding; during welding; after welding; reporting results.	
	VII.III	Dye penetrant testing: principles; technique; application; standards; personnel competence.	

	VII.IV	Magnetic particle testing: principles; technique; application; standards; personnel competence.	
	VII.V	Radiographic testing: principles; techniques; facilities; standards; personnel competence.	
	VII.VI	Ultrasonic testing: principles; techniques; facilities; standards; personnel competence	
	VII.VII	Other NDT methods: Eddy current testing; leak testing; strain gauges.	
	VII.VIII	Critical review of selection of NDT methods: NDT methods versus cost, operator competence, surface/sub-surface imperfection detection, type of imperfection detected, imperfection measurement, reliability of detection, limitations of materials, size and geometry, accuracy and validity of information obtained; Logical route to selection of the NDT test methods;	
	VII.IX	Other test methods: pressure test; dimensional test.	
	VII.X	Reporting: preparation of inspection and test reports; procedure for report assessment; essential records and their maintenance.	

Applicants are required to confirm that they understand the level of knowledge needed.

Name:

Date (dd/mm/yyyy):

Signature:

Appendix 3 - Examinations

A.3.1 Welding technology exam (WTE) and Welding inspection exam (WIE)

Module – Sub Module - Subject		Number of question (Duration)		
		CIWI-B	CIWI-S	CIWI-C
Welding Technology Exam - WTE	Sub-Mod 1 Welding processes and equipment	21	9	23
	Sub-Mod 2 Materials and their behaviour during welding	33	30	20
	Sub-Mod 3 Construction and design	9	5	5
	Sub-Mod 4 Fabrication, applications engineering	9	4	0
	TOTAL	**72 (1,5 hrs)**	**48 (1 hr)**	**48 (1 hr)**
Welding Inspection Exam - WIE	Sub-Mod 1 Quality Assurance / Quality Control in Inspection	32	12	18
	Sub-Mod 2 Testing of welds and Reporting	40	30	30
	TOTAL	**72 (1,5 hrs)**	**42 (1 hr)**	**48 (1hr)**

Table A3.1 – Welding technology exam - WTE and Welding inspection exam – WIE

A.3.2 Practical exam

	LEVEL OF QUALIFICATION / CONTENT (DURATION)	
Exam part	PE-B (2 hrs)	PE-S (4 hrs)
1	Conduct of Visual Testing + evaluation against acceptance criteria ISO 5817 and reporting, (2 fillets or 1 butt weld)	Conduct of Visual Testing + evaluation against acceptance criteria ISO 5817 and reporting, 2 specimens (1 fillet and 1 butt weld)
2	Evaluation of bend testing specimens related to welder qualification	Evaluation of bend testing specimens related to welder qualification
3	Evaluation of fracture testing specimens related to welder approval	Evaluation of fracture testing specimens related to welder approval
4	Interpretation of two Macrographs	Interpretation of two Macrographs
5	Review of 1 NDT reports chosen from PT, MT, RT, UT	Review of 1 NDT report from PT or MT and 1 from RT or UT (2 in total)
6	Review of one Welder's qualification test certificate against ISO 9606-1	Review of one Welder's qualification test certificate against ISO 9606-1
7	--	Review of 2 RT Images for assessment of quality
8	WPS compliance against ISO 15609-1	WPQR Compliance against ISO 15614-1

Table A3.2 – Practical exam - PE

Appendix 3 - Examinations (continue)

A.3.3 Application of Standard Exam (ASE)

The ASE is a written exam (multiple choice questionnaire) aimed at verifying the capability of Candidates:

- in understanding a Technical Specification/Code
- in searching for information in standards and in technical documentation
- in assessing the completeness and correctness of technical reports or quality records

always in relation to specific Construction/Fabrication Cases.

The Candidates will be provided with the so-called “Harmonised Exam Packages HEP” which is a set of documentation related to a specific Construction Case to be used to answer the examination questions. The HEP is composed of:

- instructions for the candidates
- the Welding Generic Code supporting the fabrication of the component considered by the Construction Case. Candidates shall have access the Code before the exam for self-study (the Welding Generic Code must be considered as a typical Fabrication standard)
- a typical Quality Control Plan
- the drawings of the component considered by the Construction Case
- base material certificates
- filler material certificates
- destructive test Reports
- non-destructive test reports
- welder qualification records
- welding procedure specifications
- welding procedure qualification records

	Duration and Number of Question			
Item	**Description**	**CWI-B (1 hr)**	**CWI-S (1,5 hr)**	**CWI-C (2 hr)**
QCP	Quality control plan	-	-	5
DT	Destructive testing (bending, tensile, hardness, impact)	4	6	6
MAC	Interpretation of two Macrographs	4	4	4
NDT	NDT (MT PT RT UT)	5	6	6
WQ	Welder’s qualification test certificate against ISO 9606-1	6	10	10
MAT	Welding consumable and base material inspection document	5	8	8
WPS	WPS Compliance against ISO 15609	6	6	6
WPQR	WPQR Compliance against ISO 15614	-	5	5
	Total	30	45	50

Table A3.3 – Application of Standards Exam – ASE

Appendix 3 - Examinations (continue)

IWS 0 Training Programme (According to the Guideline IAB-252, latest revision)		Teaching hours	Number of questions (Duration)
0.1	Basic Metrology applicable to Welding	4	4
0.2	Technical Calculation	8	8
0.3	Technical Drawings	8	8
0.4	Basics of Electro-technology	2	2
0.5	Basics of Chemistry	2	2
0.6	Basics of Materials	2	2
0.7	Metal Products	2	2
0.8	Machining of Materials	2	2
0.9	Technical Mechanics	4	4
0.10	Joining Elements	2	2
0.11	Calculation of strength	4	4
	TOTAL	**40**	**40 (40 minutes)**

Table A3.4 – Entry Exam for applicants not complying with the Academic Education prerequisite for CWI-S

Appendix 4 - IIW Personnel Certificate

In the next pages, the IIW Personnel Certificate is reported.

The certificate and the schedule are pre-printed only in border, headers and footers and they are provided by IAB Secretariat.

The certificate and the schedule must be filled in by the ANB by means of a template word file provided by IAB Secretariat.

The template layout, content and wording are reported in the following pages.

Appendix 4 (continue)

PERSONNEL CERTIFICATE

ANB NAME

IIW Authorised Nominated Body

ANB Logo – Accreditation Body Logo

Having met the certification requirements in accordance with Document IAB 360 of the International Institute of Welding

(NAME AND DATE OF BIRTH)

is hereby awarded the title of

CERTIFIED INTERNATIONAL WELDING INSPECTOR
xxxxxxx LEVEL
CIWI-B/S/C

Date of first issue: Certificate Nº:
Date of current issue
Expiry Date:

ANB Governing Board Representative ANB Chief Executive

ANB name, country, contact information:

This certificate is subject to the rules concerning its use and misuse. See overleaf

The International Institute of Welding
Certification Scheme ~~System~~ Owner
The IIW Certification Scheme ~~System~~ of Welding Inspectors

APPENDIX 4 (continue)

REVERSE OF CERTIFICATE

NOTES:

1. The certificate is issued to the person named and is only valid for the period indicated. Certified persons should apply for renewal well before the expiry date in order to ensure continuity of certification. The certificate remains the property of the ANB.

2. Certified persons are obliged to follow the Rules of Professional Conduct described in Document IAB-360. Failure to do so may result in the certificate being withdrawn.

3. In order to discourage fraudulent use of certificates, employers presented with this certificate should only accept it if it is an original. In cases of doubt, verification should be sought from the ANB named overleaf.