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## 1 INTRODUCTION

EN45011 (reference 1) defines criteria for bodies providing product (process and service) certification. EA has published a separate document (reference 2) giving general guidance to certification bodies seeking accreditation to EN45011.

EN729 'Quality requirements for welding. Fusion welding of metallic materials' (reference 3, also published as ISO 3834) is in four parts:

- Part 1 Guidelines for selection and use
- Part 2 Comprehensive quality requirements
- Part 3 Standard quality requirements
- Part 4 Elementary quality requirements

The standard defines quality requirements for welding both in workshops and on site, and is appropriate when demonstration of a manufacturer's capability to produce welded construction in accordance with specified criteria is required; it can also be used as the basis for assessing a manufacturer's welding quality arrangements.

The properties of welded products cannot be confirmed by testing alone, assurance is gained by controlling the production process. If the welding production processes are controlled in accordance with EN729 it is recognised that the quality of the welds in the final product will meet the specified criteria.

Further EA guidance on EN729 assessment and certification is required because welding is a special process and the evaluation of all the welding related activities and welding process operations implemented by the manufacturer to achieve the required welding quality, requires particular expertise of the assessment team.

The General assembly of EA has confirmed that the assessment and certification of the welding capability of a manufacturer in accordance with the requirements of EN729 can be provided as an integral part of ISO 9001/2 assessment and certification, (EN45012), or as a stand alone assessment and certification of the welding operations and associated activities which influence the integrity of welds. (EN45011)

In conjunction with ISO9001/2, EN729 part 2 is the applicable standard with the requirements minimised to suit the range of welded constructions defined in the scope of the manufacture's QMS certification..

The applicable part of EN729 (Part 2, 3, or 4) for stand alone assessment and certification of the welding operations and activities (EN45011) will depend on the nature of the welding activities required to meet the agreed specifications and influenced by how critical the welding operations are to the quality and fitness of the final product.

Meaningful certification should provide the purchaser (and manufacturer) with a clear statement of the manufacturer's capability to produce welded construction whether the welding controls are defined and assessed in conjunction with ISO9001 or 2, or assessed as stand alone processes and related activities capable of producing welded construction to specified requirements.

Assessment of conformity with the requirements of EN729 should be of sufficient depth and rigour to confirm that the manufacturer has appropriate and acceptable welding capability and controls, and is capable of producing welded construction to the specified requirements. In conjunction with ISO9001 or 2 standards the assessment should evaluate and confirm that the required EN729-2 controls are exercised over all aspects of the welding operations appropriate to the manufacturer's range of activities covered by the scope of QMS certification. A similar rigorous assessment of the welding controls and activities in accordance with EN729-2, -3, or -4 as a stand alone assessment should confirm the adequacy of welding controls to achieve the specified welded product quality requirements.

Since both assessment routes require the rigorous evaluation of welding controls and associated activities, the assessor qualifications and requirements for assessment in these guidelines apply to both routes. The confirmed welding capability must be related to the types of products, parent material and welding processes of the manufacturer that should be detailed in a schedule accompanying the certificate.

EN729 is not certification of the final product as such, and therefore use of marks on the product is not permitted. Any certification/declaration issued by the manufacturer must confirm which part of EN729 has been applied.

The Guidelines have been drawn up with the assistance of EWF, no accreditation body, certification body or certified company applying these guidelines may claim any recognition or authority from EWF nor may they use the EWF logo without the permission of EWF.

## 1.1 Definitions

The following terms are used throughout this document and definitions are given here for clarity. Alternative relevant terms are acceptable providing they are also clearly defined.

**EN 729 Certification Scheme:** The Scheme operated by the Certification Body for the certification of a company's welding activities in accordance with EN 729.

**EN729 Assessment Team:** The group of EN729 Assessors (including the EN729 Lead Assessor), appointed by the Scheme Manager, which assesses the manufacturer for compliance with the EN 729 Certification Scheme. Depending on the specific circumstances of the assessment (e.g. size of the company, complexity of its processes, etc) an EN729 Lead Assessor may conduct an EN729 audit alone.

**EN729 Assessor:** A person who satisfies the criteria given in Part 1 for registration by the Certification Body to perform EN729 Certification Scheme assessments.

**EN729 Lead Assessor:** The assessor who is responsible for directing the EN729 Assessment Team.

**EN729 Technical Experts:** Persons appointed by the Certification Body to provide specialist welding technical support within the EN729 Assessment Team.

**Evaluation System:** A system involving competent person(s) for the evaluation of applicant EN729 Assessors and Technical Experts. Such competent persons should be qualified to the level of European Welding Engineer or equivalent, and have a minimum of seven years' immediate past experience in welding at the level of professional engineer in one or more of the following environments: university, industry or national welding body.

**European Welding Engineer (EWE) and European Welding Technologist (EWT):** The qualifications defined in Doc EWF 409 (reference 6) and in Doc EWF 410 (reference 7) respectively.

*The term "shall" is used throughout this document to indicate those provisions which, reflecting the requirements of ISO/IEC Guides, are mandatory. The term "should" is used to indicate those provisions which, although they constitute guidance for the application of the requirements, are expected to be adopted by a certification body. Any variation from the guidance by a certification body shall be an exception. Such variations will only be permitted on a case by case basis after the certification body has demonstrated to the accreditation body that the exception meets the requirements of the relevant clause of ISO/IEC Guides and the intent of this Guidance in some equivalent way*

## **2 QUALIFICATION OF EN 729 ASSESSORS AND EN 729 TECHNICAL EXPERTS TO BE USED BY THE CERTIFICATION BODY**

### **2.1 Scope**

This section provides guidelines on the requirements to be met by EN729 Assessors and Technical Experts and on the procedure leading to their registration by the Certification Body.

The criteria to achieve registration cover: qualifications and experience, attendance at orientation meetings, and professional interview. There are also criteria covering the maintenance of registration.

### **2.2 Qualification and experience requirements**

EN729 Assessors should be:

- a) competent in quality management system auditing (in accordance with ISO 10011-2), and
- b) have a minimum of three years' experience in the field of welding within the last five years.

Applicant EN729 Technical Experts should:

- a) be experienced specialists in the welding field, trained and qualified to the level of EWE or equivalent, or to the level of EWT or equivalent, and
- b) *be able to demonstrate* current work experience spanning at least three years in fabrication by welding, and
- c) be familiar with quality management systems.

### **2.3 Evaluation of applicant EN 729 Assessors and Technical Experts**

Applicants should provide the following documentation, as applicable, to the Certification Body

- i) curriculum vitae including details of training and qualifications
- ii) experience in the field of welding (including a brief description of each major employment, preferably supported by relevant documentation from the employer)
- iii) experience in quality management systems (including a brief description of each major employment, preferably supported by relevant documentation from the employer or other body(ies)).

The Evaluation System should be used to evaluate compliance of the applicants' professional profile with the qualification and experience requirements, by examination of the above documentation.

### **2.4 Orientation meetings**

In order to provide the applicant EN729 Assessors and Technical Experts with exhaustive information on the EN 729 Certification Scheme, the Certification Body should organise a specific orientation meeting which all applicant EN729 Assessors and Technical Experts are required to attend (see Appendix 1).

### **2.5 Professional interview**

Applicant EN729 Assessors and Technical Experts who have satisfactorily completed steps 1.3 and 1.4 above should undergo a Professional Interview covering the subjects related to the qualification and experience requirements and the EN 729 Certification Scheme. The Professional Interview should be conducted by one or more competent person(s) as defined under 'Evaluation System' see Definitions.

In the case of a positive result, the approved EN729 Assessors and EN729 Technical Experts should be registered in a manner which indicates their specific experience of different welded products, processes and materials (for example see Exemplar 1).

### **2.6 Maintenance of proficiency**

The EN729 Assessors and Technical Experts should be required to maintain their proficiency through:

- active participation in relevant assessment activities



- sufficient updating and/or refreshing of knowledge and understanding of the relevant standards and scheme procedures

Registered EN729 Assessors and Technical Experts should be required to keep records of such activities. The Certification Body should periodically check these records and, in addition, implement a procedure for witnessing assessments. Through these measures, criteria for evaluating the continuing competence of Assessors and Technical Experts should be set and implemented by the Certification Body.

## **2.7 Lead assessor requirements**

The EN729 Lead Assessor should be an EN729 Assessor with authenticated experience in the EN 729 Certification Scheme. The Certification Body should be able to demonstrate that appointed EN729 Lead Assessors are competent to lead EN729 assessments.

## **2.8 Documentation**

All the documentation provided and produced as per these guidelines, should be retained by the Certification Body. The documentation should be retained for a period of not less than three years after the performance of the last assessment conducted by the registered individual.

# **3 ASSESSMENT OF MANUFACTURERS IN ACCORDANCE WITH EN 729 PARTS 2, 3 AND 4**

## **3.1 Scope**

These guidelines define the criteria and methods to be used by Certification Bodies to evaluate a manufacturer in accordance with the EN 729 Certification Scheme.

## **3.2 Procedure**

### **3.2.1 Information phases and assessment preparation**

It is important for the Certification Body to acquire sufficient initial information from the manufacturer so that it can :

- Accurately estimate the scope and cost of the task
- Ensure that appropriate EN729 Assessors and/or Technical Experts are appointed

Exemplar 2, 'Preliminary Informative Enquiry' includes questions on all the important aspects of a manufacturers' activities that relate to EN729. This Exemplar may be used as a guide.

The EN729 Assessment Team should :

- i) contain persons with direct product/process/materials competence in the products/processes/materials being assessed, and

- ii) contain at least one individual who is qualified and experienced in welding to a level which is sufficient to demonstrate that he/she is competent to assess the company's Authorised Welding Co-ordinator(s) in accordance with EN719, 'Welding co-ordination – tasks and responsibilities' (reference 8).

The number of assessors constituting the EN729 Assessment Team (one or more persons) depends on the specific circumstances of the assessment (e.g. the size of the company, the complexity of its processes, etc). The EN729 Assessment Team should comprise EN729 Assessors (including the EN729 Lead Assessor) and EN729 Technical Experts such that the aggregate of their detailed qualifications, knowledge and experience is adequate and relevant for the tasks involved in the proposed assessment.

If it is proposed to use only one person to conduct the assessment, this person should fulfil the requirements for both the EN729 Lead Assessor and the EN729 Technical Expert.

The EN729 Assessment Team appointed by the Certification Body should be accepted by the manufacturer in advance of the assessment

The EN729 Lead Assessor should be responsible for:

- preparing the EN729 part of the assessment
- leading the EN729 assessment and making the final decision on any matter regarding the EN729 assessment
- issuing the EN729 Assessment Report

The EN729 Lead Assessor *should* make use of the EN729 Assessment Team, including Technical Experts, in evaluating the manufacturer.

### 3.2.2 Assessment phase

The correct implementation of, and compliance with, the chosen part of the EN729 Certification Scheme should be assessed by the EN729 Assessment Team through interviews, examination and analysis of documents, by direct observation of the activities in the manufacturer's plant, and by inspection of the welded product and weldments.

The Assessment Team should ensure that all the requirements of the chosen part of EN729 are assessed. Records of the whole process should be maintained. Appendix 2 contains a list of questions that cover the requirements of EN729 Part 2. It is recommended that this list is used by Certification Bodies as an aid in the assessment process and as a means of maintaining the required records.

Special care should be taken by the EN729 Assessment Team in evaluating the competence of the manufacturer's welding co-ordinators in accordance with EN 719 (reference 8). The Certification Body should have procedures, which demonstrate that this important aspect of EN 729 is properly evaluated.

Such procedures should include a peer review and challenge process\* which the company's Authorised Welding Co-ordinators are interviewed and their work examined. The EN729 Assessment Team should be able to demonstrate complete evaluation of welding co-ordination (functions and individuals) in the company. Records of this process should be maintained.

\* *This means that technical discussions must take place between each Authorised Welding Co-ordinator and the relevant Assessor (see section 2.2.1 point (ii)) about the detailed technical scope of the Authorised Welding Co-ordinator's responsibilities. This process will require the Assessor to examine evidence of completed work done by each Authorised Welding Co-ordinator and to investigate his/her knowledge and understanding of it.*

The peer review process should involve the examination of specific contract(s) to assess compliance with the customer's specification in, for example, the following areas :

- i) selection/development of welding procedures
- ii) welding sequences
- iii) NDT and heat treatment
- iv) approval of personnel
- v) traceability
- vi) quality control and acceptance
- vii) sub-contracting

In order to achieve full conformity to EN729 the normative references given in the standard **shall** be applied throughout. While the conversion of EN standards to EN ISO standards is going on, EN standards can be replaced by identical ISO standards. However, it is recognised that in some cases, arising from contractual requirements, manufacturers may use other standards. Such deviations may be permitted if they provide equivalent technical conditions to the normative references in EN729. Any such deviations **shall** be recorded on any relevant certification (for example, see Exemplar 3). The acceptance of deviations in this way is considered as an intermediate solution only and will be reviewed as the standards and manufacturing contracts develop.

Although EN729 makes reference to 'inspection' and 'testing', it does not specify criteria for organisations performing these activities. The results of inspections and tests carried out by the manufacturer, or by sub-contractors, and presented as objective evidence to confirm satisfactory process controls and/or achievement of specification requirements should be fully assessed by the Certification Body.

The EN729 Assessment Team should confirm that the manufacturer's and/or sub-contractor's facility and personnel providing inspection and testing services are conducted and controlled in a technically competent manner which provides confidence in the results obtained, and can therefore support the conclusions made, regarding process control adequacy and specification compliance.

Compliance with EN45004 and EN45001 as appropriate would provide such confidence.

If the EN729 Lead Assessor recommends certification, he/she should also detail in the EN729 Assessment Report the scope of the activity (for example see Exemplar 3), to be included with the certificate.

Guidance on dealing with any non-conformity found during the assessment is given in references 1, 2, 4 and 5.

### **3.2.3 Certification phase**

The Report of the Assessment Team is submitted to the Certification Body. If certification is recommended, a competent person appointed by the Certification Body has the responsibility to decide on the issue of a certificate and on the scope of certification (for example, see Exemplar 3). Such a person should have at least three years of experience in welding technology.

### **3.3 Validity and renewal**

*Renewal of combined ISO 9001/2 and EN 729-2 certificates issued under EN 45 012 accreditation is covered in Reference 5. Stand alone EN729 certificates issued under EN45011 accreditation should have a validity of five years from the date of issue, subject to satisfactory surveillance. Re-assessment is required every five years, at which time the manufacturer must follow the same procedure as for initial application and assessment.*

### **3.4 Surveillance**

Periodic surveillance of certified activities should be implemented through audits performed by the Certification Body in order to verify continuing conformity with the EN 729 Certification Scheme. This is accomplished by surveillance visits performed annually. Such visits may be more frequent if circumstances dictate, e.g. complexity, range of products, etc.

## **4 REFERENCES**

1. EN 45 011; General requirements for bodies operating product certification systems (ISO/IEC 65:1996)
2. EA-6/01; EA Guidelines on the Application of EN 45 011
3. EN 729; Quality requirements for welding - Fusion welding of metallic materials, Parts 1, 2, 3 and 4 (also published as ISO 3834)
4. EN 45 012; General requirements for bodies assessment and certification/registration of quality systems (ISO/IEC Guide 62:1996)
5. EA's Guidelines on the Application of EN 45 012

6. EWF 409 (EWE); European Welding Engineer, Minimum Requirements for Education, Examinations and Qualification
7. EWF 410 (EWT); European Welding Technologist, Minimum Requirements for Education, Examination and Qualification
8. EN 719; Welding coordination - Tasks and responsibilities

## **5 LIST OF ITEMS ATTACHED**

### **5.1 Appendices**

1. Orientation Meetings
2. Questionnaires on Quality Requirements for Welding

### **5.2 Exemplar Forms**

1. Register of Assessors
2. Preliminary Informative Enquiry
3. Proposed Schedule (to accompany the certificate)

## **APPENDIX 1 ORIENTATION MEETINGS**

### **1 Introduction**

The Orientation Meetings are designed to provide the applicant assessors with adequate information on the EN 729 Certification Scheme.

The following Orientation Meeting Syllabus is intended as a “minimum”; each Certification Body may give more extensive information as it sees fit.

### **2 Orientation Meeting Syllabus**

#### **Items**

- Certification Body: general organisation and procedures
- Review of En 729
- Comparison between EN 729 and ISO 9001/2
- Review of EN 729, Parts 1, 2, 3 and 4
- Relationship to EN 45 011 and EN 45 012
- EA and Certification Body’s interpretation of EN 729
- Procedures for Manufacturer assessment and certification according to EN 729
- Procedures for the evaluation and registration of Assessors and Technical Experts
- Questionnaires for assessment
- Procedures for evaluation of welding co-ordinators according to EN 719

## **APPENDIX 2 QUESTIONNAIRES ON QUALITY REQUIREMENTS FOR WELDING**

The list of questions given below is designed to cover the requirements of EN729 Part 2. Certification Bodies are required to develop their own questionnaires based on this document which covers Parts 2, 3 and 4.

The Questionnaires should be formulated in such a way that the manufacturer, as part of the Information Phase, can provide answers to the questions, which can then be evaluated by the EN729 Assessment Team.

## **6 CONTRACT AND DESIGN REVIEW**

### **6.1 General**

- a) Are the contract requirements and the design data provided by the purchaser, or in-house data for construction designed by the manufacturer, reviewed by competent staff, to ensure that all information necessary to carry out the fabrication operations is available prior to the commencement of the work?
- b) Does the manufacturer declare his capability to meet all welding contract requirements and ensure adequate planning of all quality-related activities?
- c) Does the manufacturer verify that the contract is within his capability to perform, that sufficient resources are available to achieve delivery schedules and that documentation is clear and unambiguous?
- d) Does the manufacturer ensure any variations between the contract and previous tender documentation are identified and the purchaser notified of any programme, cost or engineering changes that may result?

### **6.2 Application – Contract review**

#### **6.2.1 Does the manufacturer consider the following contractual requirements?**

- a) application standard and any supplementary requirements?
- b) post weld heat treatment requirements?
- c) inspection and testing requirements?
- d) technical requirements to be met by the specification of welding procedure, non-destructive testing procedures and heat treatment procedures?
- e) the approach to be used for welding procedure approval?
- f) the approval of personnel?
- g) selection, identification and/or traceability (e.g. materials, welders, welds)?
- h) quality control arrangements, including any involvement of an independent inspection body?
- i) other welding requirements (e.g. batch testing of consumable, ferrite content of weld metal, ageing, hydrogen content)?
- j) environmental conditions relevant to welding on site (e.g. very low temperature ambient conditions or any necessity to provide protection against adverse weather conditions)?
- k) sub-contracting?
- l) handling of non-conformances?
- m) further contractual requirements?



### **6.3 Application – Design review**

#### **6.3.1** Does the manufacturer consider the following design requirements?

- a) location, accessibility and sequence of all welds?
- b) surface finish and weld profile?
- c) parent metal(s) specification and welded joint properties?
- d) permanent backing?
- e) welds which are to be made in the workshop, or elsewhere?
- f) dimensions and details of joint preparation and completed joint?
- g) use of special methods (e.g. to achieve full penetration without backing when welded from one side only)?
- h) quality and acceptance requirements for welds?
- i) other special requirements (e.g. acceptability of peening heat treatment)?

#### **6.4** Has the manufacturer written procedures which:

- a) describe how he reviews the contract (whether already signed or not) and the design requirements to ensure that all the above mentioned points are considered?
- b) specify that the welding co-ordination for these activities is carried out according to EN 719?

## **7 SUB-CONTRACTING**

- a) Does the manufacturer sub-contract some activities (e.g. welding, inspection, non-destructive testing, heat treatment).
- b) Are sub-contractors given all requirements necessary for carrying out the defined activities (including those concerning the contract and design review)?
- c) Does the manufacturer require records and documentation of the sub-contractor's work?
- d) Does the manufacturer ensure that all the activities transferred to sub-contractors are carried out in conformity with the relevant requirements of the EN 729-2?
- e) Does the manufacturer make sure that the sub-contractor can comply with the quality requirements of the contract?
- f) If the design of the product is sub-contracted are supplementary requirements (if any and when necessary) specified to the sub-contractors?
- g) Has the manufacturer a written procedure, which describes how the sub-contracted activities comply with the requirements of the contract/design specification?
- h) Is this procedure defining the tasks and responsibilities of the welding co-ordinator?

## **8 WELDING PERSONNEL**

### **8.1 General**

Can the manufacturer show that he employs sufficient and competent personnel for the planning, performing and supervising of the welding production according to the specified requirements?

### **8.2 Welders**

- a) Are all welders and welding operators approved by an appropriate test according to the appropriate part of EN 287 or EN 1418 or other equivalent code/standard?
- b) Are all records of approval maintained up to date?

### **8.3 Welding co-operation personnel**

- a) Has the manufacturer at his disposal appropriate welding co-ordination personnel according to EN 719?
- b) Has the manufacturer at his disposal any professional figures according to the EWF qualification scheme (EWE, EWT, EWS and EWP), or equivalent qualifications?
- c) Does the welding co-ordination personnel supply the welding personnel with WPS or work instructions, so as to ensure that all activities can be properly performed and controlled?
- d) Has the authorised welding co-ordinator(s) sufficient authority to take necessary action for ensuring and maintaining the product quality according to the requirements specified?
- e) Have the duties, inter-relationships and limits of responsibility of the weld co-ordination personnel been clearly defined by the manufacturer?

## **9 INSPECTION, TESTING AND EXAMINATION PERSONNEL**

### **9.1 General**

- a) Has the manufacturer at his disposal sufficient and competent personnel for planning and performing, supervising, inspecting, testing and examining the welding production according to the specified requirements?
- b) Has the manufacturer at his disposal any inspection and professional figures according to the EWF qualification scheme (EWI Level 1,2,3,4) or equivalent qualification?

### **9.2 Testing personnel**

- a) Are the non-destructive testing personnel approved according to EN473 or other equivalent code/standard?

- b) Are the destructive tests carried out in appropriately qualified facilities with personnel approved by the manufacturer?

## **10 EQUIPMENT**

### **10.1 Production and testing facilities**

- a) Is the following equipment available, when necessary:
- b) welding power sources and other machines?
- c) equipment for joint preparation and cutting, including thermal cutting?
- d) equipment for preheating and post-weld heat treatment, including temperature indicators?
- e) jigs and fixtures?
- f) cranes and handling equipment used for welding production?
- g) personnel protective equipment and other safety equipment, directly associated with welding?
- h) ovens and quivers, etc, used for treatment of welding consumables?
- i) cleaning facilities?
- j) destructive and non-destructive testing facilities?
- k) has the manufacturer a written procedure for identification, control, maintenance and calibration (where relevant) of all production equipment?
- l) is this procedure including the designated responsible individuals?
- m) is this procedure including arrangements to prevent production use of defective equipment?

### **10.2 Description of facilities**

- a) Has the manufacturer an updated list identifying the essential equipment, used for welding production that provide an evaluation of the capacity and capability of the workshop and other production areas?

Are the following (minimum) entries indicated (where relevant):

- b) capacity of the largest cranes?
- c) size of components the workshop is able to handle?
- d) capability mechanised or automatic welding equipment?
- e) dimensions and maximum temperature of furnaces for post-weld heat treatment?
- f) capacities of rolling, bending and cutting equipment?
- g) number of welding power sources for each welding process?
- h) other essential facilities?

### **10.3 Suitability of equipment**

- a) Are the equipment used adequate for the application concerned
- b) If specified in the contract is the welding and heating equipment subject to approval?

### **10.4 New equipment**

- a) Does the manufacturer carry out approval tests in accordance with appropriate standards whenever relevant, after installation of new (or refurbished) equipment?
- b) Are records of the tests kept?

### **10.5 Maintenance**

Has the manufacturer documented plans for the maintenance of equipment, ensuring checks of those items, which control essential variables in the welding procedure specification e.g.:

- a) condition of guides in equipment for thermal cutting, mechanised welding fixtures etc?
- b) condition of ammeters, voltmeters and flow meters used for the operation of the welding machines?
- c) condition of cable, hoses, connectors etc?
- d) condition of control system in mechanised and or automatic welding equipment?
- e) condition of thermocouples and other temperature measurement instruments?
- f) condition of wire feeders and conduits?
- g) is it foreseen taking actions for avoiding the use of defective equipment?

## **11 WELDING ACTIVITIES**

### **11.1 Production plan**

- a) Does the manufacturer carry out an adequate production plan compatible with the production and testing facilities to be used in the manufacture of the product?

Does such a plan include at least the following points as relevant:

- b) specification of the sequence by which the product shall be manufactured (e.g. as a single part of sub-assemblies and the sequence of subsequent final assembly)?
- c) identification of the individual processes required?
- d) reference to the appropriate specifications for welding and allied processes?
- e) sequence in which the welds are to be made, if applicable?

- f) order and timing in which the individual processes are to be performed?
- g) specifications for inspection and testing, including the involvement of any independent inspection body?
- h) provision for protection from environment conditions (e.g. protection from wind and rain)?
- i) item identification of batches, components or parts?

### **11.2 Welding procedure specification (WPS)**

- a) Does the manufacturer prepare welding procedure specifications (WPS) in accordance with the appropriate part of EN 288 or contract specification?
- b) Are there arrangements to ensure that the correct WPS's and procedures are used in production?

### **11.3 Welding procedure approval**

- a) Are the welding procedures approved prior to any production welding?
- b) Is the method of approval in accordance with the relevant application standards or as stated in the contract?
- c) Are other procedures (e.g. procedure for heat treatment) approved if required in the relevant applications standard and/or in the contract?

### **11.4 Work instruction**

- a) Does the manufacturer use the welding procedure specification directly in the workshop or dedicated work instructions?
- b) Are dedicated work instructions (welding procedures) prepared from an approved welding procedure specification?

### **11.5 Documentation**

- a) Does the manufacturer maintain procedures for the control of relevant quality documents (e.g. welding procedure specification, welding procedure approval record, welders approval certificate, weld records, NDT and post-weld heat treatment procedures)?

## **12 WELDING CONSUMABLES**

### **12.1 General**

Has the manufacturer specified responsibilities and procedures involved in the control of welding consumables?

## **12.2 Batch testing**

If required in the contract, is batch testing of welding consumables carried out?

## **12.3 Storage and handling**

- b) Does the manufacturer implement procedures for storage, handling and use of consumables, which avoid moisture pick-up, oxidation, damage etc?
- c) Are these procedures in accordance with the supplier's recommendations, if any?

## **13 STORAGE OF PARENT MATERIALS**

- a) Are parent materials stored so that they will not be adversely affected before use?
- b) Is the identification maintained during storage?
- c) Has the manufacturer written procedures for storing parent materials including bought in items and products provided by the purchases?

## **14 POST-WELD HEAT TREATMENTS**

- a) Where required, are post-weld heat treatment procedures compatible with the parent material, welded joint, construction, etc and in accordance with the application standard and/or specified requirements?
- b) Does the manufacturer issue adequate records, made during the process, of the post weld heat treatment?
- c) Do such records demonstrate that the post weld heat treatment procedure has been followed?
- d) Are these records traceable to the particular post weld heat treatment operation?

## **15 WELD RELATED INSPECTION AND TESTING**

### **15.1 General**

Is there an inspection schedule as plan for implementing inspection and testing at appropriate stages of the manufacturing process, as required by the contract requirements?

### **15.2 Inspection and testing before welding**

Are the following items checked before the start of welding, when necessary:

- a) suitability and validity of welders approval certificates (see appropriate part of EN 287 or EN 1418 or other equivalent code/standard)?
- b) suitability of welding procedure specification (see appropriate part of EN 288 or other equivalent codes/standard)?
- c) identity of parent material?
- d) identity of welding consumables?
- e) joint preparation (shape and dimensions) (see EN 29692 or equivalent code/standards)?
- f) fit-up, jiggling and tacking?
- g) any special welding requirements in welding procedure specification (e.g. preheat, prevention of distortion)?
- h) arrangements for any production tests?
- i) suitability of working and environmental conditions for welding?
- j) suitability and condition of equipment?

### **15.3 Inspection and testing during welding**

Are the following items checked during welding as required by the inspection plan and procedures:

- a) essential welding parameters (e.g. welding current, arc voltage, travel speed)?
- b) preheating/interpass temperature (see EN 1258, EN ISO 13916 or other equivalent code/standard)
- c) cleaning and shape of runs and layers of weld metal?
- d) back gouging?
- e) welding sequence?
- f) correct use and handling control of consumables?
- g) control of distortion?
- h) any intermediate examination (e.g. checking dimensions)?

### **15.4 Inspection and testing after welding**

Are the following inspections carried out, after welding, when necessary, in accordance with the contract requirements:

- a) visual inspection?
- b) other non-destructive testing?
- c) destructive testing?
- d) evaluation of shape and dimensions of the welded construction?
- e) evaluation of the results and records of post-weld operations (e.g. post-weld heat treatment)?

### **15.5 Inspection and test status**

Are measures taken as appropriate to indicate the status of inspection and test of the product during manufacture?

## **16 NON-CONFORMING AND CORRECTIVE ACTION**

- a) Are measures implemented for controlling components or items, which do not conform to specified requirements, in order to prevent their inadvertent use?
- b) When repair and/or rectification is undertaken by the manufacturer are appropriate procedures available at repair workstations?
- c) When repair and/or rectification is carried out are the items reinspected, tested and examined in accordance with the original requirements?
- d) Does the manufacturer have procedures or arrangements to identify and remedy any conditions that could adversely affect the quality of the product or production processes?

## **17 CALIBRATION**

Is all equipment used to assess the required quality of the welded construction suitable, controlled and calibrated at specified intervals?

## **18 IDENTIFICATION AND TRACEABILITY**

- a) Where appropriate, is identification maintained throughout the manufacturing process
- b) Where appropriate, is traceability maintained throughout the manufacturing process?
- c) Whenever the identification and/or traceability are required, do the arrangements include (when necessary):
- d) production plans?
- e) routing card?
- f) records of weld locations in constructions?
- g) weld marking, stamping, labels etc?
- h) traceability (for fully mechanised and automatic weld-equipment including welder and welding operator) to specific welds?
- i) welder and procedure approvals?
- j) non-destructive testing and procedures and personnel?



- k) welding consumables (e.g. type, batch or cast numbers)?
- l) parent materials (e.g. type, batch)?
- m) location of repairs?
- n) Is the manufacturer able to use a written procedure for identification and/or traceability when this is required by contract requirements?

## **19 QUALITY RECORDS**

Do the quality records include, according to the contract requirements and/or when necessary, the following:

- a) contract/design review?
- b) materials certificates?
- c) consumables certificates?
- d) welding procedure specifications?
- e) welding procedure approval tests?
- f) welder or welding operator approval certificates?
- g) non-destructive testing personnel certificates?
- h) heat treatments and procedure specification?
- i) non-destructive and destructive testing procedures and reports?
- j) dimensional reports?
- k) repairs and non-conformity reports?

Are quality records retained for a minimum period of 5 years in absence of any other specified requirements.



**EXEMPLAR 2**

**PRELIMINARY INFORMATIVE ENQUIRY**

**1 GENERAL INFORMATION**

Name of the Unit to be assessed .....

Address of the Unit to be assessed .....

Telephone ..... Fax .....

E-mail .....

**2 CERTIFICATION ISSUED BY OTHER ORGANISATIONS/BODIES**

If yes specify the following:

Type of Certification	Certifying Body	Date of issue	Date of expiry

**3 INFORMATION TO SUPPORT APPLICATION FOR ASSESSMENT**

3.1 The basic standard for which the certification is requested.

3.2 Description of the manufacturer's organisation structure, with details of the part of the organisation involved in the welding related activities. Functions and number of person shall be indicated.

Function	Total number of persons	Number of persons involved in welding activities

Please provide an organisation chart for the Unit including welding co-ordination (EN719) and a description of the job responsibilities of the authorised welding co-ordinator(s).

3.3 Type of manufactured product(s)

.....  
 .....

3.4 Type of production

- By product
- By mass

3.5 Standards and/or specifications applied

- List of product standards and/or other specifications used
- Standards used for welder approval

.....

- Standards used for welding procedure approval

.....

3.6 Maximum weight and size of product the manufacturer is able to handle

Maximum weight .....

Maximum size .....

3.7 Parent materials welded (reference to the relevant groups of CR 12187 or CR 15608 should be made) and related thickness ranges

Parent material	Range		Parent material	Range

3.8 Welding and allied processes

Welding Processes

Allied Processes

.....

.....

.....

.....

.....  
3.9 Use of Post Weld Heat Treatment

Yes  No

3.10 Activities generally subcontracted

.....  
.....  
.....

3.11 Organisation and index of welding co-ordination procedures

.....  
.....  
.....

**4 FORMAL INTERFACES WITH THE CERTIFICATION BODY**

Manufacturer Unit reference person and function

.....

Address

.....

Telephone ..... Fax .....

E-mail .....

Date .....  
Manufacturer Manager  
.....

Signed  
.....

General Note:

*If for any of the above items more space is required, please issue, with the reference to the correct item number, an attached sheet.*

**EXEMPLAR 3**

**SCOPE OF ACTIVITY**

(to be included with the Certificate)

1 Type of product(s)  
.....

2 Product standards(s)  
.....

3 Parent materials group(s) (according CR 12187 or CR 15608)  
.....

4 Welding and allied process(es)  
.....

5 Deviations  
5.1 Non EN standards  
5.2 Other deviations  
5.3 Specific requirements  
.....

6 Authorised welding co-ordinator(s)

Name	Level
.....	.....
.....	.....
.....	.....
.....	.....