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|  <p>Welding Technology Institute of Australia ABN 69 003 696 526</p> | <p align="center">Self Assessment of Quality Requirements - Checklist and Action Plan to ISO 3834:2005 Part 2: Quality requirements for fusion welding of metallic materials</p> | <p>TGN-3834-07 Rev: 0 Date: 3 October 2007 Pages: 30</p> |
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1. Scope

Before any company can claim compliance to ISO 3834 quality requirements, it should review its arrangements and operating procedures. Presented on pages 2 to 30 is a checklist that will assist a company in performing a self-assessment of its current position with reference to its compliance with ISO 3834 Part 2.

Each element of the standard has been addressed with a series of questions that requires one of three responses: **YES**, **NO** and **NOT APPLICABLE**. The questions have been so designed so as to draw out the strengths and weaknesses of the existing quality management system. These questions are typical of those that could be raised by a customer or certification body assessor during a visit to verify that the company does indeed comply with the Standard.

When a question is answered in the negative, the area "Action Plan" may be used to evolve methods and solutions to overcome that specific drawback.

In accordance with ISO 3834, a Manufacturer is defined as a 'person or organisation responsible for the welding production'. The Standard uses this term to describe any such organisation involved in manufacturing, fabrication, construction, repair or maintenance as well as other organisations such as asset owners, project management and design companies where the requirements of ISO 3834 are applicable to activities such as weld design, contract development, and the review of technical requirements and competencies of subcontractors.

This is the seventh of seven WTIA Technical Guidance Notes making up an Expert Technology Tool (TGN-3834-01 to 07) for industry on the benefits and application of ISO 3834:2005 and ISO 14731:2006 "Welding coordination - Tasks and responsibilities". A Power Point presentation of this material is available as TGN-3834-1. Detailed explanatory information on the two standards is given in the WTIA ETT and ISO 3834 Part 6.

Feedback is welcome from anybody who can add value to the Technical Guidance Notes. Please feel free to suggest amendments, deletions, additions etc. by emailing a.rorke@wtia.com.au.

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| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
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| 5 | REVIEW OF REQUIREMENTS AND TECHNICAL REVIEW | | | | |
| 5.1 | General | | | | |
| | Do we have a dedicated organisation and staff to review all incoming potential contracts and ensure that all information necessary to carry out the fabrication operations (e.g. contract requirements, design data provided by the purchaser etc.) is available prior to the commencement of the work? | | | | |
| | Does that group/person have adequate knowledge of welding-related topics combined with knowledge of the company's capability including: | | | | |
| | • The product standard to be used, together with supplementary requirements | | | | |
| | • Statutory and regulatory requirements | | | | |
| | • Any additional requirement determined by the manufacturer | | | | |
| | • The capability of the manufacturer to meet the prescribed requirements | | | | |
| | Would the Responsible Welding Coordinator (RWC) be happy to sign to accept the technically-binding contractual requirements of a prepared tender offer? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
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| | Can we declare our capability to meet all welding contract requirements and ensure that adequate planning and sufficient resources are available to achieve delivery schedules and that documentation is clear and unambiguous? | | | | |
| | Do we ensure that any variations between the contract and previous tender documentation are identified and the purchaser notified of any program, cost or engineering changes that may result? | | | | |
| 5.2 | Review of requirements | | | | |
| | Do the written or diagrammatic welding coordination arrangements truly identify the responsible persons in contract review and the relationships between them? | | | | |
| | Does the responsible person, who considers incoming enquiries, have adequate welding awareness to identify any new (to the company) requirements? | | | | |
| | If the responsible person is not the RWC, does he/she report the welding related requirements to the RWC? | | | | |
| | Is there objective evidence of the welding competence of the persons in the contract review team? | | | | |
| | Is there evidence of a systematic procedure for the contract review activity and consultations within the welding coordination team and production departments? | | | | |

| | Quality Requirements | Y | N | NA | ACTION PLAN |
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| | Are technical problems identified and highlighted to the purchaser, estimating department, quality or production manager as appropriate to ensure the contract requirements are clear, understood, allowed for and accepted by all departments involved before the contract is signed? | | | | |
| 5.3 | Technical review | | | | |
| | Have we reviewed as a minimum the items referred to in ISO 3834.2 or .3 as well as any contractual requirements, application standards and any supplementary requirements such as: | | | | |
| | • post weld heat treatment requirements? | | | | |
| | • inspection and testing requirements? | | | | |
| | • technical requirements to be met by the specification of welding procedure, NDT procedures and heat treatment procedures? | | | | |
| | • the approach to be used for welding procedure approval? | | | | |
| | • the approval of personnel? | | | | |
| | • selection, identification and/or traceability (e.g. materials, welders, welds)? | | | | |
| | • quality control arrangements, including any involvement of an independent body? | | | | |
| | • other welding requirements (e.g. batch testing of consumables, ferrite content of weld metal, ageing, hydrogen content)? | | | | |
| | • environmental conditions relevant to welding on site (e.g. very low temperature ambient conditions or any necessity to provide protection against adverse weather condition)? | | | | |

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| | • sub contracting? | | | | |
| | • availability of shop space, facilities and services? | | | | |
| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
| | • material delivery program? | | | | |
| | • handling of non-conformance? | | | | |
| | • further contractual requirements? | | | | |
| | • Is there evidence that the welding related issues are identified by a competent Welding Coordinator involved in the Design Review? | | | | |
| | • Is there evidence that the points raised by the welding coordinator are properly incorporated with production engineering of the product? | | | | |
| | • Do we consider the following design requirements: | | | | |
| | • location, accessibility and sequence of all welds? | | | | |
| | • surface finishes and weld profiles? | | | | |
| | • parent metal(s) specification and welded joint properties? | | | | |
| | • permanent backing? | | | | |
| | • welds which are to be made in the workshop or elsewhere? | | | | |
| | • dimensions and details of joint preparation and completed joint? | | | | |
| | • use of special methods (e.g. to achieve full penetration without backing when welded from one side only)? | | | | |
| | • quality and acceptance requirements for welds? | | | | |
| | • other special requirements (e.g. acceptability of peening or heat treatment)? | | | | |
| | Do we have written procedures which: | | | | |
| | • describe how we review the contract and the | | | | |

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| | design requirement to ensure that all above-mentioned points are considered? | | | | |
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| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
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| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Documents showing how the manufacturer carries out the requirement review and the technical review | | | | |
| | Typical forms required | | | | |
| | Requirements review checklist | | | | |
| | Technical review checklist | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
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| 6 | SUBCONTRACTING | | | | |
| | Has the company carried out and recorded an appraisal of the Subcontractor's competence and quality system? | | | | |
| | Have we identified the person responsible for ensuring that all subcontractors are provided with the requisite information? | | | | |
| | Is there a systematic procedure for specifying subcontract requirements, providing the information required and monitoring the quality of work of subcontractors? | | | | |
| | Do we identify the need to subcontract elements of production during the Design Review? (E.g. welding inspection, NDT, heat treatment)? | | | | |
| | Do we subcontract some of these activities? | | | | |
| | Are subcontractors given all requirements necessary for carrying out the defined activities (including those concerning the review of requirements and the technical review)? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
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| | Do we require records and documentation of the subcontractor's work? | | | | |
| | Do we ensure that all the activities transferred to subcontractors are carried out in conformity with the minimum requirements of the ISO 3834 Part 2 or 3? | | | | |
| | Do we make sure that the subcontractor can comply with the quality requirements of the contract? | | | | |
| | If the design of the product is subcontracted, are supplementary requirements (if any and when necessary) specified to the subcontractors? | | | | |
| | Do we have a written procedure that describes how the sub- contracted activities comply with the requirements of the contract/design specifications? | | | | |
| | Does this procedure define the tasks and responsibilities of the welding coordination? | | | | |
| | Does the subcontractor have a competent Responsible Welding Coordinator (RWC) and other relevant and appropriate welding coordination personnel? | | | | |
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Documents explaining how subcontracted operations related to welding comply with the requirements of the contract, including how subcontractors are assessed and controlled | | | | |
| | Typical forms required | | | | |
| | Assessment report of subcontractors | | | | |
| | Subcontractor monitoring check lists | | | | |
| | Inspection reports | | | | |

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| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
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| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
|---------------|---|----------|----------|-----------|--------------------|
| 7 | WELDING PERSONNEL | | | | |
| 7.1 | General | | | | |
| | Can we show that we employ sufficient and competent personnel for the planning, performing and supervising of the welding production according to the specified requirements? | | | | |
| | Do we have record of the curriculum vitae and experience of our personnel? | | | | |
| | Do we have an organisational plan and structure showing the relationships between personnel and the correct implementation of welding coordination to ISO 14731? | | | | |
| 7.2 | Welders and welding operators | | | | |
| | Are all welders and welding operators approved by an appropriate test according to the appropriate code/standard? | | | | |
| | Are all records of approval maintained up to date? | | | | |
| | Are the welders qualifications controlled and in accordance with the contract? (Or the company's standard)? | | | | |
| | Have we identified the person responsible for maintaining welder qualifications? | | | | |
| | Is the activity shown in the Welding coordination arrangement? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
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| 7.3 | Welding coordination personnel | | | | |
| | Do we have at our disposal a Responsible Welding Coordinator and appropriate welding coordination personnel according to ISO 14731? | | | | |
| | Do we have at our disposal any professional figures according to the IIW qualification scheme (IWE, IWT, IWS & IWP)? | | | | |
| | Is there evidence of these links being used in practice? | | | | |
| | Is there sufficient evidence of the competence of each Welding Coordinator (e.g. training and accreditation in the operation of the various activities/duties allocated and procedures used)? | | | | |
| | Do the welding coordination personnel supply the welding personnel with WPS or work instructions, so as to ensure that all activities can be properly performed and controlled? | | | | |
| | Has the Responsible Welding Coordinator(s) sufficient authority to take necessary action for ensuring and maintaining the product quality according to the requirement specified? | | | | |
| | Have the duties, inter-relationships and limits of responsibility of the welding coordination personnel been clearly defined by us? | | | | |
| | Have they been explained clearly to, and understood by such personnel? | | | | |
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Documents for training, assessment and appointment of personnel | | | | |
| | Documents to record appointments, tasks, interrelationships and limits of responsibility of the welding coordination personnel | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
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| | Typical forms required | | | | |
| | Welder/welding operator qualification certificates | | | | |
| | Chart of welding coordination interactions | | | | |
| | Welding coordination personnel qualification records and authorisations | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
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| 8 | INSPECTION AND TESTING PERSONNEL | | | | |
| 8.1 | General | | | | |
| | Do we have at our disposal sufficient and competent personnel for planning and performing, supervising, inspecting, testing and examining the welding production according to the specified requirements? | | | | |
| | Do we have at our disposal welding inspection personnel appropriately qualified to the IIW International Welding Inspector Standard Level or WTIA Senior Welding Inspector? | | | | |
| 8.2 | Non-destructive testing personnel | | | | |
| | Is the organisation of the NDT team properly detailed? | | | | |
| | Do we ensure that NDT procedures are written and approved and that the operators are qualified? | | | | |
| | Is NDT coordinated during production planning and production itself etc.? | | | | |
| | If self-inspection by welders is used, is it properly detailed and have they been trained? | | | | |
| | Are the NDT personnel approved according to ISO 9712 or other equivalent standard? | | | | |
| | Are the destructive tests carried out in appropriately qualified facilities with personnel approved by the manufacturer? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
|------------|--|---|---|----|-------------|
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Documentation for training, assessment and appointment of personnel | | | | |
| | | | | | |
| | Typical forms required | | | | |
| | Report on qualification for visual testing | | | | |
| | Report on ability of near vision acuity and colour vision | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
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| 9 | EQUIPMENT | | | | |
| 9.1 | Production and testing equipment | | | | |
| | Are the following pieces of equipment available, when necessary: | | | | |
| | • welding power sources and other machines? | | | | |
| | • equipment for joint preparation and cutting, including thermal cutting? | | | | |
| | • equipment for preheating and post-weld heat treatment, including temperature indicators? | | | | |
| | • cranes and handling equipment used for welding production? | | | | |
| | • PPE and other safety equipment, directly associated with welding? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
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| | <ul style="list-style-type: none"> ovens and quivers etc used for treatment of welding consumables? | | | | |
| | <ul style="list-style-type: none"> jigs and fixtures? | | | | |
| | <ul style="list-style-type: none"> surface cleaning facilities? | | | | |
| | <ul style="list-style-type: none"> destructive and NDT facilities? | | | | |
| | Do we have a written procedure for identification, control, maintenance and calibration (where relevant) of all production equipment? | | | | |
| | Is this procedure including arrangements to prevent production use of defective equipment? | | | | |
| 9.2 | Description of equipment | | | | |
| | Do we have 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): | | | | |
| | <ul style="list-style-type: none"> capacity of the largest cranes? | | | | |
| | <ul style="list-style-type: none"> size of components the workshop is able to handle? | | | | |
| | <ul style="list-style-type: none"> capability mechanised or automatic welding equipment? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
|------------|--|---|---|----|-------------|
| | • dimensions and maximum temperature of furnaces for PWHT? | | | | |
| | • capacities of rolling, bending and cutting equipment? | | | | |
| | • number of welding power sources for each welding process? | | | | |
| | • other essential facilities | | | | |
| 9.3 | Suitability of equipment | | | | |
| | Is the equipment used adequate for the application concerned? | | | | |
| | If specified in the contract is the welding and heating equipment subject to approval? | | | | |
| 9.4 | New equipment | | | | |
| | Do we carry out approval tests in accordance with appropriate standards whenever relevant, after installation of new (or refurbished) equipment? | | | | |
| | Are records of the tests kept? | | | | |
| 9.5 | Equipment maintenance | | | | |
| | Is there a list of welding-related capital plant owned by the company? | | | | |
| | Have operators been trained in care and adjustment of the minor equipment they use routinely? | | | | |
| | Is the RWC involved in the procurement of new or replaced equipment? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
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| | Do we have documented plans for the maintenance of equipment, ensuring checks of those items which control essential variables in the WPS: | | | | |
| | • condition of guides in equipment for thermal cutting, mechanised welding fixtures etc? | | | | |
| | • condition of ammeters, voltmeters and flow meters used for the operation of the welding machines? | | | | |
| | • condition of cables, hoses, connectors etc? | | | | |
| | • condition of control system in mechanised and/or automatic welding equipment? | | | | |
| | • condition of temperature measurement and other temperature measurement instruments? | | | | |
| | • condition of wire feeders and conduits? | | | | |
| | Do we take adequate action for avoiding the use of defective equipment? | | | | |
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Documents for the identification, control, maintenance and calibration (where relevant) of all production and inspection equipment | | | | |
| | Equipment maintenance schedule | | | | |
| | Typical forms required | | | | |
| | Essential equipment list | | | | |
| | Test reports of new equipment | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
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| | Equipment maintenance record | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
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| 10 | WELDING AND RELATED ACTIVITIES | | | | |
| 10.1 | Production Planning | | | | |
| | Do we have a person responsible for approving the production plan? | | | | |
| | Do we have a procedure/method for presenting this production plan to others? | | | | |
| | Does the production plan identify where existing or new welding procedures are required? | | | | |
| | Are welding processes, position and sequences detailed where appropriate? | | | | |
| | Are all the essential requirements considered, e.g. procurement, preparation, training approvals availability of resources, subcontracts etc.? | | | | |
| | Do we 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: | | | | |
| | <ul style="list-style-type: none"> • 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)? | | | | |
| | <ul style="list-style-type: none"> • identification of the individual processes required? | | | | |
| | <ul style="list-style-type: none"> • reference to the appropriate specifications for welding and allied processes? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
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| | <ul style="list-style-type: none"> sequence in which the welds are to be made, if applicable? | | | | |
| | <ul style="list-style-type: none"> order and timing in which the individual processes are to be performed? | | | | |
| | <ul style="list-style-type: none"> specifications for inspection and testing, including the involvement of any independent inspection body? | | | | |
| | <ul style="list-style-type: none"> provision for protection from environment conditions (e.g protection from wind & rain)? | | | | |
| | <ul style="list-style-type: none"> item identification of batches, components or parts? | | | | |
| | <ul style="list-style-type: none"> Allocation of qualified personnel | | | | |
| | <ul style="list-style-type: none"> Arrangement for any production test | | | | |
| 10.2 | Welding Procedure Specifications | | | | |
| | Do we prepare WPS in accordance with the appropriate Standard or contract specification? | | | | |
| | Are there arrangements to ensure that the correct WPSs and procedures are used in production? | | | | |
| 10.3 | Qualification of the welding procedures | | | | |
| | Does the contract (or product specification) require weld procedure qualification tests? | | | | |
| | Is the most involved Welding Coordinator knowledgeable about the Weld Procedure Specification (e.g. ASME IX etc)? | | | | |
| | Are WPS parameters selected to give the optimum approval range? | | | | |

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| | Is the Welding Coordinator adequately qualified and experienced to carry out these tasks and be accepted by the customer etc? | | | | |
| | Are the welding procedures approved prior to any production welding? | | | | |
| | Is the method of approval in accordance with the relevant application standards or as stated in the contract? | | | | |
| | Are other procedures (e.g. procedure for heat treatment) approved if required in the relevant application standard and/or in the contract? | | | | |
| 10.4 | Work Instruction | | | | |
| | Do we use the WPS directly in the workshop? | | | | |
| | Do we use dedicated work instructions in the workshop instead? | | | | |
| | Are dedicated work instructions (welding procedures) prepared from an approved WPS? | | | | |
| 10.5 | Procedures for preparation and control of documents | | | | |
| | Do we maintain procedures for the control of relevant quality documents (e.g. WPS, welding procedure approval record, welder approval certificates) weld records, NDT and PWHT procedures? | | | | |
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Documents for production planning and for controlling production operations. | | | | |
| | Production plans | | | | |
| | WPQRs | | | | |
| | Procedures for the preparation and control of relevant quality | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
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| | Typical forms required | | | | |
| | Drawings and sketches | | | | |
| | WPQR | | | | |
| | WPS or work instruction | | | | |
| | Process instructions, e.g. NDT, coating | | | | |
| | Process records, e.g. NDT test reports, coating records and test | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
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| 11 | WELDING CONSUMABLES | | | | |
| 11.1 | General | | | | |
| | Have we specified responsibilities and procedures involved in the control of welding consumables? | | | | |
| 11.2 | Batch Testing | | | | |
| | If required in the contract, is batch testing of welding consumables carried out? | | | | |
| 11.3 | Storage and handling | | | | |
| | Have we implemented procedures for storage, handling and use of consumables which avoid moisture pick-up, oxidation, damage etc.? | | | | |
| | Are these procedures in accordance with the supplier's recommendations, if any? | | | | |
| | Are electrode procurement, storage and issue arrangements reviewed by a competent Welding Coordinator? | | | | |
| | Where special or low hydrogen consumables are used, are there other audit arrangements to ensure the requirements are being complied with? | | | | |

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| | Do we implement procedures for storage, handling and use of consumables which avoid moisture pickup, oxidation, damage etc.? | | | | |
| | Are these procedures in accordance with the supplier's recommendations, if any? | | | | |
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Documents for storage, handling, identification and use of welding consumables. | | | | |
| | Typical forms required | | | | |
| | Consumable test certificates | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
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| 12 | STORAGE OF PARENT MATERIALS | | | | |
| | Do we have a person responsible for storage and handling of materials? | | | | |
| | If various materials are used, is there a method of identifying each to ensure that inadvertent use of a wrong material is not possible? | | | | |
| | Are parent materials stored so that they will not be adversely affected before use? | | | | |
| | Do we have written procedures for storing parent material including bought-in items and products provided by the purchaser? | | | | |
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Documents for storing parent metals, including work in progress and completed product awaiting despatch | | | | |
| | Storage plans | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
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| | Typical forms required | | | | |
| | Parent metal test certificates | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
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| 13 | POST WELD HEAT TREATMENT | | | | |
| | Do we have a person who details and approves PWHT procedures? | | | | |
| | Is the procedure agreed offered to the Customer before implementation? | | | | |
| | Do we verify the acceptance of the records? | | | | |
| | Are requirements for PWHT (including provision of test plate material) properly considered during contract review? | | | | |
| | Where required, are PWHT procedures compatible with the parent material, welded joint, construction etc. and in accordance with the application standard and/or specified requirements? | | | | |
| | Do we issue adequate records, made during the process, of PWHT? | | | | |
| | Do such records demonstrate that the PWHT procedures have been followed? | | | | |
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Documents for production planning and controlling production operations. | | | | |
| | Heat treatment procedures | | | | |
| | Typical forms required | | | | |
| | Heat treatment records | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
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| 14 | INSPECTION & TESTING | | | | |
| 14.1 | General | | | | |
| | Is there an inspection schedule or plan for implementing inspection and testing at appropriate stages of the manufacturing process, as required by the contract requirements? | | | | |
| 14.2 | Inspection and Testing before welding | | | | |
| | Are the following items checked before the start of welding, when necessary: | | | | |
| | <ul style="list-style-type: none"> • suitability and validity of welder approval certificates to the appropriate part of relevant code/standard)? | | | | |
| | <ul style="list-style-type: none"> • suitability of WPS to the appropriate part of relevant code/standard)? | | | | |
| | <ul style="list-style-type: none"> • identity of parent material? | | | | |
| | <ul style="list-style-type: none"> • identity of welding consumables? | | | | |
| | <ul style="list-style-type: none"> • joint preparation (shape and dimensions) to the appropriate part of relevant code/standard)? | | | | |
| | <ul style="list-style-type: none"> • fit-up, jigging and tacking? | | | | |
| | <ul style="list-style-type: none"> • any special welding requirements in WPS (e.g. preheat, prevention of distortion)? | | | | |
| | <ul style="list-style-type: none"> • arrangement for any production tests? | | | | |
| | <ul style="list-style-type: none"> • suitability of working and environmental conditions for welding? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
|-------------|---|---|---|----|-------------|
| | <ul style="list-style-type: none"> suitability and conditions of equipment? | | | | |
| 14.3 | Inspection and testing during welding | | | | |
| | Are the following items checked, during welding, as required by the inspection plan and procedures: | | | | |
| | <ul style="list-style-type: none"> essential welding parameters (e.g. welding current, arc voltage, travel speed)? | | | | |
| | <ul style="list-style-type: none"> preheating/interpass temperature to the relevant code/standard? | | | | |
| | <ul style="list-style-type: none"> cleaning and shape of runs and layers of weld metal? | | | | |
| | <ul style="list-style-type: none"> back gouging? | | | | |
| | <ul style="list-style-type: none"> welding sequence? | | | | |
| | <ul style="list-style-type: none"> correct use and handling control of consumables? | | | | |
| | <ul style="list-style-type: none"> control of distortion? | | | | |
| | <ul style="list-style-type: none"> any intermediate examination? (eg. checking dimensions) | | | | |
| 14.4 | Inspection and testing after welding | | | | |
| | Are the following inspections carried out, after welding, when necessary, in accordance with the contract requirements: | | | | |
| | <ul style="list-style-type: none"> visual inspection? | | | | |
| | <ul style="list-style-type: none"> other NDT? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
|-------------|---|---|---|----|-------------|
| | <ul style="list-style-type: none"> destructive testing? | | | | |
| | <ul style="list-style-type: none"> evaluation of shape and dimensions of the welded construction? | | | | |
| | <ul style="list-style-type: none"> evaluation of the results and records of post-weld operations (e.g. PWHT) | | | | |
| 14.5 | Inspection and test status | | | | |
| | Do we have a person who is responsible for authorising the use of specific Welding Procedures or Welders on a production task? | | | | |
| | Can this person be shown to be competent? | | | | |
| | Do we have a person who is responsible for supervising production? | | | | |
| | Is this person competent and of sufficient status to be able to ensure that the welding in practice conforms to the technical requirements and acceptable practice? | | | | |
| | If he/she is not the RWC, how can the RWC be confident that these requirements are being satisfied? | | | | |
| | Are there procedures in place to ensure that the welders are given adequate instructions? | | | | |
| | Are acceptance standards for edge preparation, fit up, tacking, welding inspection etc. detailed and available to those responsible for that inspection? | | | | |
| | Are records kept of any inspection before, during and after welding? | | | | |
| | Are measures taken as appropriate to indicate the status of inspection and testing of the product during manufacture? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
|-----------|--|---|---|----|-------------|
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Documents for production planning and controlling production operations | | | | |
| | Inspection plans | | | | |
| | Inspection procedures | | | | |
| | Typical forms required | | | | |
| | Dimensional reports | | | | |
| | Inspection reports | | | | |
| | Records of repairs | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
| | | | | | |
| | | | | | |
| 15 | NON-CONFORMANCE AND CORRECTIVE ACTIONS | | | | |
| | Does the company have approved weld repair procedures? | | | | |
| | Is there a management procedure to control the development, approval and use of special procedures? | | | | |
| | Do we collate records of weld defects and who is the responsible person? | | | | |
| | Do we have a person responsible for ensuring that all repairs have been properly completed? | | | | |
| | Are measures implemented for controlling components or items that do not conform to specified requirements, in order to prevent their inadvertent use? | | | | |
| | When repair and/or rectification is undertaken by us are appropriate procedures available at repair workstations? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
|-----------|---|---|---|----|-------------|
| | When repair and/or rectification is carried out are the items reinspected, tested and examined in accordance with the appropriate requirements? | | | | |
| | Do we have procedures or arrangements to identify and remedy any conditions that could adversely affect the quality of the product or production processes? | | | | |
| | Do we check the reasons for the non-conformance and put measures in place to stop it re-occurring? | | | | |
| | Do we measure the cost of the non-conformances to the company and highlight them to the employees on an ongoing basis? | | | | |
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Documents to identify and remedy any conditions that could adversely affect the quality of the product or the production processes. | | | | |
| | Typical forms required | | | | |
| | Non-conformance reports | | | | |
| | Management review reports | | | | |
| | | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
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| 16 | CALIBRATION AND VALIDATION OF MEASURING, INSPECTION AND TESTING EQUIPMENT | | | | |
| | Is there a calibration schedule for all measuring or shape acceptance devices used in fabrication? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
|-----------|--|---|---|----|-------------|
| | Does it list out the original equipment, the tolerance allowed, frequency of calibration and define the calibration status of each item? | | | | |
| | Do we prove the calibration status of each item? | | | | |
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Included in the documented process for the identification, control, maintenance and calibration (where relevant) of all production and inspection equipment. | | | | |
| | Calibration and verification schedules | | | | |
| | Typical forms required | | | | |
| | Records of calibration and validation tests | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
| | | | | | |
| 17 | IDENTIFICATION AND TRACEABILITY | | | | |
| | Where appropriate, is identification maintained throughout the manufacturing process? | | | | |
| | Where appropriate, is traceability maintained throughout the manufacturing process? | | | | |
| | Whenever the identification and/or traceability are required, do the arrangements include (when necessary): | | | | |
| | • production plans? | | | | |
| | • routing cards? | | | | |
| | • record of weld locations in construction? | | | | |
| | • weld marking, stamping, labels etc.? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
|--------|--|---|---|----|-------------|
| | • traceability (for fully mechanised and automatic equipment including welder)? | | | | |
| | • welding operator to specific welds? | | | | |
| | • welder and procedure approvals? | | | | |
| | • NDT procedures and personnel? | | | | |
| | • welding consumables (e.g. type, batch or cast numbers)? | | | | |
| | • parent materials (e.g. type, batch)? | | | | |
| | • location of repairs? | | | | |
| | • location of temporary attachments? | | | | |
| | • WPS to specific welds? | | | | |
| | Do we use a written procedure for identification and/or traceability when this is required by contract requirements? | | | | |
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Documents, when required, to ensure identification and traceability of the welding operations. | | | | |
| | Typical forms required | | | | |
| | Traceability records (when required) | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
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| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
|-----------|---|---|---|----|-------------|
| 18 | QUALITY RECORDS | | | | |
| | Are requirements for records identified at the requirement/technical review? | | | | |
| | Do we have a procedure for controlling data that must be collected, verifying it and collating it? | | | | |
| | Does the procedure incorporate data and records required from subcontractors? | | | | |
| | Is the record package properly filed and stored so as to be retrievable at any time during the 5-year storage period? | | | | |
| | Do the quality records include, according to the contract requirements and/or when necessary, the following: | | | | |
| | • Requirement/technical review? | | | | |
| | • materials certificates? | | | | |
| | • consumables certificates? | | | | |
| | • WPSs | | | | |
| | • WPQRs | | | | |
| | • welder or welding operator approval certificates? | | | | |
| | • NDT personnel certificates? | | | | |
| | • Manufacturers Data Certificate of Compliance? | | | | |
| | • heat treatment and procedure specification? | | | | |
| | • NDT and destructive testing procedures and reports? | | | | |

| Clause | Quality Requirements | Y | N | NA | ACTION PLAN |
|--------|--|---|---|----|-------------|
| | • dimensional reports? | | | | |
| | • repairs and non-conformity reports? | | | | |
| | • production plan? | | | | |
| | • equipment maintenance record | | | | |
| | Are quality records retained for a minimum period of 5 years in absence of any other specified requirements? | | | | |
| | | | | | |
| | DOCUMENTATION | | | | |
| | Required Documents | | | | |
| | Included in the document for document control. | | | | |
| | Typical forms required | | | | |
| | Traceability records (when required) | | | | |
| | IIW Manufacturer Certification Scheme (Additional information) | | | | |
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