The Indian Institute of Welding

Welding Quality & Certification Systems for Indian Railways

R.Banerjee
Executive Director
IIW India
March 2016
The Indian Institute of Welding (IIW India)

Formation

- IIW India was incorporated on the 22nd April 1966 at Calcutta, by some dynamic and farsighted members of the erstwhile Indian chapter of the British Welding Institute, who took the initiative to form the Indian Institute of Welding to foster the development of welding science, technology, and engineering in India. **The institute is celebrating its Golden Jubilee this year.**

- The Institute is a non-profit making organisation registered under Section 8 of the Company’s Act 1956 and is also registered under section 12A of the Income Tax Act 1961, vide Certificate No. S-51/W.B. VII of 1985-86, as an Institution for charitable purpose.
The Indian Institute of Welding

Through its various activities and programmes, IIW-India is now recognised as the premier Institute related to welding in the country with over **4500 Individual and Corporate Members**.

Further IIW India, is a **Member Society of the International Institute of Welding** along with 57 other countries. It is helping to project the importance and achievements of the Indian Welding Industry to the global community.

It may be noted that **Dr. Baldev Raj**, Distinguished Scientist and Ex-Director of Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam, an Ex-President of our Indian Institute of Welding, was a past **President of the International Institute of Welding**.
As a member of the International Union of Technical Associations and Organisations (UTAO), IIW is a part of the International Council for Engineering and Technology (ICET), one of the twelve key formal umbrella organisations associated with UNESCO.

The experts of International Institute of Welding have supplied the technical basis of the great majority of welding standards issued by the International Standards Organisation - ISO.

Since 1989, IIW has been recognised by ISO as an International Standardisation Body to prepare the final texts of international welding standards.

Recognised as Apex Body for Welding globally
The Indian Institute of Welding

Major objectives of the Institute

- Assist Human Resources Development in welding in India
- Technology diffusion to Industry and the individual
- Foster R&D in welding
- Promote Health & Safety in welding
- Establish International Standards of Quality for the Indian fabrication industry.
IIW India Infrastructure

- **Registered Office at Flat 4BN, 3A Dr, U, N, Brahmachari Street, Kolkata 700 017** – Presently housing MES assessment and AMIIW examination activities

- **Head office at Plot No.38, Geetanjali Park, 200 Kalikapur Main Road, Kolkata 700 099** – Four storey building housing following
  - Head office and Central Accounts
  - NWTCS and PMKVy scheme assessment activities
  - ANB India Division
  - ANBCC India Division
  - Kolkata Branch

- **13 branches and 2 centers**
IIW India’s Network of Branches

<table>
<thead>
<tr>
<th>Branch</th>
<th>State</th>
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</thead>
<tbody>
<tr>
<td>Bangalore</td>
<td>Karnataka</td>
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<td>Baroda</td>
<td>Gujarat</td>
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<td>Bhubaneswar (center)</td>
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<td>Bhilai</td>
<td>Madhya Pradesh</td>
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<td>Chennai</td>
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<td>Cochin</td>
<td>Kerala</td>
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<td>Delhi</td>
<td>Delhi, Haryana, UP</td>
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<td>Andhra Pradesh</td>
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<td>Jamshedpur</td>
<td>Jharkhand</td>
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<td>Mumbai</td>
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<td>Pune</td>
<td>Maharashtra</td>
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<td>Trichy</td>
<td>Tamil Nadu</td>
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<tr>
<td>Vizag</td>
<td>Andhra Pradesh</td>
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</tbody>
</table>
Modernisation Program of the Railways

- The Indian Railways have been on a path of continuous modernisation of its rolling stock and infrastructural systems to keep pace with the nation’s requirements of providing an efficient and safe rail transportation system.

- Railway vehicle manufacturing units under the public sector and also private sector are involved in the process both for the Railways and Metro transit systems.

- The railways have introduced the manufacturing of stainless steel LHB coaches at the Railway Coach Factory, Kapurthala some years back. Other units such as ICF, Perambur and BEML, Bangalore have also started the manufacture of stainless steel coaches.

- Stainless steel wagons of the BOXN, BCNA, BTPN etc. types are also being manufactured by a number of private sector units in the Eastern Region.
Modernisation Program of the Railways

- For construction of both coaches and wagons AISI- 304 and 409m grades of stainless steel as per IRS M-44 are being used.

- Similarly, in the manufacture of Electrical Locomotives at Chittaranjan in collaboration with ABB Transportation Australia and Diesel Locomotives at DLW Mandwari in collaboration with EMD USA, GMAW process using advanced technology is being extensively used, producing locomotives up to 5500 HP.

- With the Prime Minister’s ‘Make in India’ program, this process will get a further impetus to catch up with the competitive technology, cost and safety standards.
The drive for Higher Speeds

- It is learnt that the first high speed section of 508 km between Mumbai and Ahmedabad will be constructed by the Japanese from 2017.
- Whereas the introduction of high speed trains as per International Standards achieving speed of 320-350 km/hr. such as the Shinkansen (Bullet train) in Japan, TGV in France, TR-09 in Germany etc. is someway off.
- However the average speed of the existing sections is being gradually increased. The Railway Minister has announced introduction of the Tejas trains running at 130 km/hr.
- There is also a project to increase the speed of the Delhi-Agra section from 150 km/hr. to 200 km/hr.
Fabrication of modern Railway Vehicles

- The objective of using stainless steels in the construction of railway vehicles is to reduce weight, achieve higher speeds and longevity.

- Side by side, there is a requirement for ensuring higher quality standards in construction to ensure greater safety and hazard reduction in operation and prevention of loss.

- For welding these steels, the GMAW process using various Argon-CO₂ mixtures is being extensively used with conventional as well as synergic pulsed MIG systems and with robotic interface.

- The use of these advanced processes is both for obtaining higher productivity as well as quality standards.
Importance of Weld Quality

- In this context, the quality of welding and joining processes, in particular on load bearing structures, become critical in ensuring the safety of the vehicles operating at such high speed.

- A safe Railway Transport system cannot be guaranteed without a high level of quality. This applies both to the operation of railway vehicles and their manufacturing and maintenance.

- Standards relating to the implementation of quality criteria have to ensure that the fundamental welding technology requirements are adhered to by the manufacturing units.
IRS Quality Standards

- A basic pre-requisite for all manufacturing units for Railways is that they must comply with ISO : 9001 quality Management Systems and also ISO : 14000 Environment Management Systems

- At present the construction of railway coaches, wagons and locomotive chassis is done as per the requirements of U.I.C code General Specification G – 72 supported by the following specifications

- GS – Coaches for manufacture of coaches G – 105 along with Annexures I, II, III
IRS Quality Standards

- The GS – Coaches and G 105 standards lay down the requirements for infra-structural facilities, plant and machinery, testing & measuring, quality control and quality assurance to be available in a manufacturing unit.

- In addition, there are individual manufacturing specifications and drawings for each product.

- These are supported by the following specific standards related to welding.
Welding Related Standards

- IS 813 : 1986 FOR WELDING SYMBOLS
- IS 812 : 1957 FOR WELDING TERMS
- IS 7310 (PART – 1) – 1074 FOR WELDERS’ QUALIFICATION TESTS
- IS 9595 : 1996 FOR WELDING JOINTS
- IS 823-04,15.2.7 FOR RECTIFICATION OF WELD DEFECTS
- IS 4353 - 1995 – SUBMERGED ARC WELDING
- IS 813 – 1986 – WELDING SYMBOLS
- IS 817 – 1966 – TRAINING AND TESTING OF WELDERS
- IS 7307 – 1974 – WELDING PROCEDURE APPROVAL TEST
- IS 3613 – 1974 - WIRE – FLUX COMBINATION FOR SAW.
Limitations of IRS Quality Standards

- The existing systems, however, do not ensure that the fundamental welding technology requirements are adhered to by the manufacturing units in the absence of a specific Welding Quality Management System.

- The individual specifications are not integrated into a Product Manufacturing Standard.

- The importance, role and qualification of the Welding Coordination Personnel (Welding Engineers, Welding Supervisors, Welders and Operators) is not recognized adequately.
Weld quality is achieved by sound welding, not by inspection. Inspection only identifies defects / deficiencies in the product, but cannot improve poor quality. Sound welding requires continuous control and following of validated and documented procedures.

For achieving this, the total manufacturing process has to be supported by an effective Quality Management System such as provided by ISO: 3834. – Quality Requirements for Fusion Welding.

Further an established manufacturing standard e.g. EN: 15085: Fabrication of Railway Vehicles and Components is to be followed for quality assurance of the product, which requires compliance to ISO: 3834.

These standards are also becoming a requirement for export of wagon, coaches and locomotives to railways of other countries.
In the fabrication of railway vehicles, welding processes are a “Key“ feature of production. These processes exert a profound influence on the cost of manufacture and quality of product.

It is essential, therefore, to ensure that these processes are carried out in the most effective way and that appropriate control is exercised over all aspects of the operation.

Because the quality of these processes cannot be readily verified, they are considered to be “Special Processes“ as noted by ISO 9001:2015.
Special Process

A special process is where the conformity to the requirement of the resulting product cannot be:

“verified by subsequent monitoring or measurements and as a consequence the deficiencies become apparent only after the product is in use”. 
In the ISO 9001, section 7.5.2, there is a requirement of “Process Validation” for such special processes.

Welding, by this definition is a special process and must be validated as per ISO 9001.

However, ISO 9001 does not go into details of validation requirements, as the exact requirements vary from industry to industry.
While ISO 9001 covers all basic requirements, ISO 3834 additionally identifies all factors at all stages of welding that could affect the quality of welded product and which need to be controlled - before, during and after.

ISO 3834 therefore complements ISO 9001 and does not replace it.

A company already operating ISO 9001 will have much less to add to its quality system in order to conform to ISO 3834.
What are the main additional requirements in ISO 3834?

- Technical review of contract
- Control of Subcontracting
- Welding process validation and related activities
- Personnel qualification
- Equipment
- Welding Consumables approval
- Storage of parent materials
- Post-weld heat treatment
- Inspection and testing
- Nonconformance and CA
- Calibration
- Identification & traceability
- Quality documents and records

In all the above areas, ISO 3834 has specified requirements in addition to requirements in ISO 9001.
Basic Features of ISO 3834

- Sets priority to the **specific technical competence** and defines **exact competence requirement** in welding.

- The competence of the welding engineers are ensured by **international diploma** and personal interview.

- The competence of welders are ensured by **International certification**.

- Also requires control on other inputs materials and system.

- Much more than a quality system - it is a work culture.
Application of ISO 3834

- Certification of manufacturing units in accordance with ISO – 3834
- Certification of personnel in accordance with ISO 14731
Manufacturers Certification for compliance with ISO 3834

- The International Institute of Welding (IIW) by virtue of its unique international experience has developed an integrated and specialised certification scheme to assure companies compliance with ISO 3834.

- The scheme is titled IIW Manufacturers Certification Scheme for the Management of Quality in Welding.

- Companies are certified after thorough audit of their activities as per requirements of ISO 3834.
Structure of EN ISO 3834

- ISO 3834-1:2005, Criteria for the selection of the appropriate level of quality requirements
- ISO 3834-2:2005, Comprehensive quality requirements
- ISO 3834-3:2005, Standard quality requirements
- ISO 3834-4:2005, Elementary quality requirements
- ISO/TR 3834-6:2007, Guidelines on implementing ISO 3834m
The extent and significance of safety-critical products

The range of different materials used

The range of products

The complexity of manufacture

The extent to which metallurgical problems may occur

The extent to which manufacturing imperfections, e.g., misalignment, distortion, or weld imperfection, affect product performance
ISO 3834-2
Comprehensive Quality Level

- Applied to constructions in which the failure of welds may lead to total product failure with successive significant financial consequences and a major risk of human injury

- The product may be subject to pronounced dynamic loading in addition to high static loading

- Manufacture would require enhanced controls to avoid the occurrence of harmful imperfections
Sub - Contracting

- The subcontractor is treated as extension of manufacturers facility and shall fully comply with the relevant requirements of this part of ISO 3834.

- The sub-contractor shall provide such records and documentation of his work as may be specified by the manufacturer.

- Shall work under the order and responsibility of the manufacturer (WC).

- The manufacturer shall ensure that the sub-contractor can comply with the quality requirements as specified.
How important are welding personnel?

- A key feature of ISO 3834 is the requirement to ensure that people with welding responsibilities are **competent** to discharge those responsibilities.

- This is achieved by incorporation of another standard, namely, ISO 14731 “Welding coordination – Tasks and responsibilities”.

- The specifying of minimum requirements for personnel dealing with welding coordination and welding inspection personnel in the Standard indicates the importance.
Role of the RWC

The company shall nominate at least one person who is appropriately qualified, as Responsible Welding Co-ordinator (RWC). His responsibilities:

- Competent to make decisions and sign on behalf of the manufacturer.
- Directing and monitoring welding activities as well as taking action when welding has not been correctly performed.
- May also be responsible for the work of other welding co-ordinators in the same department / site.
- RWC may be an individual with normal job title eg, Technical Manager, QC Manager, Production Manager etc.
Task and responsibilities of WC
(ISO 14731, Annexure B)

B.1 Review of requirements
B.2 Technical review
B.3 Sub-contracting
B.4 Welding personnel
B.5 Equipment
B.6 Production planning
B.7 Qualification of the welding procedures
B.8 Welding procedure specifications
B.9 Work instructions
B.10 Welding consumables handling
B.11 Materials handling
B.12 Inspection and testing before welding
B.13 Inspection and testing during welding
B.14 Inspection and testing after welding
B.15 Post-weld heat treatment
B.16 Non-conformance and CA
B.17 Calibration and validation of measuring, inspection and testing equipment
B.18 Identification and traceability
B.19 Quality records
Knowledge Requirements for Welding Coordination Personnel

Comprehensive Technical Knowledge
- Full technical knowledge for planning, executing, supervising and testing of all tasks and responsibilities in welding fabrication, construction, repair, maintenance etc.
- **Example:** Broad range of materials, processes, thicknesses, procedures & NDT requirements is involved, where a wide variety of products are to be manufactured to differing codes, major fabrication projects etc.

Specific Technical Knowledge
- Technical knowledge is sufficient for planning, executing, supervising and testing of the tasks and responsibilities in welding fabrication within a selective or limited technical field.
- **Example:** Where welding processes, procedures, materials and products do not change significantly etc.

Basic Technical Knowledge
- Technical knowledge is sufficient for planning, executing, supervising and testing of the tasks and responsibilities within a limited technical field involving simple welded constructions
- **Example:** Welding processes and procedures, materials etc. do not vary, the welds produced are not critical from safety aspects etc.
How ISO 3834 helps

If the quality of *welding* in production is good and predictable:

- Rework/rejection would be less, and **cost due to rejection/rework will go down**
- If welded joints are sound, redesign can reduce sections used, **resulting in lower weight, savings of materials, reduction in cost**
- Because of above reasons, **Product cost will go down**
- Failures will be less and **safety/reliability will go up**
- All the above ultimately give a **Competitive edge** in terms of price and performance
How ISO 3834 helps?

- Good manufacturing practice (GMP)
- Employs qualified welders, engineers, inspectors
- Process qualification (PQR)
- Material qualification
- Supplier control
- Does not take any chance - reduces all possibility of failure on all fronts
EWF - ISO 3834 Survey

Have you got any **quality enhancement or money saving** at the end of your production? e.g.

- lower percentage of waste and/or repair reduction;
- a better control of crucial manufacturing phases;
- an easier identification of some weak points in your fabrication process

- Yes: 85%
- No: 6%
- Can't say: 9%

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What is ISO 3834? (c) IIW-India ANBCC
ISO 3834 is central to many standards

- Steel constructions: DIN 18800-7 > EN 1090-2
- Railway vehicles: DIN 6700 / EN 15085
- Road vehicles: no regulatory requirement
- Pressure tanks: EN 13445
- Nuclear technology: KTA-Regulations
- Further areas of application: with and without regulatory requirement

ISO 3834, EN 1011, EN 287, ISO 14731, ISO 15609...
## Products standards which require ISO 3834

<table>
<thead>
<tr>
<th>Product manufactured</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing Un-fired Pressure Vessels</td>
<td>EN 13445</td>
</tr>
<tr>
<td>Manufacturing Metallic Industrial Piping</td>
<td>EN 13480</td>
</tr>
<tr>
<td>Manufacturing simple Un-fired Pressure Vessels to contain air and nitrogen</td>
<td>EN 286-1</td>
</tr>
<tr>
<td>Steel Pipelines and Pipe-works for gas supply systems</td>
<td>EN 12732</td>
</tr>
<tr>
<td>Fabrication of steel and aluminum structures</td>
<td>EN 1090</td>
</tr>
<tr>
<td>Fabrication of Railway vehicles and components</td>
<td>EN 15085</td>
</tr>
<tr>
<td>Water tube boilers and auxiliary installations</td>
<td>EN 12952</td>
</tr>
</tbody>
</table>
ISO 15085

Fabrication of railway vehicles and components

The standard covers the following areas:

**Quality requirements (quality system)**

**Design (Risk management)**

**Production**

**Inspection**
Main requirements of ISO 15085

- Certification / compliance to ISO 3834.
- Appropriate qualification of welding coordinators and inspectors.
- Classification of “weld performance class (CP)” of welded joints (during design) depending on risk perception or safety requirement.
- Carry out production (welding and allied processes) as appropriate for specified CP.
- Carry out inspections as per inspection class (CT) as appropriate for specified CP.
- There are 4 possible certification levels (CL) and the CL of a company depends on the safety requirement and CP of product manufactured.
<table>
<thead>
<tr>
<th>Stress category</th>
<th>Safety category</th>
<th>Weld performance class</th>
<th>Quality levels for imperfections EN ISO 5817 EN ISO 10042</th>
<th>Inspection class</th>
<th>Volumetric tests RT or UT</th>
<th>Surface tests MT or PT</th>
<th>Visual examination VT</th>
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<tbody>
<tr>
<td>High</td>
<td>High</td>
<td>CP A</td>
<td>see Table 5 or Table 6</td>
<td>CT 1</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
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<tr>
<td>High</td>
<td>Medium</td>
<td>CP B</td>
<td>B</td>
<td>CT 2</td>
<td>10%</td>
<td>10%</td>
<td>100%</td>
</tr>
<tr>
<td>High</td>
<td>Low</td>
<td>CP C2</td>
<td>C</td>
<td>CT 3</td>
<td>Not required</td>
<td>Not required</td>
<td>100%</td>
</tr>
<tr>
<td>Medium</td>
<td>High</td>
<td>CP B</td>
<td>B</td>
<td>CT 2</td>
<td>10%</td>
<td>10%</td>
<td>100%</td>
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<tr>
<td>Medium</td>
<td>Medium</td>
<td>CP C2</td>
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<td>Not required</td>
<td>100%</td>
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<tr>
<td>Medium</td>
<td>Low</td>
<td>CP C3</td>
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<td>CT 2</td>
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<td>Not required</td>
<td>100%</td>
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<tr>
<td>Low</td>
<td>Low</td>
<td>CP D</td>
<td>D</td>
<td>CT 4</td>
<td>Not required</td>
<td>Not required</td>
<td>100%</td>
</tr>
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</table>
Certification Level

- Three certification levels (CL-1, CL-2, CL-3) are possible for the manufacturers depending on the “safety criticality” of the product.

- Example of products requiring CL-1 certification:
  - Bogie
  - Bolster
  - Underframe
  - Brake components
Other Issues

- Qualification of procedures of all welded joints - individually
- Qualification of all consumables, parent materials: new sourcing approaches
- New approach for supplier assessment
- New quality plans
- Documentation
Sub - Contracting

- The manufacturer should ensure that any sub-contracted welding-related activities, including:
  - welding,
  - NDT,
  - inspection,
  - heat treatment,
  - maintenance of equipment and
  - calibration,
comply with the requirements to the satisfaction of the welding coordinator with assigned responsibilities in this area.
Supplier Training / Qualification

○ Suppliers of welded products are required to follow whatever is applicable to the parent company.

○ It is recommended that supplier get formally certified.

○ in case of certification ISO 1090, ISO 15085 and some other standards, it is mandatory for the suppliers to get formally certified
Steps to ISO 3834 / EN 15085

- Gap analysis
- Documentation
- Training, including suppliers
- Review, decide on new approved suppliers
- Own welding related personnel qualification
- Certification of welders, certification of inspectors
- Qualification of welding procedures
- Review and upgrade present systems
- Certification by CB

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What is ISO 3834? (c) IIW-India ANBCC
Activities of IIW-India under accreditation from International Institute of Welding

ANB
Authorised National Body for Certification of welding personnel

ANBCC
Authorised National Body for company certification

March 2015

What is ISO 3834 ? : (c) IIW-India ANBCC
ANB India

- ANB INDIA – is the Authorised National Body of the International Institute of Welding in India

- ANB India was approved, by the International Institute of Welding in July 2007, as their Authorised National Body in India (ANB) for operating their Unified International System for Education, Examination and Qualification of Welding Personnel.

- Over 900 diplomas awarded for International Welding Engineer, International Welding Technologist and other levels.

- Diplomas obtained by attending condensed courses operated by ANB India through Transition and Alternate routes or full time classes at ANB India’s Approved Training Bodies (ATBs)
International Diplomas for Welding Co-ordination Personnel

- International Welding Engineer (IWE)*
- International Welding Technologist (IWT)*
- International Welding Specialist (IWS)*
- International Welding Practitioner (IWP)*
- International Welding Inspection Personnel (IWIP)*
- International Welded Structure Designer (IWSD)

- International Welder (IW)* – Diploma awarded for Specific process and material

* IIW-India is authorised to award these diplomas
Routes to International Qualifications

ROUTE TO QUALIFICATION

STANDARD
- IWE & IWT
- IW

ALTERNATIVE
- IWE & IWT
- IW

TRANSITION
- IWE, IWT, IWS, IWP
- IWIP

These routes for IIW Qualifications are now offered by ANB-India
## List of ATBs in India

<table>
<thead>
<tr>
<th>Name of Institutes</th>
<th>Course/Diploma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don Bosco Tech, Cochin</td>
<td>IW</td>
</tr>
<tr>
<td>Cornerstone Academy, Chennai</td>
<td>IWE, IWT</td>
</tr>
<tr>
<td>“Transition” through IIW-India</td>
<td>IWE, IWT, IWS, IWP, IWIP</td>
</tr>
</tbody>
</table>

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Welder Certification

- IIW-India ANB conducts welder certification directly according to ISO 9606-1, EN 287-1

- Examiners can be deputed to customers place
ANBCC India

- IIW India have applied for and obtained full accreditation from the IAB to operate as an **Authorised National Body for Company Certification (ANBCC) in India** under IIW’s Manufacturers Certification Scheme.

- Accreditation allows ANBCC India to conduct certification audit of companies for conformance to ISO 3834 as per IIW’s MCS exclusively in India.

- Adoption of ISO 3834 will demonstrate the Indian fabrication units capability to manufacture quality welded products and allow them to compete more effectively in both the export and domestic markets.
IIW-India ANBCC – Scope of activities

- Auditing and Company certification for compliance to
  - ISO 3834
  - ISO 15085/ EN 1090, in collaboration with IIS Cert, Italy.
  - Weld Quality Audit
  - Gap Analysis (ISO 3834, ISO 15085)

- Training
  - Quality Management system ISO 9001, ISO 3834
  - Awareness/implementation programme ISO 3834, 15085
  - Quality tools, e.g., Risk management, FMEA, Lean manufacturing, etc.
Cooperation with IIS Cert, Italy

- ISO 15085 certification
- ISO 1090 certification
- CE marking as per
  - Pressure Equipment Directive
- Training
  - PED
  - CPD

March 2015
## ANBCC Certification

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Location</th>
<th>Certification Type</th>
<th>Certification Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dantal Hydraulics</td>
<td>Manesar</td>
<td>ISO 3834-2</td>
<td>01-11-2012</td>
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<td>INOX CVA Pvt. Ltd.</td>
<td>Kalol</td>
<td>ISO 3834-2</td>
<td>26-12-2013</td>
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<tr>
<td>INOX CVA Pvt. Ltd.</td>
<td>Kandla</td>
<td>ISO 3834-2</td>
<td>18-10-2014</td>
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<td>BHAVINI</td>
<td>Kalpakkam</td>
<td>ISO 3834 - 2</td>
<td>27-10-2014</td>
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<td>Plasser India Pvt. Ltd.</td>
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<td>19-10-2015</td>
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<td>Vadodara</td>
<td>ISO 3834-2</td>
<td>08-12-2015</td>
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<td>SMS India Pvt. Ltd.</td>
<td>Khurda</td>
<td>ISO 3834-2</td>
<td>22-02-2016</td>
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<tr>
<td>Tata Growth Shop (TGS)</td>
<td>Jamshedpur</td>
<td>Certification in process - by end March’16</td>
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</tbody>
</table>
IIW-India ANBCC – Special packages

- Generic training on implementation of ISO 3834 comprising
  - Awareness programs
  - Interpretation of standards and Workshop
  - Trainings to specific work groups
  - Gap Audit

- Provide training/assistance to implement or shape up existing ISO 9001 with a focus to ISO 3834/ISO 15085
Collaborative Services of ANB and ANBCC

- **IIW India’s** ANB together with ANBCC can now offer a comprehensive range of services to the fabrication and construction industries related to welding quality.

- **ANBCC** – Certification in compliance to ISO 3834 and Product certification to EN 15085, EN 1090 etc.
  Training programs for ISO 3834 awareness, internal audit and gap analysis

- **ANB** – IWCP qualifications to establish competence of Welding Co-ordinators Welder certification to EN 287 / ISO 9606 and equivalent standards.
  Development of pWPS and certification of WPQR tests.
THANK YOU