



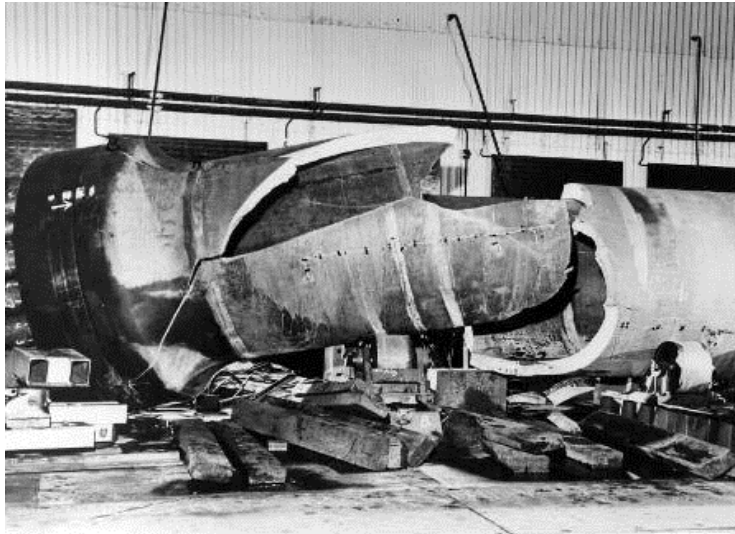
The special importance of personnel competence in welding fabrication

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Welding can go wrong!





The 'Welding Quality Chain'

How strong is a length of chain?



Only as strong as its **WEAKEST** link!



The 'Welding Quality Chain'



- The links in the chain are the people with welding responsibilities:
 - Welders
 - NDT personnel
 - Welding inspectors
 - Welding coordinators
 - Quality managers
 - Etc
- If only one person does not have the required competence the chain breaks and the required quality is not achieved!



Training

Qualification

Competence

Certification

Education

Experience

Definitions



- *Education* – imparting a broad, general level of knowledge
- *Training* - imparting a narrow range of knowledge/skills
- *Qualification* – evidence of attainment of knowledge/skills, valid for life
- *Experience* – working in a job that uses education, training, qualification
- *Certification* – evidence of proven ability to perform defined tasks, limited validity period
- *Competence* – being capable of performing defined tasks

Standards and specifications



Welder qualification – an industry requirement for 80+ years:

- ISO 9606 and EN 287

Non-destructive testing (NDT) and welding inspector personnel certification – an industry requirement for 40+ years:

- EN 473 & ISO 9712

Two, more recent, important standards recognise the importance of competence in welding throughout the quality chain:

- EN ISO 3834 (formerly EN 729) – Quality Requirements for Welding
- EN ISO 14731 (formerly EN 719) – Welding Coordination

Compliance with these standards is becoming a requirement:

- EU Directives – legal requirement
- Product Standards
- Client Specifications



Key issue for qualifications:

Recognition

The EWF/IIW Qualification System



Professional Qualification

Combined System EWF and IAB/IIW ANBs

Rules for the Approval of ANBs and ATBs EWF and IAB/IIW

EWF System www.ewf.be

Qualification Levels /Guidelines:

- **IWE/EWE** – Engineer
- **IWT/EWT** – Technologist
- **IWS/EWS** - Specialist
- **IWP/EWP** – Practitioner
- **IWIP** – Inspection Personnel
- **IW** - Welder
- **IWSD** - Designer

www.iiw-iis.org

Guidelines:

- **EAE/EAS/EAB** – Adhesive Bonding
- **EWS-RW/EWP-RW** - Resistance Welding
- **ETSS/ETSP/ETS** - Spraying
- **MMA EW** - Diver Welder
- **EATW** - Rail Welder
- Heat Treatment Personnel

Special Courses at Specialist Level:

- Laser
- Robots
- Reinforcing Bars
- Weld Imperfections NDT

The EWF/IIW Qualification System



The European/International System for Qualification/Certification of Welding Personnel

For a company using welding of metals or plastics or using other processes like thermal spraying/adhesive bonding in manufacturing, the way to assure the quality of the work is by training, qualifying and certifying its personnel through the EWF/IIW System.



***Facilitates compliance with
ISOs 14731 and 3834***

Austria
Belgium
Brazil
Bulgaria
Canada
China
Croatia
Czech Republic
Denmark
Finland
France
Germany
Hungary
India
Indonesia
Italy
Iran
Japan
Netherlands

Norway
Poland
Portugal
Romania
Russia
Serbia
Singapore
Slovakia
Slovenia
South Africa
Spain
Sweden
Switzerland
Thailand
Turkey
Ukraine
United Kingdom
United States



Demonstrating competence using qualification/certification



- ISO 14731 and ISO 3834 make reference to the EWF/IIW qualification system
- Welders – European/International standards available – ISO 9606, EN 287, EN 1418, ISO 24394, etc
- Welding Inspectors – EWF/IIW, AWS, CSWIP
- NDT personnel – certification to ISO 9712, EN 473
- Other welding related competences – use EWF/IIW system, or equivalent national qualifications, as a basis
- Guidance is in ISO 3834 and ISO 14731

Conclusions



1. Competence in welding is key to the safety, reliability and cost effectiveness of welded products. This applies to all personnel
2. Assuring a person's competence is a complicated matter and requires an understanding of education, training, qualifications, experience, certification
3. Compliance with ISO 3834 and ISO 14731 is a way for manufacturers to ensure that they deal with welding competence in a proper way
4. EWF/IIW have developed qualification and certification systems which facilitate the adoption of best practice in terms of competence demonstration
5. More effort should be made to raise industry awareness of the importance of welding competence and of the routes to achieve it