

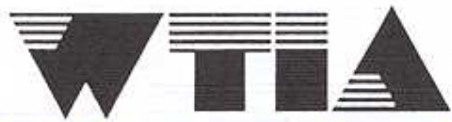
IIW MCS ISO 3834 CERTIFICATION



Richard Fowles IWE
WTIA Qualification and Certification
Manager

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Slide 1



Welding Technology Institute of Australia

Research, Education, Technical Support & Information



**EXPERT
TECHNOLOGY
TOOLS**



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WTIA GOAL

To lead and assist in making Australian Industry locally and globally competitive in welding-related activities

Slide 2

Welding Technology Institute of Australia (WTIA)

- Established in 1989
- Amalgamation of the Australian Welding Institute (AWI) (established 1929) and the Australian Welding Research Association (AWRA) (established 1964)
- The ***not-for-profit***, national peak body in welding technology.

Welding Technology Institute of Australia (WTIA)

Membership based, cooperative, national organization representing the Australian welding industry

- More than 320 corporate members
- More than 1000 personal members
- Qualification & Certification Board: **OzWeld-Cert**
- School of Welding Technology: **OzWeld-SWT**
- Technology Support Centres: **OzWeld-TSC**
- Research & development: **OzWeld-R&D**

Welding Management to IIW MCS ISO 3834

The role of the International Institute
of Welding in welding management –
IIW MCS ISO 3834

Welding Management to IIW MCS ISO 3834

International Institute of Welding

Mission:

- To act as the worldwide network for knowledge exchange of joining technologies to improve the global quality of life.

Welding Management to IIW MCS ISO 3834

IIW

- International Institute of Welding

MCS

- Manufacturer Certification Scheme of the IIW for the management of quality in welding according to the standard ISO 3834

ISO

- International Standards Organisation

ISO 3834

- Quality requirements for fusion welding of metallic materials

Welding Management to IIW MCS ISO 3834

International Institute of Welding

- Conceived in 1947 and founded in 1948 by 13 countries, the IIW is today the largest worldwide network for welding and joining technologies.
- 54 Member Countries, representing experts in the various fields of welding and joining.
- 25 Technical Commissions and Working Units.
- 40 **A**uthorised **N**ational **B**odies (**ANBs**) for Personnel Qualification and Certification, and 19 **A**uthorised **N**ational **B**odies for **C**ompany **C**ertification (**ANBCCs**)

Welding Management to IIW MCS ISO 3834

International Institute of Welding

- ANBs and ANBCCs are authorised to operate after assessment by the International Authorisation Body (IAB) of the IIW.
- Surveillance by the IAB is every 2 years.

Welding Management to IIW MCS ISO 3834

The **W**elding **T**echnology **I**nstitute of **A**ustralia (**WTIA**) is the IIW **A**uthorised **N**ational **B**ody for **C**ompany **C**ertification (**ANBCC**) in Australia.



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Welding Management to IIW MCS ISO 3834

The IAB delegates the authority for company certification to the **Australian ANBCC Committee** with representatives from:

- Engineers Australia
- NATA
- Asset owners / end users
- WTIA

The WTIA assessors comply to the requirements of **EA-06/02** and **IAB-339-08**

Welding Management to IIW MCS ISO 3834

EA-6/02

Guidelines on the Use of EN 45 011 and
ISO/IEC 17021 for Certification to EN ISO
3834



European Cooperation
for Accreditation

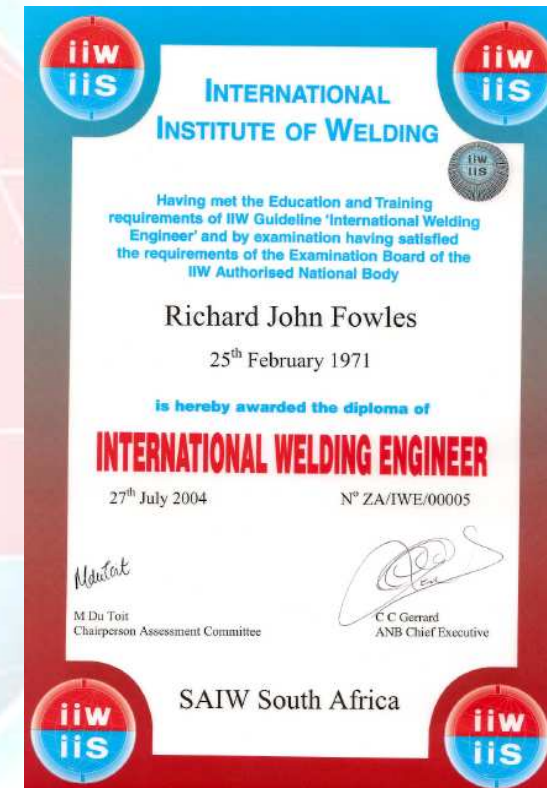
Welding Management to IIW MCS ISO 3834

- It is recognised that the EA-6/02 document issued by the European Co-operation for Accreditation (EA) provides the basis for the harmonisation of the assessment of Manufacturers of welded products by the accredited bodies performing ISO 3834 certification of companies
- IIW does not consider these guidelines sufficient for an organisation to be authorised to certify companies in accordance with ISO 3834 Scheme,
- An ANBCC shall therefore implement as rules the EA-6/02 Guidelines and shall integrate them with the IIW Rules described in the IIW MCS ISO 3834 documents.

Welding Management to IIW MCS ISO 3834

- The critical point about the IIW MCS ISO 3834 scheme incorporating EA-6/02 and the IIW guidelines is that it requires assessors to be:
 - a) Competent in welding technology,
 - b) Experienced in welding fabrication,
 - c) Suitably qualified in welding technology, and
 - d) Familiar with quality management systems

This is where the true value and credibility of the scheme lies.



Welding Management to IIW MCS ISO 3834

- Implications from a discussion with the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).
 - JAS-ANZ is the government-appointed accreditation body for Australia and New Zealand responsible for providing accreditation of conformity assessment bodies (CABs) in the fields of certification and inspection.
 - It is not a regulatory authority.
 - Any organisation may issue certification without being JAS-ANZ accredited, however they are precluded from using the JAS-ANZ accreditation symbol on the certificates issued.
 - No organisation has yet applied to JAS-ANZ to modify their scope of activities to include certification of companies to ISO 3834.



Welding Management to IIW MCS ISO 3834

Extract from EA-6/02 July 2007 Rev 1

2.2 Qualification and experience requirements

EN ISO 3834 Assessors should be:

- a) competent in quality management system auditing (in accordance with ISO 19011), and
- b) have a minimum of three years' experience in the field of welding within the last five years.

Applicant EN ISO 3834 Technical Experts should:

- a) be experienced specialists in the welding field, trained and qualified to the level of **I/EWE or equivalent, or to the level of I/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.

Welding Management to IIW MCS ISO 3834

IIW MCS ISO 3834

- Great care has been taken by the IIW to detail the interpretation of ISO 3834 in terms of:
 - Third party assessment,
 - To specify and register properly trained assessors,
 - To devise an operational structure so that certification of companies will be consistent wherever the rules are applied.

Welding Management to IIW MCS ISO 3834

IIW MCS ISO 3834

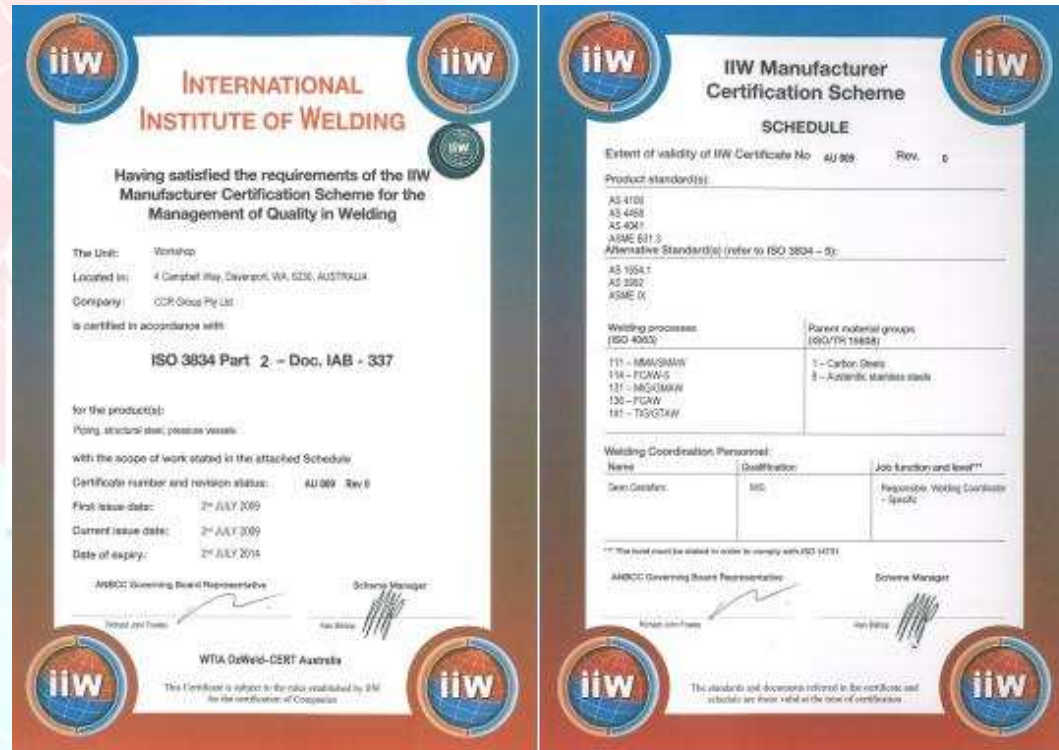
The Scheme is based on the following four documents:

- **IAB 337** “IIW Manufacturer Certification Scheme for the Management of Quality in Welding - Interpretation and Implementation of ISO 3834 requirements”
- **IAB 338** “IIW Manufacturer Certification Scheme for the Management of Quality in Welding - Supplement for the implementation of ISO 3834 oriented to welded products”
- **IAB 339** “IIW Manufacturer Certification Scheme for the Management of Quality in Welding - Rules for ANBCC Operating the IIW Manufacturer Certification Scheme.
- **IAB 340** “IIW Manufacturer Certification Scheme for the Management of Quality in Welding - ANBCC Assessment of Manufacturers of Welded Products Operating the IIW Manufacturer Certification Scheme

Welding Management to IIW MCS ISO 3834

IIW MCS ISO 3834

- IIW MCS ISO 3834 certified Manufacturers will have demonstrated that they have achieved an identified, minimum level of capability over a specified scope of activity, irrespective of the country in which they had been certified.



Welding Management to IIW MCS ISO 3834

What is a Manufacturer?

- Fabrication companies
- Manufacturing companies
- Construction companies (on-site)
- Repair and maintenance companies
- Welding workshops on sites under the same technical and quality management
- Asset owners with their own workshop(s)

Welding Management to IIW MCS ISO 3834

Objectives of IIW MCS ISO 3834

- **Primary objective:** Guide Australian companies to increase their local and international competitiveness. This is in line with the WTIA's stated goal:

To lead and assist in making Australian industry locally and globally competitive in welding-related activities.

Welding Management to IIW MCS ISO 3834

Objectives of IIW MCS ISO 3834

- **Secondary objective:** Provide a conditional means of access for Australian manufacturers to the most credible international platform designed specifically as a statement of their competency and expertise in the coordination of welding and allied processes. The platform represents an “elite” group of companies who have implemented world’s best practice in welding management.

Welding Management to IIW MCS ISO 3834

Objectives of IIW MCS ISO 3834

- **Additional objective:** Provide end users, purchasers, and asset owners with access to a group of manufacturers who have been certified to have employed competent welding coordination personnel and to have established a proper and effective welding coordination system.

Welding Management to IIW MCS ISO 3834

Why choose the IIW Scheme?

- Visibility through an International and Australian register of IIW certified companies
- Credibility and global recognition of the Manufacturer's competence.
- Demonstration of control over the “special process” of welding.
- Scheme implementation can be used as a requirement by a purchaser to satisfy product standard requirements.

Welding Management to IIW MCS ISO 3834

Why choose the IIW Scheme?

Welding companies are assessed by competent and experienced welding people (EA-06/02 and IAB-339-08) against unique IIW documentation.

“Competent welding people looking at welding”

International Welding Engineer (IWE)
International Welding Technologist (IWT)

Welding Management to IIW MCS ISO 3834

Why choose the IIW Scheme?

Through their audit report, these experienced welding people will:

- Produce an assessment report that is **relevant** to your business of welding.
- **Add value** to your operation by identifying valid opportunities for improvement.
- **Help** improve your welding co-ordination team to understand their roles better.
- Improve your productivity, efficiency, cost effectiveness, and credibility with your customer base.

Welding Management to IIW MCS ISO 3834

IIW & WTIA web based register of Certified Companies

- All companies that become certified are listed on an international (IIW/EWF) and national (WTIA) register.
 - Level of control: Comprehensive, standard, or elementary
 - Products manufactured / services rendered
 - Materials that are welded
 - Welding processes used
 - Certificate number & validity period

List of IIW MCS ISO 3834 Certified Companies in Australia and New Zealand



Company Name	ISO 3834 Level	Expiry Date	Products	Materials	Welding Processes	Cert. No.
A&B Welding	Part 2-Comprehensive	02/07/2014	Piping systems, pressure vessels	Carbon steels, low V alloyed Cr-Mo-(Ni) steels, Cr-Mo steels, austenitic s/steels, duplex s/steels, copper-nickel alloys	MMA, MIG, MAG, FCAW, TIG	AU 001
Topline Steel Fabrications	Part 2-Comprehensive	02/07/2014	Aluminium and steel structures	Carbon steels, austenitic s/steels, aluminium and aluminium alloys	MIG, MAG, FCAW	AU 002
Universal Engineering	Part 2-Comprehensive	02/07/2014	Steel structures, pressure pipework, pressure vessels	Carbon steels, Cr-Mo steels, austenitic s/steels, aluminium and aluminium alloys, copper and copper alloys	MMA, MIG, MAG, FCAW, TIG	AU 003
HWE Maintenance Services	Part 2-Comprehensive	03/07/2012	Mining mechanical handling equipment, mineral/quarry plant, structural steel, storage vessels	Carbon steels, thermomechanically treated fine grain and cast steels, quench and tempered steels	MMA, FCAW-S, SAW, MIG, FCAW	AU 004
Monadelphous Engineering Associates	Part 2-Comprehensive	01/09/2012	Pipeworking and piping systems, process plant, storage vessels and tanks, overland pipelines, unfired pressure vessels, structural steel, mechanical conveying equipment, offshore structures	Carbon steels, quenched and tempered steels, Cr-Mo steels, austenitic s/steels	MMA, SAW, MAG, FCAW, TIG	AU 005
Elliott Group of Companies	Part 2-Comprehensive	11/02/2012	Buckets for earth-moving equipment, unfired pressure vessels, pipework and piping systems, structural steel, gantry and signage structure steel, wind turbine towers, storage wells and waste heat boilers	Carbon steels, quenched and tempered steels, austenitic s/steels, aluminium and aluminium alloys	MMA, SAW, MAG, FCAW, TIG	AU 006
Fingers Aluminium	Part 2-Comprehensive	02/07/2014	Ship repairs, food processing equipment, hand railings, balustrades, earthmoving equipment, lifting equipment, pressure vessels, pressure piping.	Austenitic s/steels, duplex s/steels, aluminium and aluminium alloys	MIG, MAG, TIG	AU 007
Kerr Engineering (WA) Pty Ltd	Part 2-Comprehensive	02/07/2014	Mining mechanical handling equipment, structural steel, lifting equipment	Carbon steels, austenitic s/steels, aluminium and aluminium alloys	FCAW-S, MIG, TIG	AU 008
CCR Group	Part 2-Comprehensive	02/07/2014	Piping, structural steel, pressure vessels	Carbon steels, austenitic s/steels	MMA, FCAW-S, MIG, FCAW, TIG	AU 009

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CERTIFIED COMPANIES . RESULTS

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SEARCH CRITERIA:
Company's Country: Australia

9 records found.

Company Name	Contact Person	Country	Expiration Date	Product	More info
A & B Welding Pty Ltd	Mr Laurie Atkins	Australia	2.Jul.2014	Pressure pipework	
CCR Group Pty Ltd	Mr Sean Castafaro	Australia	2.Jul.2014	Piping, structural steel, pressure vessels	
Elliott Group of Companies	Anthony Elliott	Australia	11.Feb.2012	Buckets for earth-moving equipment, unfired pressure vessels, pipework and piping systems, structural steel, gantry and signage structure steel, wind turbine towers, storage vells and waste heat boilers	
Fingers Specialised Metal Fabrication	Mrs Marian Taylor	Australia	2.Jul.2014	Ship repairs, food processing equipment, hand railings, balustrades, earthmoving equipment, lifting equipment	
HWE Maintenance Services Pty Ltd	Mr Stewart Dalgarno	Australia	3.Jul.2012	Mining mechanical handling equipment, mineral/quarry plant, structural steel, storage vessels	
Kerr Engineering Pty Ltd	Mr Mark Kinsman	Australia	2.Jul.2014	Mining components, offshore baskets, lifting equipment	
Monadelphous Engineering Associates Pty Ltd	Phil Richardson	Australia	1.Sep.2012	Pipeworking and piping systems, process plant, sotrage vessels and tanks, overland pipelines, unfired pressure vessels, structural steel, mechanical conveying equipment, offshore structures	
Topline Steel Fabrications	Mr John Roberts	Australia	2.Jul.2014	Aluminium and steel structures	
Universal Engineering	Mr Steven Tiley	Australia	2.Jul.2014	Steel Structures, Pressure Pipework,	

Welding Management to IIW MCS ISO 3834

Period of Manufacturer certification

- 5 years with annual surveillance visits

Period of authorisation of the WTIA ANBCC by the IIW

- 5 years with intermediate surveillance
after 2 years

Welding Management to IIW MCS ISO 3834

Benefits for Manufacturers

- Improve the efficiency of welding management
 - Opportunity for reducing costs and waste, without decreasing the level of quality.
 - Avoidance of the duplication of effort through clear understanding of welding related tasks and responsibilities.
- Practical feedback is given from IIW MCS ISO 3834 audits to assist the company in improving their business.
- Automatic recognition in over 54 IIW member countries gives enhanced global competitiveness.
- Audits of companies are performed by trained IIW registered assessors who are internationally qualified and experienced International Welding Engineers and Technologists – global credibility.

Welding Management to IIW MCS ISO 3834

Benefits for Manufacturers

- The IIW MCS ISO 3834 scope of certification spells out the company's welding processes, products manufactured, materials and the role of the Responsible Welding Coordinator (RWC).
- An up-to-date global website register (www.ewf.be), with the relevant information of all companies certified under IIW MCS ISO 3834 , is freely available to enquirers worldwide – international market exposure.
- Addresses a potential gap often not adequately covered by an ISO 9001 audit.

Welding Management to IIW MCS ISO 3834

To Quote a Manufacturer

“It is a more practical approach as opposed to the documentation approach”

“We see IIW MCS ISO 3834 as more than just a certificate – it is proof that we are doing things correctly on the shop floor.”

Welding Management to IIW MCS ISO 3834

To Quote a Manufacturer

“ISO 3834 through IIW MCS ISO 3834 certification gives the company and all our stakeholders the confidence to bid on and complete high quality products. Over the past few years we have been able to take on larger and more complex projects.

This has lead to improved revenue, higher employment and apprenticeships, improved staff retention, less rework and improved delivery times”.

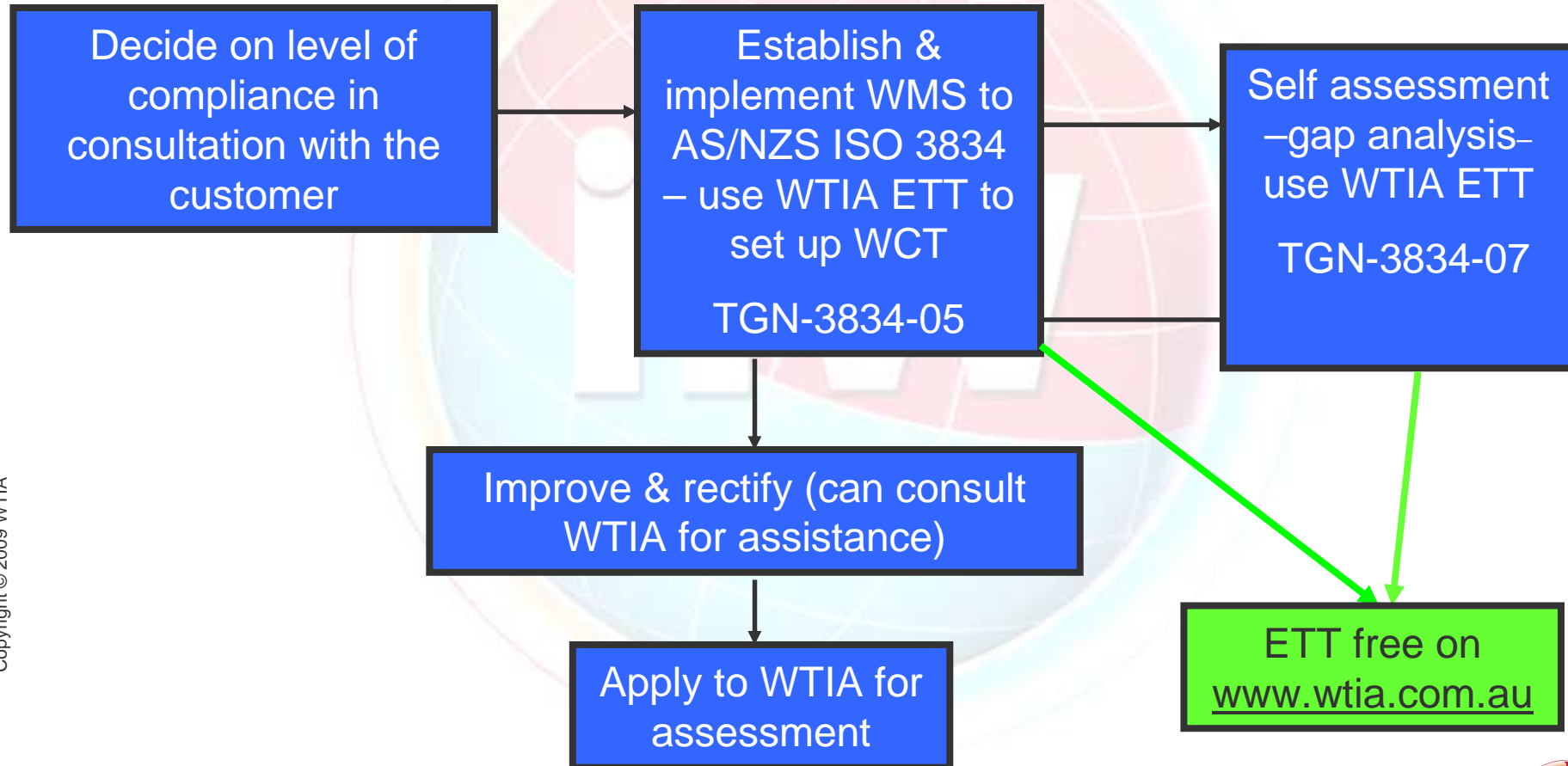
Welding Management to IIW MCS ISO 3834

To Quote a Manufacturer

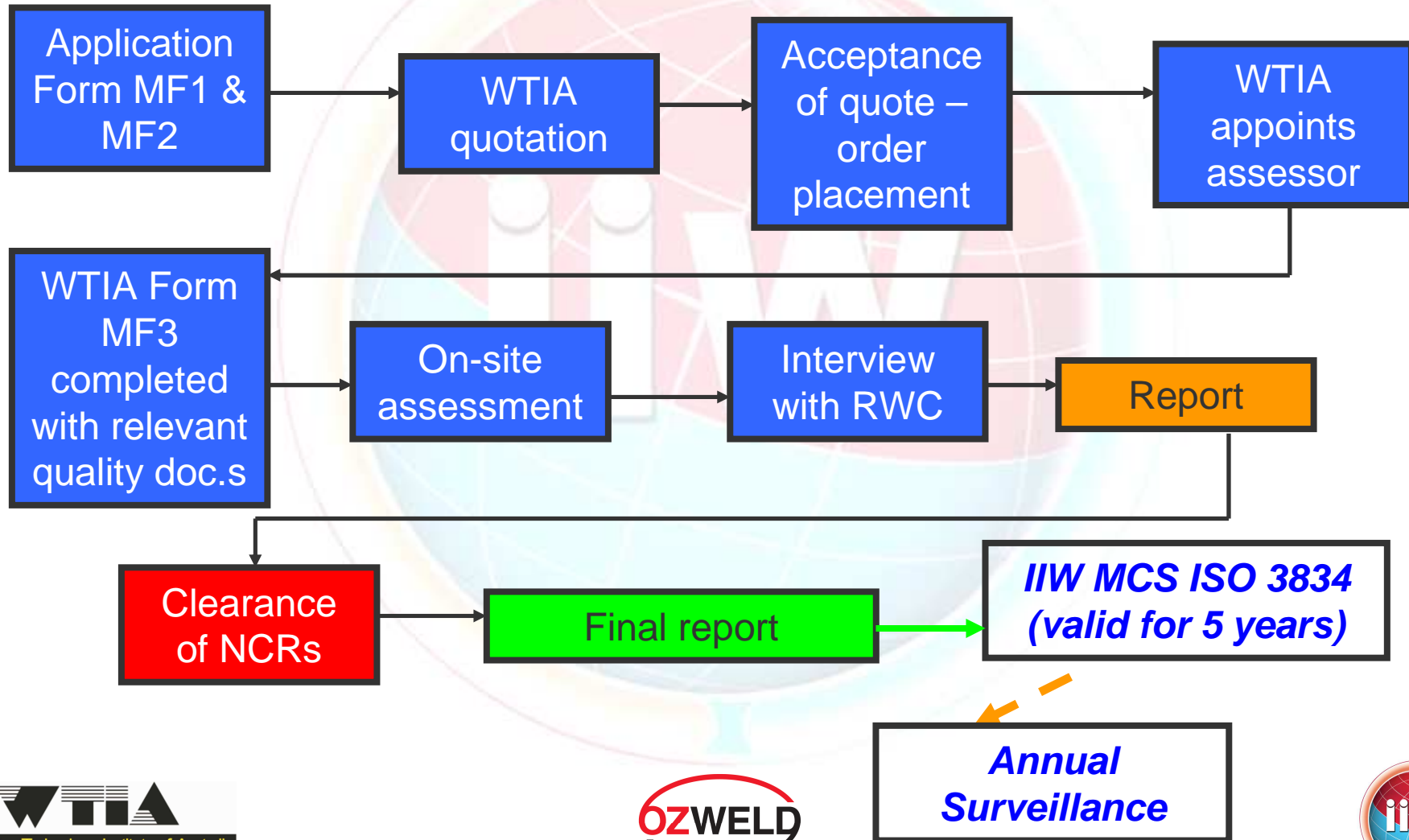
“Since implementing ISO 3834 our company has employed more tradesmen and opened the way to more apprenticeships. Through our quality control we offer a complete professional and quality service to our customers. In working in this specialized area our company has grown considerably and our staff has grown along with us and this is evident in their confidence and pride in their workmanship ”.

Welding Management to IIW MCS ISO 3834

How does the process work?



Welding Management to IIW MCS ISO 3834



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Welding Management to IIW MCS ISO 3834

How long?

- The on-site assessment can take one or two days, depending on the size of the fabrication workshop and if there is only one workshop or multiple shops or sites.
- There is normally an allowance for a day to review relevant documentation and a day for the compilation of detailed reports.
- Surveillance normally takes a day on-site.

Welding Management to IIW MCS ISO 3834

Productivity Culture

- Manufacturers may initially have the perception that the cost of implementation of a welding management system in compliance with AS/NZS ISO 3834 is a constraint.
- This, however, is a perception that is removed once proper organization and an integrated coordination of welding activities leads to improved productivity and cost savings.

Welding Management to IIW MCS ISO 3834

Productivity Culture

- Productivity is about the ability that a system (be it an individual, a department, a business, or the economy) has, to use all the resources at its disposal in a harmonised and integrated manner to provide products or services which are useful to the end user.
- Productivity improvement is the improvement of that ability.
- A productive culture is where everybody and every effort contributes to improving and building up themselves and the business.

Welding Management to IIW MCS ISO 3834

Productivity Culture

- To improve productivity of a welding management system, one cannot focus solely on investing in welding technology advances.
- A holistic approach is required that addresses:
 - Contract review
 - Design review
 - Management of work flow (production planning)
 - Inspection and testing (management of appraisal costs)
 - Non conformances and corrective action (cost of internal or external failures)
 - Identification and traceability
 - Quality records

Welding Management to IIW MCS ISO 3834

- A financial measurement of productivity in fabrication or maintenance industries could be:

$$\text{Productivity} = \frac{\text{Successful service provision / fabrication project / job}}{\text{Total Cost}}$$

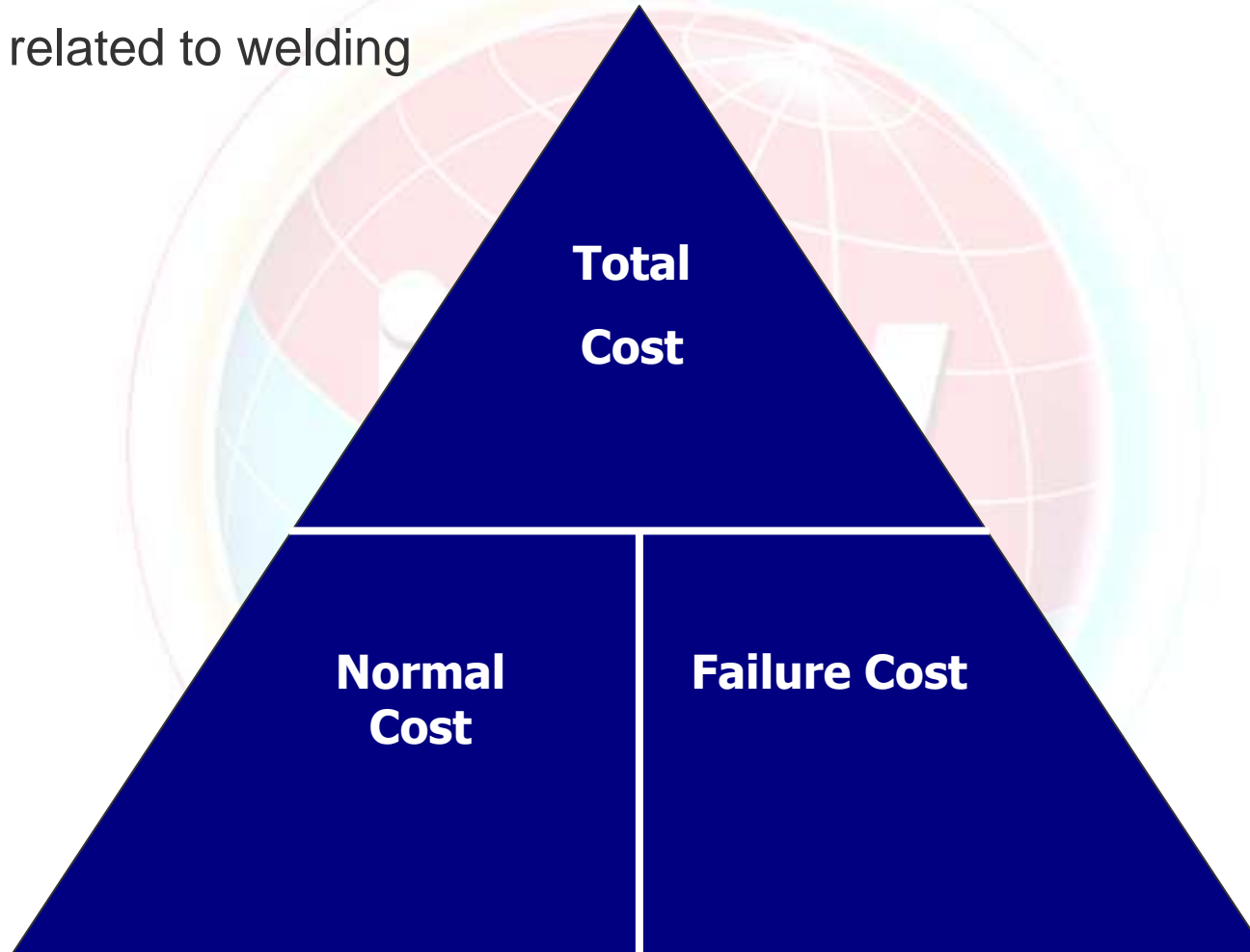
Total cost

- **Normal costs:** marketing, promotion, design, administration, raw material, labour overheads, consumables, power etc.
- **Failure costs:** Any cost that has to be carried over and above what was originally costed and cannot be transferred onto the client.

***The cost of failure has a direct link to the elements of
AS/NZS ISO 3834***

Welding Management to IIW MCS ISO 3834

- Costs related to welding



Welding Management to IIW MCS ISO 3834

- What could the failure cost consist of?
 - Failure to identify all the client's requirements accurately during tender and technical review. (ISO 3834: Clause 5)
 - Sub-contractor does not deliver what or when it is required (ISO 3834: Clause 6)
 - Incompetent welders/operators resulting in unnecessary defects leading to premature in-service failure (ISO 3834: Clause 7.1 & 7.2)
 - Welding coordinators not exerting their authority or failing to carry out tasks (ISO 3834: Clause 7.3)
 - Welding inspectors or NDT personnel missing key inspection tasks due to incompetency or not being on hand (ISO 3834: Clause 8.1)

Welding Management to IIW MCS ISO 3834

- What could the failure cost consist of? (cont.)
 - Delays in production caused by equipment being unavailable or delays caused by having to repair defects introduced by equipment (ISO 3834: Clause 9)
 - Incorrect selection of or incorrectly qualified welding procedures issued to production staff resulting in production delays for repair or requalification (ISO 3834: Clause 10)
 - Failure to identify material during storage leading to mix-ups that have to be sorted out (ISO 3834: Clause 12)

Welding Management to IIW MCS ISO 3834

- What could the failure cost consist of? (cont.)
 - Incorrect PWHT applied or failure to keep a record of a PWHT (ISO 3834: Clause 13)
 - Inadequate ITP's used or inspection interventions missed (ISO 3834: Clause 14)
 - Failure to make repairs or to inspect when they have been done (ISO 3834: Clause 15)
 - Rework as a result of correcting incorrect weld sizes, or missing potential defects as UT machines not correctly calibrated. (ISO 3834: Clause 16)
 - Failure to correctly use weld maps if required to do so by the client. (ISO 3834: Clause 17)
 - Delivery delays caused by setting up MDR's when inadequate records have been maintained during fabrication or repair (ISO 3834: Clause 18)

Welding Management to IIW MCS ISO 3834

Cost of quality

Consists of:

- Prevention costs
- Appraisal costs
- Failures
 - Internal
 - external



Welding Management to IIW MCS ISO 3834

Cost of quality

Internal Failure:

- Scrap
- Rework and repair
- Trouble-shooting or defect/failure analysis
- Re-inspect, re-test
- Scrap and rework – fault of vendor – downtime
- Modifications and concessions
- Downgrading

Welding Management to IIW MCS ISO 3834

Cost of quality

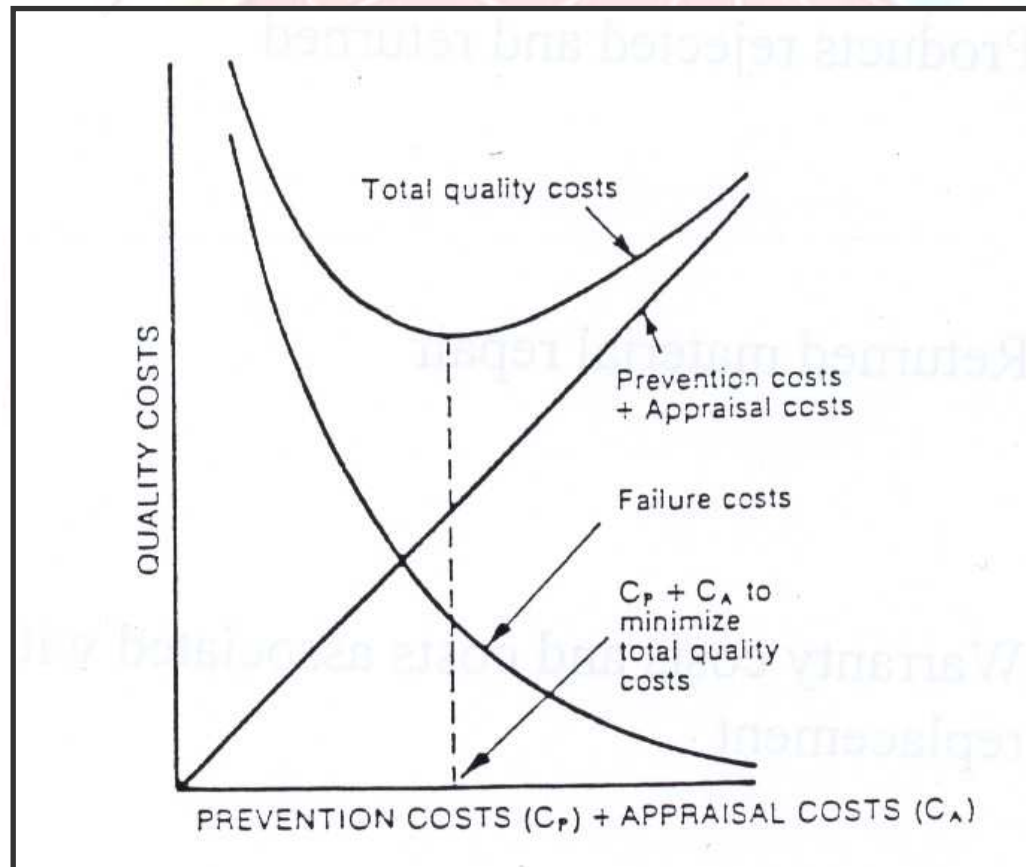
External Failure:

- Complaint investigation
- Products rejected and returned
- Material returned prematurely for repair
- Warranty claims and costs associated with replacement

Welding Management to IIW MCS ISO 3834

Cost of quality

- Optimization of Appraisal Costs vs Failure Costs



Welding Management to IIW MCS ISO 3834

- The benefit to productivity that the implementation of ISO 3834 gives has been recognised by the **Queensland Government**.
- \$30 000 was put forward as a grant for WTIA to assist Queensland companies.
- The WTIA carried out productivity and quality reviews on 6 companies using the requirements of ISO 3834 as the platform.
 - Three companies in Gladstone - Pressurised Equipment
 - Three companies in Mackay – Mining
- These companies were therefore empowered to improve productivity by implementing each requirement of ISO 3834.

Welding Management to IIW MCS ISO 3834

The **Northern Territory Government** has also realised the benefits to productivity and hence competitiveness of companies implementing and becoming certified to AS/NZS ISO 3834.

Picture: 1 December 2009: Four Northern Territory SME fabricators receiving their company certification to IIW MCS ISO 3834 from NT Chief Minister Paul Henderson (centre back), from right Universal Engineering; Topline Steel Fabrications; A&B Welding Pty Ltd and Fingers Specialised Metal Fabrications.



Welding Management to IIW MCS ISO 3834

IIW MCS ISO 3834 is a certification product developed by a panel of recognised international welding management experts

It is the only international certification scheme that focuses on welding management

IIW MCS ISO 3834 Certification

Look for the confirmation of welding
coordination competency in Australia



Welding Management to IIW MCS ISO 3834

*To be globally relevant & competitive in welding
you must:*

- ***Ensure that the welding coordination team responsible for welding management are competent and relevant to the international playing field.***
- ***Understand and implement global best practice: AS/NZS ISO 3834 and ISO 14731***
- ***Raise the awareness and level of priority given to welding coordination and technology within your organisation***
- ***Become certified to **IIW MCS ISO 3834*****