BS EN ISO 3834

TWI Technology Centre (North East)
Riverside Park, Middlesbrough

20 January 2015

0900-1400

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Offshore Wind Validation Centre Technology Transfer Project

Nick Elbourn
Technology Transfer
TWI

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Programme

- Offshore Wind Validation Centre project – welcome and introduction
- ISO 3834: Why is it important and what's in it for you?
- RWC: Who, What and Why? Busting the myths
- 11am coffee
- Assessment and certification to BS EN ISO 3834. The WFCS Scheme
- Case study: A company's experience with ISO 3834
- GROW funding
- Questions/discussion
- 1pm lunch and close

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TWI

- **A world centre of expertise in Manufacturing, Engineering, Materials and Joining**
- **Dedicated to supporting the needs of our Industrial Membership**
- **Non-profit distributing**

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Where is TWI?

four UK technical centres

14 international training centres

members in 3500 locations worldwide

800+ staff

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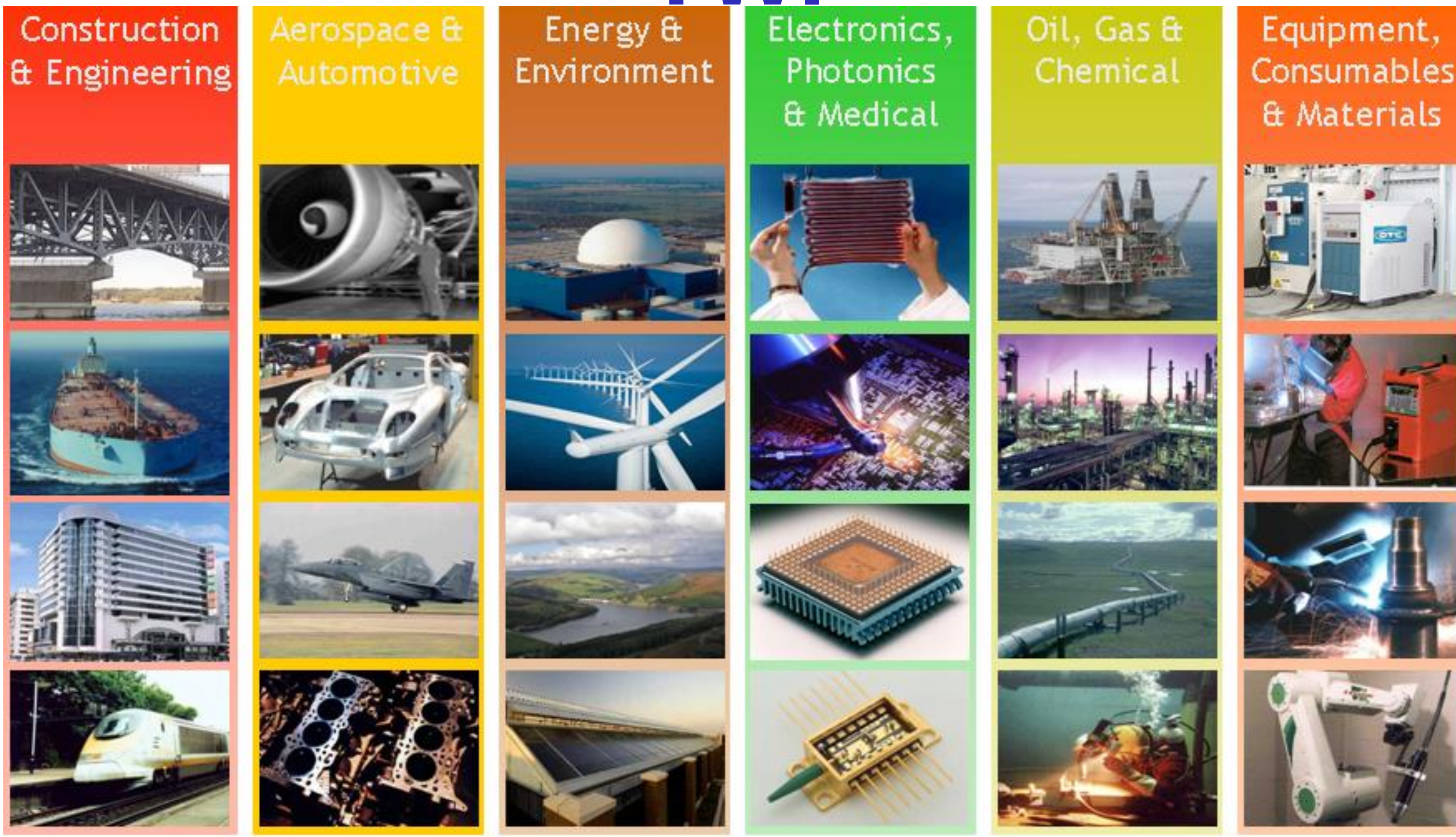
TWI



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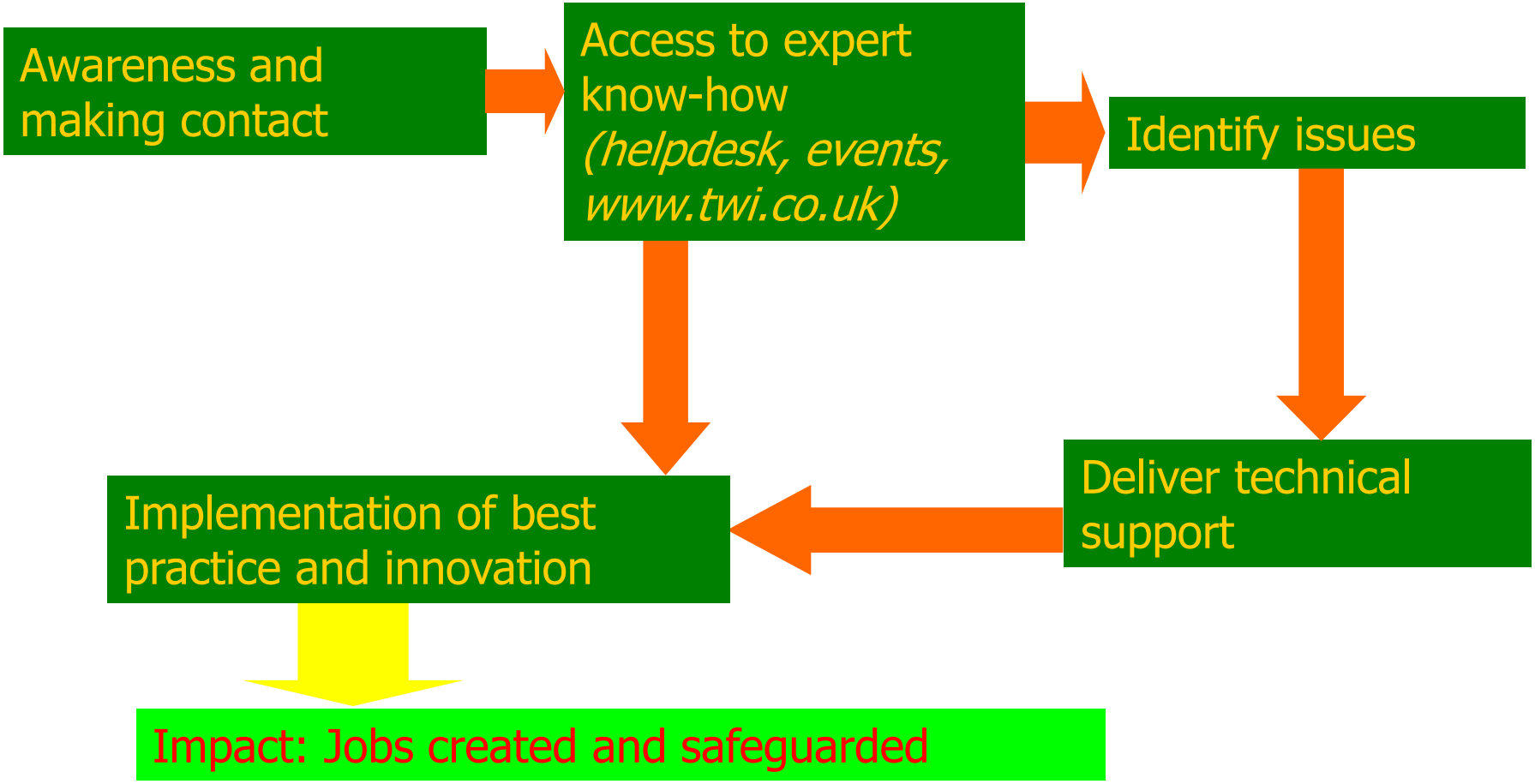
Technology transfer in practice



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Technology Transfer – Business Impacts

Region	jobs created	jobs safeguarded	t/o created £M	t/o safeguarded £M
North East	355	1249	30.3	74.8
Wales	190	1029	83.5	
North West	76	248	5.4	15.3
Scotland	44	95	2.9	5.1
Yorkshire	1420		62.4	

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OSWVC Technology Transfer

For companies which are:

- **already in the offshore supply chain or who are interested in moving into this sector**

- **Growing and able to make use of high quality technical support**

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OSWVC-TT project key facts

- **15 month project, started in July 2014**
- **funded by ERDF and Middlesbrough Council**
- **outreach/technology transfer: assist 55 companies, aiming to create 45 jobs/safeguard 30 jobs**
- **events programme**

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OSWVC-TT project key facts

- **All TWI technologies covered: fabrication, surfacing, cutting, inspection and NDT, processes, materials, quality**
- **Mainly SMEs**
- **North East**
- **Technical support – up to 12 FREE days**

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OSWVC-TT technical support

- **Initial 2 days scoping then**
- **Up to 5 days Feasibility Study**
- **Up to a further 5 days**

Innovation Support

All free of charge

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Technical Support

- Process/material change/innovation
- Procedure development
- Trouble shooting
- Design improvement
- Workshop practice
- Complying with standards
- Materials/consumables selection
- Health & safety issues
- Carbon footprint
- Skills development
- Quality systems
- Cost reduction

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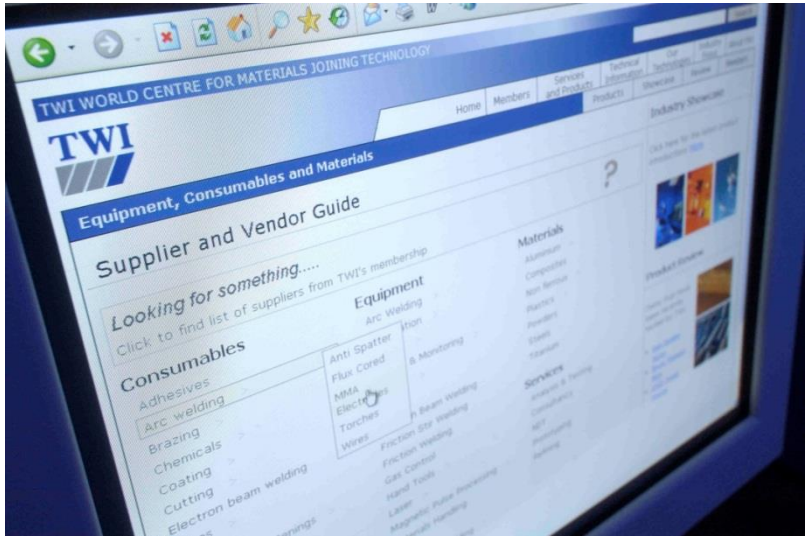
TWI Website Content

- Best practice guides
- Software toolkits
- Frequently Asked Questions (>1000)
- Knowledge summaries
- Corporate information
- Members reports (since 1995)
- Staff papers
- Technology briefings
- Weldasearch™
- MI-21 Consumables database
- Photographic images



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Knowledge Summary on Hydrogen Cracking

Visual appearance

Hydrogen cracks can be usually be distinguished due to the following characteristics:

- In C-Mn steels, the crack will normally originate in the heat affected zone (HAZ) but may extend into the weld metal *(Fig 1)*.
- Cracks can also occur in the weld bead, normally transverse to the welding direction at an angle of 45° to the weld surface. They are essentially straight, follow a jagged path but may be non-branching.
- In low alloy steels, the cracks can be transverse to the weld, perpendicular to the weld surface, but are non-branching and essentially planar.

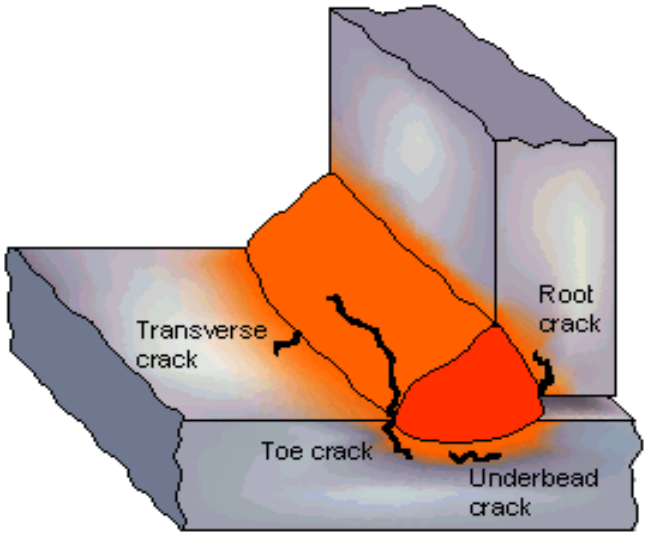

Fig. 1 Hydrogen cracks originating in the HAZ (note, the type of cracks shown would not be expected to form in the same weldment)

On breaking open the weld (prior to any heat treatment), the surface of the cracks will normally not be oxidised, even if they are surface breaking, indicating they were formed when the weld was at or near ambient


AARYAN
North Sea Logistics

Case Study: Alnmaritec

- Innovative aluminium boat builder Alnmaritec has supplied operators from the Arctic to the Antarctic
- Customised work boats for oil and gas industries, fire and rescue, fishing, ferries and offshore
- Support vessels for OSW tower maintenance became central
- Boats 10 to 15m long single or twin hull vessels made from 5083 and 6082 grade aluminium alloy plate of between 4-6mm thickness
- Design and fabrication to Lloyds Rules involved MIG butt welding in the flat, horizontal, vertical and overhead
- Success rate was already high, x-ray examination revealed that a 100% pass rate was achievable
- Surface appearance was excellent and advice given on sidewall fusion and porosity, both of which were not perceptible visually
- TWI highlighted importance of operating gas-shielded process in a draught-free environment and emphasis on completing welding within four hours of degreasing

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Summary

- **TWI World Centre for Technology Transfer & Training - meeting the needs of Industry**

- **OSWVC-TT: free technical assistance and supply chain support**

- **Practical assistance and support provided to achieve real business benefits**

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New TWI Facility at Middlesbrough

- ~40,000 sq ft (50% increase in space)
- R&D space for advanced arc welding, electron beam, coatings technology and mathematical modelling of structural integrity
- Large dive tank for training underwater welding, inspection and NDT; smaller tank for development of underwater NDT technology and ROV deployment systems
- Welder training bays, X-ray facilities, classrooms, office accommodation for ~70 staff
- TWI is working with various local organisations to make this project work with objective of having new facility operational early 2016

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OSWVC-TT project support

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