European Technology Development Ltd

ETD'S SPECIALIST SERVICES

European Technology Development provides specialist services in some of the technology areas which are unique to the company. A few of these are briefly described below.

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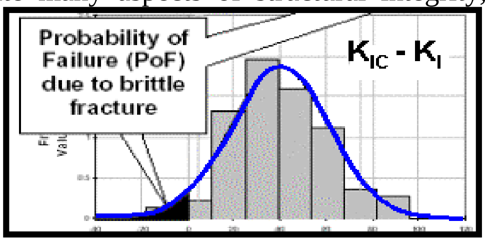
Defect / Crack Assessment in Industrial Components

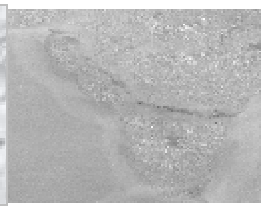
ETD are internationally recognised in the field of defect assessment both at ambient and elevated temperatures. ETD have developed a range of effective and robust in-house tools that incorporate the widely accepted fracture assessment procedures (BS7910, BS5500, R6, R5 and A16) and our own HIDA procedure and practical field experience using the HIDA Knowledge Based System "Alias-HIDA". These special purpose tools, which are based on both ***deterministic*** and ***probabilistic*** methods, enable the assessment of known defects and determine maximum acceptable defect sizes to assist in identifying suitable inspection methods and inspection intervals.

Asset Integrity Services section of ETD performs fracture mechanics assessment by means of ***classical stress analysis*** or ***finite element techniques*** as appropriate, including the 'Leak-Before-Break' methodology. The defect assessments are used to underwrite many aspects of structural integrity, including but not limited to:

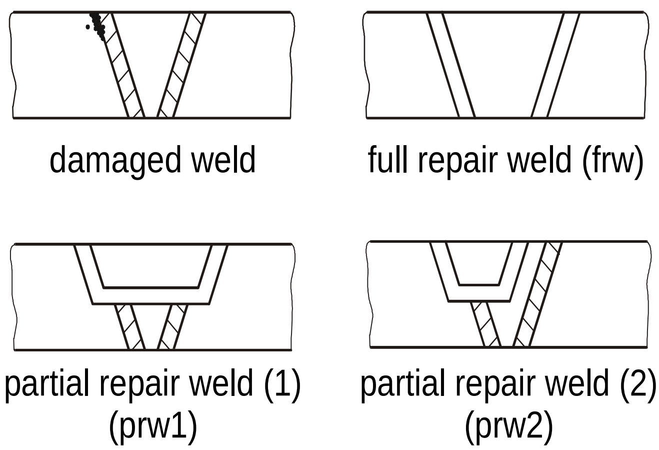
- Remaining or remnant life prediction
- Fitness-for-purpose assessment
- Life extension of ageing equipment
- Assessment of required / allowable inspection intervals
- Compliance to regulatory requirements.



Advice on *Repair Welds* Based on Worldwide Practice Reviews and Recent Research Findings



This project involved worldwide review of plant and research experience, testing of large weld repaired components (P22, P91, 316SS) using both cold and conventional welding procedures. This was backed up by lab specimen testing, residual stress measurement and FE analysis. As a result ETD have developed a wealth of knowledge and experience and guidelines to help industry with best repair practices and procedures and performance/ life assessment of repaired components.



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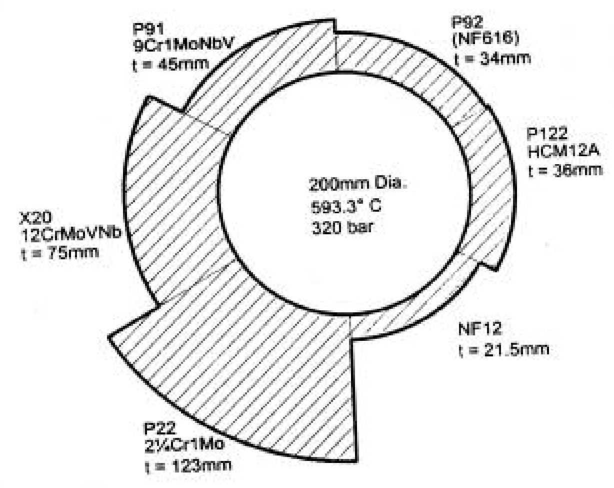
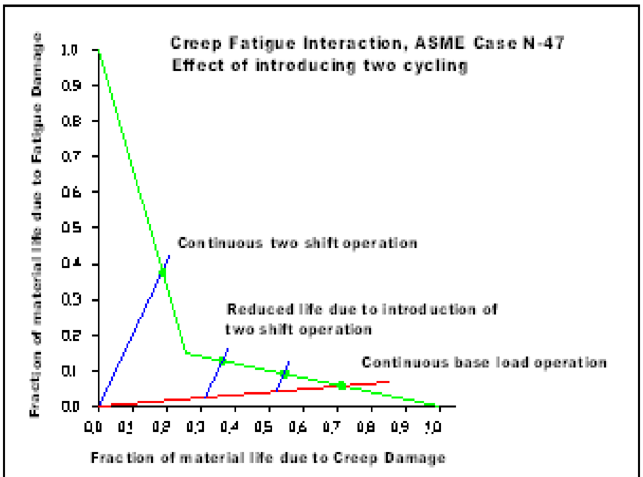
Advice on the Behaviour of New High Temperature Plant Steels (e.g. P91, P92, E911, T23 and T24) Based on Research and Plant Experience

ETD have carried out a number of comprehensive reviews on the use some of these steels in both new plants and as replacement components in older plant. In addition ETD have been involved in collaborative projects on the testing of some of these steels (base metals and weldments involving both large feature tests and lab specimens) and developing their life assessment methodologies. Some of these studies were sponsored by international industry and have provided ETD a wealth of knowledge and experience on e.g. welding , steam side oxidation, Type IV cracking, microstructure and life prediction.



Two Shifting/ Cyclic Operation of Power Plant (both Conventional and CCGTs)



As the competition in electricity production increases plant cycling is becoming more common and this means that plant operators have to know how to reduce plant start up and shut down times, be knowledge about the problems introduced by cyclic operation and thus reduce maintenance costs. ETD have recently carried out two reviews for international industry and organised international seminars and workshops on this subject. Both technical and cost implications were studied.

Component Cracking at Low Temperature (350 – 400^{o}C)

Carbon, C-Mn and even low alloy steels used in ***cold bent riser and supply pipes*** or ***furnace wall tubing*** are vulnerable to low temperature creep crack growth. The problem first raised its head in power industry in the UK, USA and other countries in 1970s with some violent failures. A number of studies were carried out by ETD staff primarily in the UK and problem contained. However, with the ageing of plant it is now re-surfacing and needs specialist attention. ETD have a unique understanding of this problem and the associated engineering, material, chemical composition and inspection issues involved.

Other areas of ETD specialisation include:
HRSGs, Risk Based Maintenance, Plant Monitoring Sensors etc.
For enquiries please contact at the address on the front page.