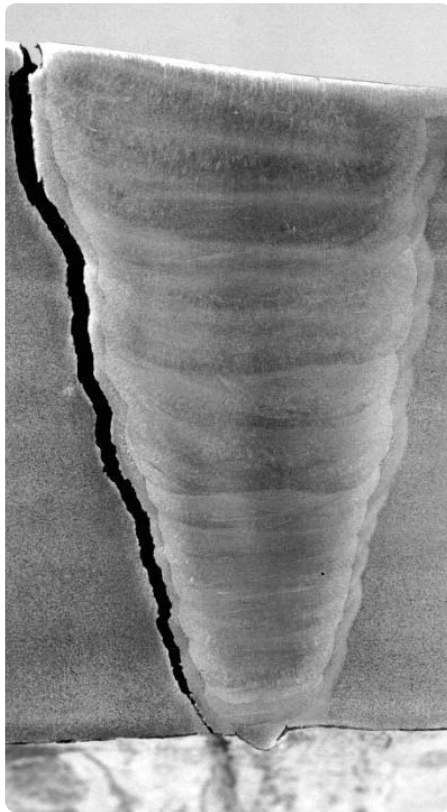




Fitness-for-Service

In addition to inspection and more specialist testing methods, ERA Technology perform comprehensive fitness-for-service assessments either as part of a larger plant-wide project function, or as a supporting role to more specific client-based activities. With an experienced team of multi-disciplined engineers, ERA is able to provide the specialist knowledge to qualify the appropriate material properties, stresses and assumptions as part of an advanced engineering assessment.



Experience

ERA Technology has many years experience in fitness-for-service assessment, complementing ERA's expertise in providing other engineering consultancy services to the power, refining and petrochemical industries. With the differing approaches and methods available, ERA uses a combination of specialist in-house procedures as well as published guidelines to carry out realistic and representative assessments of the actual service conditions the component has seen and may see as part of its future planned operation.

Collation of many of the procedures commonly used for fitness for service have been summarised in ASME/API RP 579, providing a common framework to perform this work. ERA has carried out many assessments using these guidelines, including local and general metal loss, pitting and crack-like flaws.

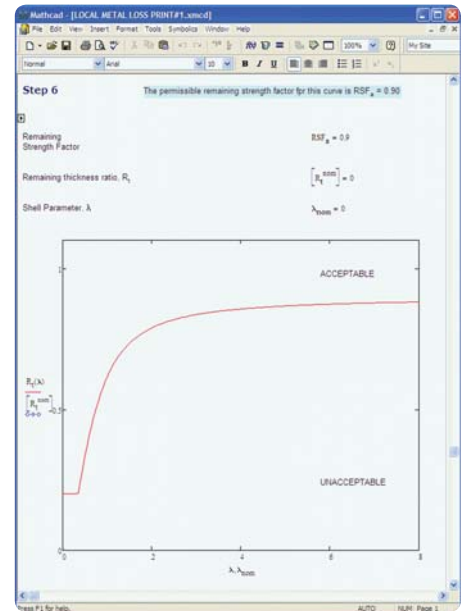


Damage Mechanisms

Assessments have covered damage mechanisms such as:

- Corrosion
- Erosion
- Low and high temperature
- Hydrogen damage
- Pitting
- Environmental cracking
- Fatigue.

ERA Technology has experience with a range of alternative procedures and standards. These include inverse design calculation using codes such as TRD, BS and ASME, design-by-analysis approaches using non-linear finite element analysis, high temperature creep life assessments using ERA's in-house materials database, defect assessments using BS 7910 and use of in-house procedures for specialist components.



Fitness-for-Service assessments are completed using:

- Fully validated MathCAD worksheets and specialist Excel worksheets developed in-house
- Thermal and structural finite element analysis (FEA)
- Material testing results and in-house materials database
- Knowledge and experience of inspection techniques, their applicability, accuracy and repeatability
- Extensive remaining life assessment experience, based on both numerical modelling and condition based assessment.

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