



CrackFit

CrackFit is a software designed to help engineers perform crack initiation and growth assessments, specifically for high temperature operations. Crack initiation and growth in all defect geometries have been tested by one group of experts and verified by another. CrackFit represents the cutting edge in crack and defect assessment software.

Industry Need

Components operating under stress, and at elevated temperatures are likely to be subject to in-service damage, in the form of crack initiation and growth. Once found it is important to understand how long a crack can remain safely in service.

The Solution

Our software, CrackFit reliably measures the cracks and defects using fracture mechanics. The fitness-for-service programme performs calculations to determine the defect's criticality in line with the assessment codes. Current version of the software contains various geometries of boiler and turbine components.

Results

1. Choose your geometry and material properties:

- Defect type and location.
- Materials data comes from established sources such as HIDA and ECC data sheets, or can be entered manually.
- Confidence intervals for different input data can be accommodated.

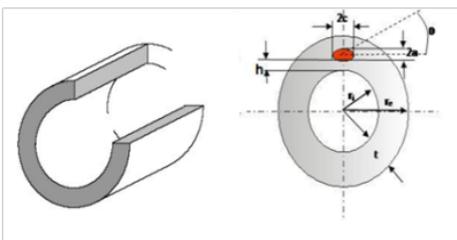
2. Pick your assessment module:

- Cyclic loading allows different minimum and maximum loads temperatures and dwell times for modelling of creep-fatigue interactions.

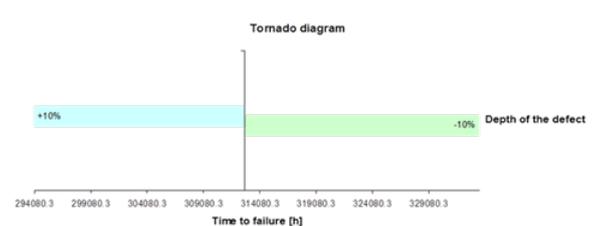
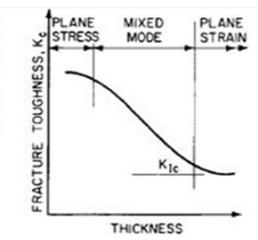
3. Review the results:

- Using a Tornado diagram which shows the time to failure changes depending on the different parameters.
- Probability of failure with time can be derived using a Monte-Carlo Simulation.

4. Use Remaining Life Assessment to provide recommendation for run/repair/replace decisions.



Cross section of pipe showing crack length.



A Tornado diagram shows the time to failure changes depending on the different parameters.

Advantages of CrackFit

1. Flexible, to add new geometries for assessment.
2. Useful training aid, allowing specific problems to be defined and their solutions modelled and validated, with detailed guidance from the manual.
3. User-friendly for industry engineers who would like to carry out defect assessment without going through different established codes or assessment practices.

