BMT

Clarity from complexity

FlawCheck Structural Integrity Assessment Tool

FlawCheck is a comprehensive integrity assessment tool for metal structures designed to support the development and implementation of integrity assurance and maintenance programs. Add the probabilistic analysis module for an even more powerful tool.

FlawCheck

FlawCheck was created by a team of experts in materials and damage assessment using industry input and codes of practice. The software simplifies assessment of structural defects by seamlessly linking user-selected, industry-accepted load characterization, fatigue and failure assessment procedures. FlawCheck can define allowable flaw sizes to qualify inspection results and define inspection intervals to positively identify sub-critical flaws.

Integrity Management Program Development

The FlawCheck software was developed to be a flexible engineering analysis and design support tool. It can make use of data developed from field instrumentation, numerical simulation tools and finite element models to develop asset life or integrity predictions. This capability and the user friendly interface makes it ideal for integrity management program development, supporting repair decisions, defining inspection intervals or selecting inspection tools.

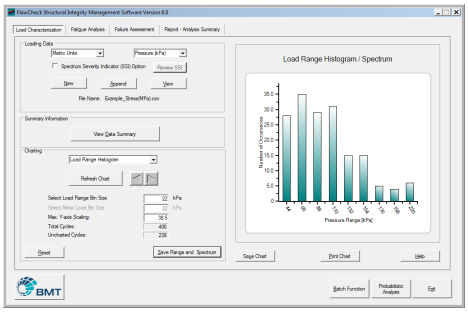
Software Features

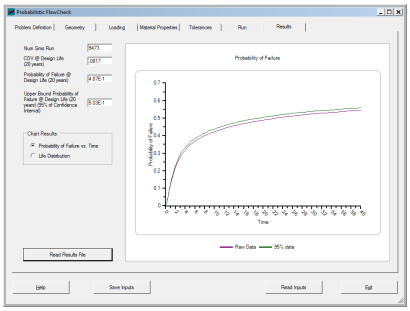
- characterize measured or estimated load effects
- estimate fatigue initiation and growth of flaws
- determine fracture potential for stable cracks or those growing by fatigue
- streamline the assessment process using a single interface for multiple industry codes of practice
- generate easily interpreted graphical and tabular results
- transfer input data and results to word processor ready files to facilitate reporting
- perform and document fatigue and/or failure analyses for up to 200 scenarios with a single execution of the program
- material property and S-N curve databases - select from default or user defined data in fatigue or fracture calculations
- apply assessment procedures consistent with BS7608, API RP579, ASTM E 1049, BS 7910, PRCI NG 18, CSA Z662 Appendix K and Marine classification society rules

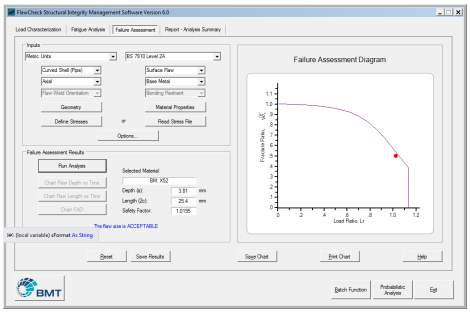
FlawCheck

Technical Specifications

FlawCheck can use actual or judgement based structural loading data to estimate the potential for fatigue related growth of flaws and to determine the potential for fracture. It is designed to accept analytical techniques while facilitating assessment and documentation.







Load Characterization

- reduce load-time history data to load cycles, load range and mean frequency, R-ratio, load rate and mean-and-peak load effects
- consider pressure, stress, force, moment or any scalable load effect
- quantify cyclic load history severity

Crack Growth

- evaluate extension of surface, embedded, through thickness and edge flaws in flat or curved shell or plate sections
- complete S-N based fatigue life estimates
- account for infrequent load events
- consider stress concentration factors (SCF) and/ or crack growth thresholds

Final Failure

- apply the Failure Assessment Diagram (FAD) approach and other failure assessment criteria
- assess the safety of a specific flaw
- determine the time to fracture during fatigue crack propagation
- develop families of critical flaw geometries for extreme loading conditions

General Features

- perform and document fatigue and/or failure analyses for up to 200 scenarios with a single execution of the program
- material property and S-N curve databases - select from default or user defined data in fatigue or fracture calculations
- apply assessment procedures consistent with BS7608, API RP579, ASTM E 1049, BS 7910, PRCI NG 18, CSA Z662 Appendix K
- create word processor ready documents containing analysis data, results and charts