

Pacifica™

Pressure Cycle Fatigue Analysis

Capabilities

Quest Integrity's Pacifica software performs pressure cycle fatigue analysis of crack-like flaws in pipelines based on state-of-the-art fracture mechanics methodology including API 579 Part 9 and the newly developed MAT-8 crack failure model. Fatigue crack growth analysis is performed using actual pressure data to enable real-time monitoring and hydraulic modeling determines true pressure cycling behavior at crack locations throughout the pipeline, resulting in more accurate growth predictions. Pacifica also uses a database structure to store pressure data and line layout information for future analysis.

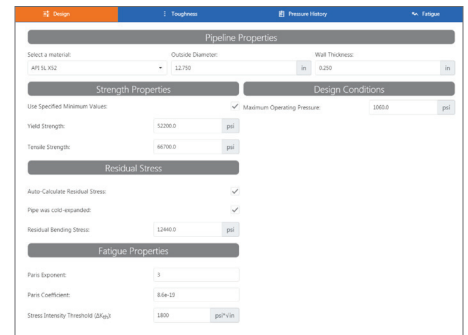
The analysis results support the prioritization of anomalies, determination of hydrotest and ILI re-inspection intervals, sensitivity analysis, and the evaluation of the impact of operations on seam weld integrity.

Software Benefits

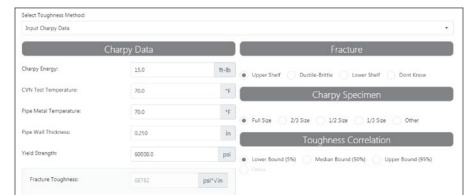
- Aids in the development of repair plans and re-inspection intervals
- Avoids unnecessary excavations
- Improves understanding of growth rates and material properties
- Provides detailed analysis of all potential flaws located anywhere on the pipeline

Features

- Intuitive and easy to use user interface
- Assess a large group of crack-like flaws with a single analysis
- Includes advanced MAT-8 and API 579 Part 9 FAD crack failure models
- Directly calculate fracture toughness from Charpy Impact test data
- Automated generation of reports
- Infer starting flaw sizes from a recent hydrostatic/pressure test
- Perform rainflow counting on pressure data at an upstream and downstream location
- Account for the decrease in pressure cycling severity as a function of distance from a pump discharge location
- Capability to store complete pipeline layout and pressure data in a database to support the management of a large network of pipelines
- Automated Remaining Life Monitoring



Updated user interface



Calculate fracture toughness from Charpy data

Remaining Life Assessment

- Assess actual flaws reported from inspection, or hypothetical flaws inferred from hydrostatic testing.

Rainflow Calculations

- Executed per ASTM E1049-85
- Pre-process pressure data to automatically remove invalid readings
- Reporting of actual pressure histograms at any location
- Severity of cyclic loading is quantified based on the “cyclical index”, or pressure cycling speedometer

Detailed Reporting Options

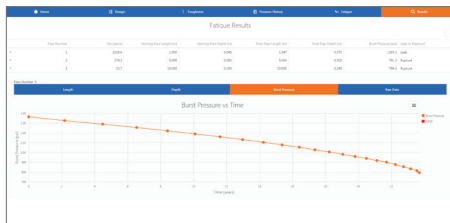
- Automatically generate master flaw reports which provide detailed results for all flaws assessed.

Database Storage Capabilities

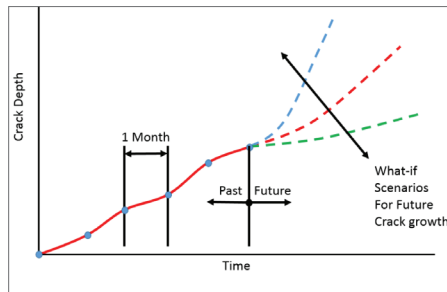
- Store complete line layout and pressure data in a database to support the management of a large network of pipelines.
- Flaw sizes, locations, material properties, and other analysis input parameters are stored to easily facilitate sensitivity analysis.

Automated Remaining Life Monitoring

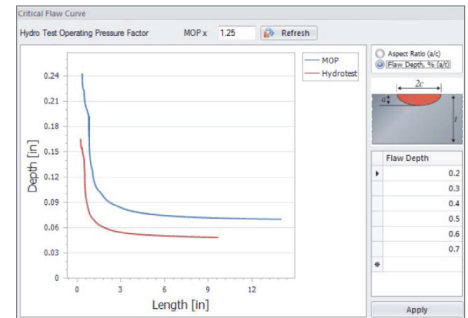
- Automatically import additional pressure data and produce updated periodic reports based on the newly imported data.
- Email updates can be set up to alert the user about certain conditions, such as drops in predicted remaining life or an increase in cyclic loading severity.



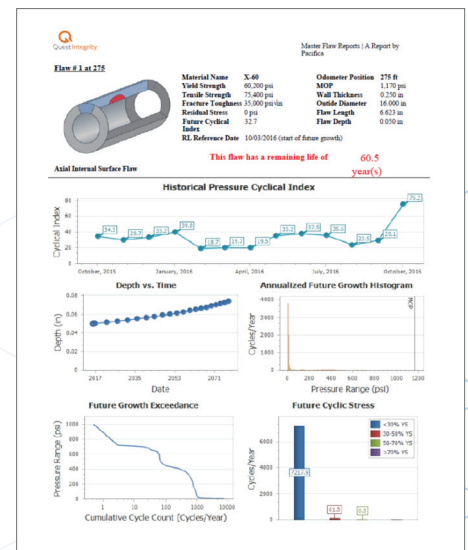
Automated remaining life monitoring



Remaining life assessment



Infer flaw sizes from hydrostatic test



Detailed reporting options