

Title: API 579-1/ASME FFS-1 Fitness-For-Service

Potential PDH: 24

Code: BTT008-01

Description:

This course provides theory and practical application of API-579/ASME FFS-1 methods for assessing the acceptability of equipment with various kinds of flaws. The Fitness-for-Service training provides direction for performing FFS assessments using procedures specifically prepared for pressurized equipment. During the training, example problems will be solved using hand calculations supplemented with BechtFFS software.

Learning objectives:

- API 579-1/ASME FFS-1 2021 is used to assess the fitness for service of pressure equipment and storage tanks that have exhausted their intended design condition.
- Each part of the API579 standard relating to fracture, corrosion, and mechanical and in-service damage will be covered with the step-by-step procedures explained and tested on hands-on examples and case studies.
- The procedure also offers ways of rerating the pressure equipment or re-evaluating the maximum allowable fill height for storage tanks. This rerating is offered with the calculation of the Remaining Strength Factor (RSF). The calculation of RSF will be covered in detail for the relevant parts of the standard.
- The course will also cover the logic in the understanding of the way API579 is organized, which will help make the standard more approachable.
- Review of relevant damage mechanics and the way remaining life assessments can be carried out.

Outline:

- Introduction to FFS and API-579
- Factors influence brittle fracture and Level 1 and 2 Brittle fracture assessment
- Assessment of crack-like flaws, Level 1 and Level 2 Failure Assessment Diagram
- Fatigue assessment including screening methods and fatigue crack growth
- General metal loss assessment (Local metal loss vs general thinning)
- Local metal loss assessment
- Pitting assessment, pit measurements, and Level 1 assessment method:
- Assessment of blisters and hydrogen damage
- Misalignment and weld distortion
- Lamination
- High temperature creep assessment (Level 1 and Level 2)
- Dent and gouge assessment

Hand-calculated examples will be carried out in each section and options for using BechtFFS software as a comparison with the hand calculations.

Who Should Attend:

- Integrity Assessment Engineers

Course Content

- Maintenance Engineers
- Specialists, Site Inspection Engineers
- Piping Engineers
- Mechanical Engineers
- Plant Engineers

Instructor:

Dr. Annette Karstensen is a registered licensed engineer in Australia and United Kingdom with more than 25 years' experience in Structural Integrity and Fitness for Service. She has extensive experience with solving integrity issues covering assessments of engineering components relating to syngas plants, petrochemical plants and power facilities. Her main expertise is the application of crack assessment and remaining life assessment procedures such as API 579 and BS7910 to develop allowable crack sizes and/or time for failure for components subjected to cyclic loads or high temperature exposure. Prior to joining Becht, Annette worked 18 years with Quest Integrity as Structural Integrity Manager in Asia Pacific and 7 years with TWI in the UK predominantly focused on projects relating to Structural Integrity. The last 12 years Annette has conducted more than forty API 579 training courses in Asia, Australia, New Zealand, and Europe.