Fitness For Services (FFS Study)

For Onshore & Offshore Installations

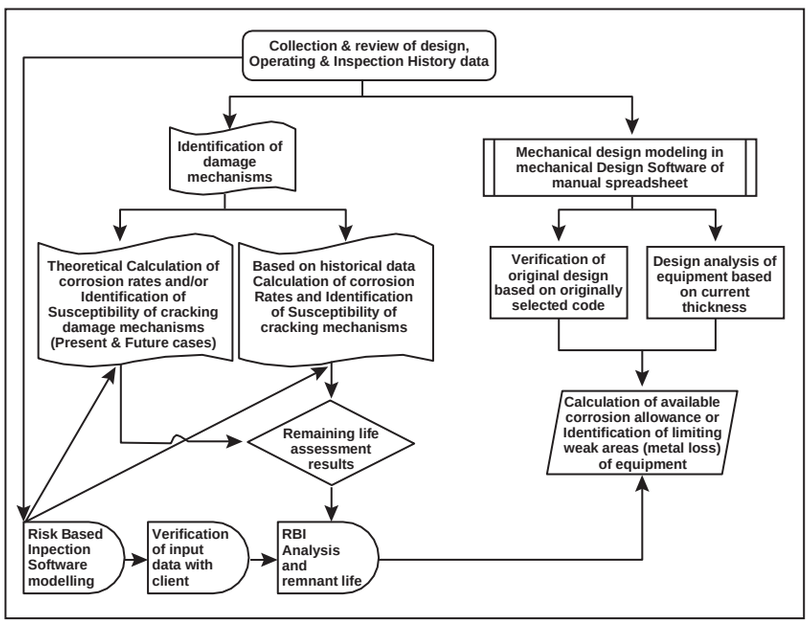
Fitness-for-service evaluations are performed on pressure equipment (pressure vessels, heat exchangers, boilers, storage tanks, piping etc.) for a wide variety of flaws. Below are some common flaws requiring FFS evaluations:

- Generalized Corrosion
- Localized Corrosion / Corrosion under insulation
- Pitting Corrosion
- Blisters and Laminations
- Bulging
- Dents
- Cracks
- Fire Damage

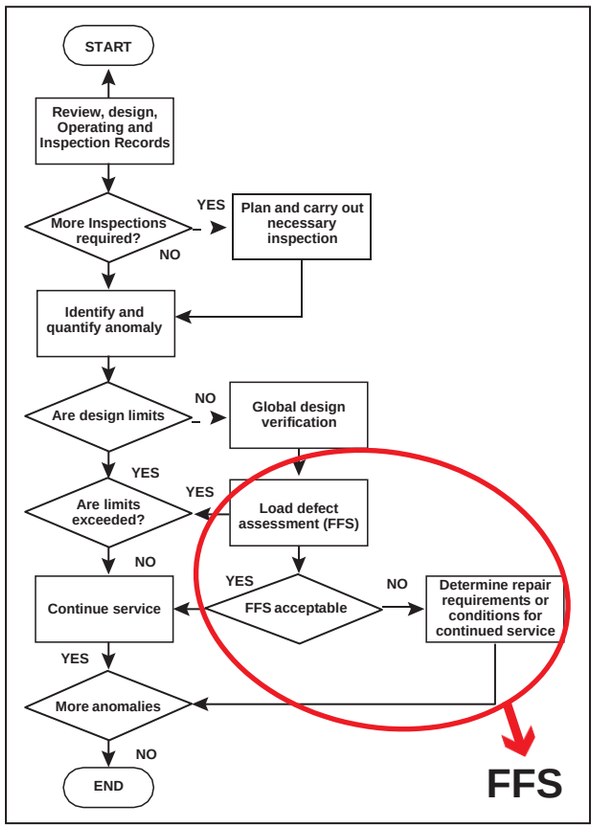
VELOSI's FFS Methodology:

VELOSI performs fitness-for-service evaluations on pressure vessels, heat exchangers, boilers, storage tanks, piping and other specialized equipment to ensure the structural integrity of equipment for the intended design parameters which are usually level-1, 2 & 3. This evaluation is based on API-579-1 /ASME FFS-1, JUNE 5, 2007 (fitness for service) and other applicable codes, standards and specifications.

Our assessment of fixed equipment can improve your plant's reliability, saving time and money.



Concept for Remnant life Assessment



Condition Assessment/FFS

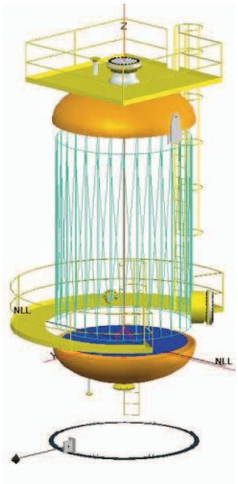
A full range of the FFS experience

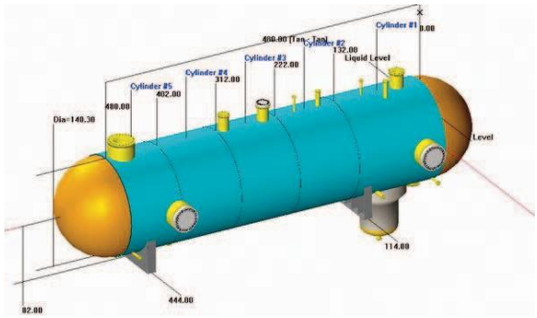
VELOSI has evaluated all types of damage that can occur in the refining and petrochemical industries on a wide variety of pressure vessels, process piping, transmission pipelines, storage tanks, heat exchangers, heaters (casing, tubes and stacks), and mechanical components of specialized equipment. Our experience includes the assessment of the following damage mechanisms:

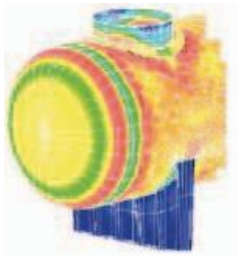
- Brittle fracture, including tank hydrotest exemption
- General and locally corroded areas, including pitting
- Laminations and blisters, HIC and SOHIC damage
- Bulges and out-of-roundness
- Crack-like flaws, including stress corrosion and fatigue crack growth
- Dents, gouges and dent-gouge combinations
- Evaluation of hot spots
- Heater tube remaining life
- Evaluation of high temperature equipment for creep and creep-fatigue damage
- Fire damage
- High Temperature Hydrogen Attack (HTHA)
- Thermal and mechanical fatigue
- Fatigue evaluation of welded joints
- Ring joint flange cracking
- Tank shell and edge settlement
- Local PWHT of weld repairs
- Modeling of weld residual stresses and incorporation into crack-like flaw assessments
- Wind-induced vibration of towers, stacks and pipelines
- Mechanical vibration
- Blast loading and other dynamic effects
- Hot tap thermal analysis

Why owners choose VELOSI for FFS

- Recognized Leader
- Technical Excellence
- Sophisticated Servicing
- Practical Experience
- Focus on your profitability







Pressure Vessel
Saddle ZICK Analysis

Nozzle FE Analysis
against Load