

Training Title

API 579 - Fitness for Service

Training Duration

5 days

Training Dates & Venue

REF					
ME044	API 579 - Fitness for Service	5	25-29 March	\$4,250	Dubai, UAE

Training will be held at any of the 5 star hotels. Exact venue will be informed once confirmed.

Training Fees

- **4,250 US\$ per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch**

Training Certificate

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

TRAINING OVERVIEW

INTRODUCTION

Pipeline & Piping systems are like arteries and veins. They carry the lifeblood of modern civilization. Piping is a major expenditure in the design and construction of industrial, refinery, petrochemical, or power-generating plants when one considers engineering costs, material costs, and fabrication and field labor costs.

Although pipelines are protected by many methods such as coating and cathodic protection, pipe failures are likely to take place due to some forms of corrosion, erosion or fracture. Therefore, good understanding of these damage-causing forms and methods to control and repair them will have good impact on the working life of piping systems.

This course deals with the main topics related to the various defects which piping systems can experience such as Foundations of Fitness-for-Service Assessment, Corrosion and Fracture, Pitting and Mechanical Damage, Fracture and Crack-Like Flaws and Applications.

WHO SHOULD ATTEND?

- **Pipeline and piping engineering and design personnel wishing to expand their knowledge of piping**
- **Engineers, designers, operators and draftspersons in the piping field.**
- **Practicing engineers and designers who may have experience in related disciplines and wish to expand their knowledge of the piping area.**

TRAINING METHODOLOGY

A combination of class lectures, case studies or examples and group discussion. The course will be intensive but practical and highly interactive. Participants are encouraged to participate actively and to ask questions especially pertaining to specific problems. At the end of the session there will be a question-and-answer session to allow participants enough time to seek answers to grey areas and to seek clarifications to any misconceptions or problems they may have regarding the subject concerned to the course. There will also be some indoor experiential activities to enhance learning.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussions

Topics Covered

DAY 1

FOUNDATIONS OF FITNESS-FOR-SERVICE ASSESSMENT

- ☐☐ Introduction
- ☐☐ Terminology
- ☐☐ Overview of API and ASME codes and standards with historical background
- ☐☐ Overview of API 579 contents, objectives and applications
- ☐☐ How to apply API 579 for cost-effective run-or-repair decisions
- ☐☐ Degradation and Degradation Mechanisms
- ☐☐ Concepts of Fitness-for-Service (FFS)
- ☐☐ Fitness-for-Service assessment procedure
- ☐☐ Degradation and FFS
- ☐☐ ASME code rules and design equations tanks, vessels, piping and pipelines
- ☐☐ Inspection techniques for tanks, vessels, piping and pipelines
- ☐☐ Difference between flaw acceptance criteria for new construction and inservice equipment
- ☐☐ Case history study and practical exercises

DAY 2

CORROSION AND FRACTURE

- ☐☐ API 579 Chapter 3 assessment of existing equipment for brittle fracture
- ☐☐ Understanding and classifying corrosion mechanisms
- ☐☐ API 579 Chapter 4 Assessment of general metal loss
- ☐☐ API 579 Chapter 5 Assessment of Local Metal Loss
- ☐☐ *Brief: ASME B31G Assessment of local metal loss in pipelines*
- ☐☐ *Brief: RSTRENG Assessment of local metal loss*
- ☐☐ Repair techniques for general and local metal loss
- ☐☐ Case history study and practical exercises

DAY 3

PITTING AND MECHANICAL DAMAGE

- ☐☐ API 579 Chapter 6 Assessment of pitting corrosion
- ☐☐ API 579 Chapter 7 Assessment of blisters and laminations
- ☐☐ API 579 Chapter 8 Assessment of weld misalignment and shell distortions

- ☐☐ Brief: ASME B31.4 and B31.8 Assessment of dents and gouges -
- ☐☐ Brief: Future ASME B31 rules for assessment of pipelines defects -
- ☐☐ Repair techniques for pitting corrosion
- ☐☐ Repair techniques for dents, gouges and mechanical damage
- ☐☐ Case history study and practical exercises

DAY 4

FRACTURE AND CRACK-LIKE FLAWS

- ☐☐ Understanding crack-like flaws in base material and welds
- ☐☐ Introduction to fracture mechanics
- ☐☐ Reference stress solutions
- ☐☐ Understanding and estimating residual stresses
- ☐☐ API 579 Chapter 9 Assessment of crack-like flaws
- ☐☐ Fatigue mechanisms, remaining life and fatigue failure
- ☐☐ Repair techniques for crack-like flaws
- ☐☐ Report Writing
- ☐☐ Case history study and practical exercises

DAY 5

APPLICATIONS

- ☐☐ Selection of 3 Rs i.e. Re-rate, Repair and Replace
- ☐☐ Approaches to Evaluations and Decision Making
- ☐☐ Exercise 1 – Brittle fracture example
- ☐☐ Exercise 2 – General corrosion example
- ☐☐ Exercise 3 – Local corrosion example
- ☐☐ Exercise 4 – Pitting corrosion example
- ☐☐ Exercise 5 – Lamination defect example
- ☐☐ Exercise 6 – Pipeline dent example
- ☐☐ Exercise 7 – Crack flaw in weldment
- ☐☐ Question / Answer Session
- ☐☐ General Group Discussion
- ☐☐ Course Wrap-up
 - Course Summary
 - Course Evaluation
 - Distribution of Material

Case Studies, Last Day Review, Discussions & Pre & Post Assessments will be carried out.