

TRAINING TITLE

API 579 – Fitness for Service

TRAINING DURATION

5 days

TRAINING VENUE AND DATES

ME046	API 579 – Fitness for Service	5 days	10-14 June 2024	\$5,500	Dubai, UAE
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In any of the 5-star hotels. The exact venue will be informed soon.

TRAINING FEES

\$5,500 per participant includes Training Materials/Handouts, Tea/Coffee breaks, Refreshments, and International Buffet Lunch.

TRAINING CERTIFICATE

DEFINE Management Consultancy & Training Certificate of course completion will be issued to all attendees with valid approved Logo of AACE (Certification Preparatory Training by AACE).

TRAINING INTRODUCTION/DESCRIPTION

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 highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivate everybody find the right answers. You will also be encouraged to raise

your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

All presentations are made in excellent colourful power point. Very useful Course Materials will be given.

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

COURSE OUTLINE:

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

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NOTE:

- **Pre-& Post Tests will be conducted**
- **Post-tests will be with minimum pass marks**
- **80% of attendance is a must to receive a Certificate**
- **Case Studies, Individual and group Exercises, Project works (making into groups), Role plays, Group Discussions, Last Day Review & Assessments will be carried out as applicable.**