

# (ME#27) ADVANCE STORAGE TANK “API 650 & API 653 DESIGN, MAINTENANCE AND INSPECTION”

## COURSE OVERVIEW

The course will highlight various common storage facilities for liquid and gaseous hydrocarbons and explain their configuration, tank farm requirements, design operation and maintenance aspects. Among topics that will be discussed; types of conventional storage tanks, design aspects and design codes (in compliance with API650, EN14015, BSI) operational aspects, tank maintenance, inspection and engineering (in compliance with API65 and EEMUA159) introduction in Risk Based Inspection (RBI) related to preventive maintenance, maintenance work (including tank jacking based on international and company standards – API/EEMUA/DEP's) and safety aspects. The course lectures will be by means of presentations material, classical discussions, group exercises, case studies and video material.

## WHO SHOULD ATTEND

The tank designers with academic and industry engineering background are the most get benefit of the course whereas the course also suitable for storage tank operators, inspectors, engineers and managers involved with storage tank Maintenance / design / modifications will gain the solid knowledge as well.

## LEARNING APPROACH

A 5-days course which is designed to provide intensive instruction and guidance on understanding Code requirements. The instructor will be available following each day's session to provide participants with further opportunity for discussion and consideration of specific problems. Each session will be conducted in lectures, discussion and problem solving format. Upon completion of the course, you will be able to:

- Distinguish function of structural parts of and fittings to conventional storage tanks
- Explain design and operational aspects of storage tanks
- Set up inspection and maintenance programmes / schedules
- Differentiate maintenance methods (condition/repair)
- Define the maintenance scope
- How to read Inspection Reports properly

## INTERESTING TOPICS COVERED DURING THE COURSE:

- Review of codes requirements, structural design, materials, fabrication, and erection for new storage tanks
- Tank Shell Design (1-foot method, Variable design point method)
- Tank Roof Design
- Tank bottom layout design
- Tank internal structural members design
- Introduction to Finite Element modeling of storage tanks
- Tank stress evaluation
- Introduction to Fit-For-Service API 579
- Shell opening and Nozzle design
- Corrosion evaluation and tank life prediction calculation
- Elevated temperature tanks design
- Design and construction of tank foundation
- External floating roof, Seismic loading analysis
- Tanks with internal pressure
- Inspection of Storage Tanks, NDE tests
- Risk based Inspection Planning
- Tank repairs
- Tank settlement criteria, measurement, and evaluation
- Tank lifting methods and stress induced on tank shell, roof and welds
- Introduction to Brittle Fracture Mechanics
- Tank ventilation requirements
- Tank maintenance and repair management (Tank program)