

# PIPELINES DESIGN INSPECTION & TESTING



**MUE267**  
**Mechanical &**  
**Utility**  
**Engineering**

## **COURSE TITLE**

# **PIPELINES DESIGN INSPECTION & TESTING**

## **COURSE DATE/ VENUE**

19<sup>th</sup>-23<sup>rd</sup> May 25'

London, UK

## **COURSE REFERENCE**

MUE267

## **COURSE DURATION**

05 Days

## **DISCIPLINE**

Mechanical & Utility Engineering

## **COURSE INTRODUCTION**

The course will review the basic requirements of the ASME B31 Code for Pressure Piping. Topics include: design conditions, pipe sizing, pressure design, flexibility analysis, material, fabrication, examination, testing, and mechanical integrity for existing piping systems, as provided in API 570 Piping Inspection Code.

## **COURSE OBJECTIVE**

### **Upon successful completion of this course, the delegates will be able to:**

- ✓ Provide a complete and up-to-date overview of the area of Piping Technology
- ✓ Explain the design, fabrication, examination and testing requirements of ASME B31
- ✓ Familiarize the related standards for inspection and repair of piping systems that have been in service, as provided in API 570, Piping Inspection Code
- ✓ Explain the physical phenomena which affect the operation, durability of piping systems

- ✓ Calculate the pipe schedule, and pipe size that serve certain application
- ✓ Discuss about the different methods of pipe inspection and testing based on related Codes and Standards
- ✓ Recognize the different methods of checking pipe flexibility

### **COURSE AUDIENCE**

Engineers and Technicians of mechanical, and chemical engineering background will benefit largely from this workshop. Maintenance, Operation, inspection, and R and D People should also attend this course.

### **COURSE CONTENT**

Basics of Piping

Pipe Dimensions and Schedule number

Pipe Manufacturing Methods

    Welded and Seamless Pipes

Pipe Drawing Symbols

Types of pipes – application wise

    Standard pipe

    Pressure pipe

    Line pipe

Piping Materials

Chemical properties

Mechanical properties

Physical properties

Property stability

Classification of steel

Steel heat treating practices

Aging of properties

Piping Codes and Standards

ASME Boiler and Pressure Vessel Code

ASME B31: Code for pressure piping

API Specifications (Spec), Recommended Practices (RP), and Standards (Std.)

Spec. 5L-90: Specification for Line Pipe

American Welding Society - AWS Welding Handbook

Pipeline Design

1. Design Parameters

Maximum Operating Pressure

Flow Rate of Oil or Gas

Delivery Pressure

Pressure Drop

Pumping Power

2. Failure Theories

3. Design Criteria

Maximum Allowable Stress

Maximum Allowable Pressure

Construction Factor

4. Steel Selection

5. Pipe Sizing

Pipe Diameter

6. Pipe thickness calculation

Pipe Schedule

Pump and Compressor Stations

Originating and booster Stations

Pump Selection

Parallel and Series Operation

Pipeline Installation

Off-shore and on-shore installations

Welding Techniques

Welding Processes

Welding Procedures

Weld Passes



Inspection and Testing

Visual Inspection

Non-Destructive Testing

Class designation

Hydrostatic testing

Pigging for Cleaning and Monitoring

Types of Pigs

Monitoring Internal Corrosion

Pipe Repair

Buried pipelines

Corrosion and Cathodic Protection

Pipe Coating

Stress Analysis

Flexibility Analysis Methods

Flexibility Analysis Demonstration

Equipment Load Limits

Cold Spring

Elastic Follow-up

Fluid Service Requirements

### **COURSE CERTIFICATE**

**TRAINIT ACADEMY** will award an internationally recognized certificate(s) for each delegate on completion of training.

### **COURSE FEES**

£5,500 per Delegate. This rate includes participant's manual, Hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

### **COURSE METHODOLOGY**

The training course will be highly participatory and the course leader will present, guide and facilitate learning, using a range of methods including formal presentation, discussions, sector-specific case studies and exercises. Above all, the course leader will make extensive use of real-life case examples in which he has been personally involved. 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.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Case studies & Practical Exercises
- 10% Role Play
- 10% Videos, Software or Simulators (as applicable) & General Discussions