PIPELINES DESIGN INSPECTION & TESTING

TRAINIT ACADEMY

MUE267
Mechanical & Utility Engineering

COURSE TITLE

PIPELINES DESIGN INSPECTION & TESTING

COURSE DATE/ VENUE

23 – 27 November 2020

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

$6,150 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