OBJECTIVES

- The Participant will gain an in-depth knowledge of pipe and fitting material specifications, fabrication process and influence on mechanical properties of strength and toughness, to help in material selection and failure analysis.
- The participant will understand the technical background to the design equations, and their application to the design of piping systems and pipelines. The course addresses rules of good practice in layout of piping systems for reliable operation.
- The participant will gain a practical understanding of piping and pipeline corrosion mechanisms, how to recognize them, classify them and resolve them.
- The participant will be introduced to the latest techniques and research in piping and pipeline integrity to analyze a degraded condition due to either corrosion or mechanical damage.
- The participants will review case histories of field failures and will evaluate their cause and solutions to avoid recurrence.

WHO SHOULD ATTEND
The course is intended for engineers, maintenance technicians and inspectors responsible for the design, integrity, maintenance and repair of pipelines and piping systems.

COURSE OUTLINE:
Introduction, Material and Inspections

1. Introduction
   - History of Pipeline Technology
   - ASME Codes and Standards
   - API Standards
   - NACA, MSS-SP, PFI Standards
   - Fundamentals of Maintenance and Integrity

2. Materials
   - API 5Land ASTM Specifications

3. Welding
   - Practical Aspects of Metallurgical Properties
   - Chemistry and Material Test Reports
   - Fabrication of Line Pipe and Forged Fittings
   - Mechanical Properties: Strength and Toughness

4. Integrity for Sustained Loads
   1. Operating and Design Pressure
      - How to Establish the System Design Pressure
      - Introduction to Pressure Relief Valves
      - Pipe and Pipeline Sizing Formula with Applications
   2. Layout and Support
      - Rules of Good Practice in layout
      - Pump and Compressor Piping
      - How to Support a piping System
      - Review of Support Types and their Application
      - Lesson learned from Poor Support Practices
   3. Temperature Effects
      - Flexibility Layout Analysis
      - Temperature Transients and Fatigue Damage
   4. Vibration In Service
      - Mechanical and Hydraulic Induced Vibration in Piping
      - How to Measure Analyze Resolve Vibration

5. Integrity for Occasional Loads
   1. Pressure Transients
      - Recognizing and Solving Liquid Hammer
      - Pump Station Transients
      - Study of Pipeline Failures Due to Transient
      - Two-Phase Liquid –Vapor Transients
      - Two-Phase Liquid-Gas Transients
      - Gas Discharge Transients
   2. Buried Pipe
      - Soil Loads
      - Surface Loads
Piping System & Pipeline Integrity With an Application to ASME B31 Codes & API579 Standards

March, 26th – 29th, 2012 Golden Flower Hotel Bandung

By. Dr. Ir. Dedy Lazuardy, DEA & Team

- Expansion of Buried Pipe
- Soil settlement
- n-service Movement of Pipeline

3. Pipeline Failures
- Study Case Histories
- Understanding Why Failures Occur and How to Avoid Them

Piping System Maintenance
1. Flange and Mechanical Joints
- Overview of Different Types of Flanges and Application
- Gasket of Bolt Selection
- Causes of Flange Leaks and How to Resolve
- Case Study of Flange Failure
- Assembly of Flange Joints and Leak Tightness

2. Pressure and Leak Testing
- The Difference Between Leak Testing and Pressure Testing
- Review of Difference Testing Techniques
- The Purpose of Hydro test
- How to Conduct a Hydro test
- Pipeline and Piping Systems Testing
- Pneumatic Testing

3. Repair Techniques
- The New ASME Repair Standards
- The Fundamentals of Repair package
- Pipe and Component Replacement
- Grinding and welding
- Welded Sleeve: Type A and B
- Flush Patch Repair
- Fillet Welded Patch
- Weld Overlay Repair
- Mechanical Clamp with Sealant Injection
- Mechanical Clamp without Sealant Injection
- Insertion Liners
- Painted and Brushed Liners
- Pipe Coating

Corrosion, Assessment and Repairs
1. Corrosion
- Introduction to Practical Corrosion
- Classification of Corrosion Mechanisms
- General wall Thinning
- Local Corrosion: Galvanic Effects
- Crevice corrosion
- Pitting Corrosion
- Environmental Effects
- Hydrogen and H2s Effects
- Microbiological Corrosion
- Corrosion Protection
- Cathodic protection Overview

2. Mechanical damage To Pipelines
- Dents and Gouges
- Ripples and buckles

3. Fitness For Service Overview
- Application of ASME B31G to Determine Remaining Life
- Application of 579 to General and Local Corrosion
- Analysis of Dents and Gouges in Pipelines
- How to Evaluate cracks in piping and Pipelines

ABOUT INSTRUCTOR'S TEAM LEADER:

DR. Ir. Dedy Lazuardy, DEA

Note: - venue could be changed with advance notification
Piping System & Pipeline Integrity With an Application to ASME B31 Codes & API 579 Standards

March, 26th – 29th, 2012 Golden Flower Hotel Bandung

By. Dr. Ir. Dedy Lazuardy, DEA & Team

- course will be delivered in Bahasa Indonesia

**Investment fee per delegate:**
Rp. 8.250.000, net

Includes: training materials, bag, stationeries, 2x coffee breaks, luncheon, and gimmick
Excludes: board and lodging, and all statutory taxes.

Payment could be by cash, cheque, or transferred to:
Bank Mandiri, KK Gatot Subroto Bandung
Account No. 131 000 701674 6
Cc. PT. Surya Daya Mandiri

How to register?
Please, contact Lucky at PT. Surya Daya Mandiri,
phone 022-70815849 / 7330052
fax :022- 7308091
e-mail : training@ptsdm.com