



## Pipeline Inspection, Maintenance, and Integrity

18 - 22 Nov 2024  
Vienna (Austria)



# Pipeline Inspection, Maintenance, and Integrity

**Ref.:** 15382\_311930 **Date:** 18 - 22 Nov 2024 **Location:** Vienna (Austria) **Fees:** 5200 **Euro**

## Introduction:

Pipeline systems for the oil and gas industry play an important role in modern industrial operations. The purpose of this training course is to present the basic characteristics of efficient operation of pipelines in various engineering applications.

This training course will cover the interaction of pipelines with flow moving equipment, i.e. pumps and compressors, and technical characteristics of operation of pump and compressor stations.

The participants will be introduced to the main points of inspection and testing according to relevant API standards. They will also develop familiarity with methods of cleaning and other maintenance activities, including necessary repairs as prevention of failures

## Targeted Groups:

- Process, chemical and mechanical engineers working in petrochemical and process industry, including oil refineries and gas production companies where operation and maintenance of pipelines are high importance
- Operation, technical service and maintenance professionals from various processing plants involved in everyday operation, control, inspection and maintenance of pipelines
- Engineers and consultants dealing with the planning of new production lines and retrofitting plants and introducing new technologies
- Technical professionals responsible for the maintenance and repair of equipment

## Course Objectives:

At the end of this course the participants will be able to:

- Identify basic principles of safe operation & efficient maintenance of pipelines for various industrial applications
- Develop deep understanding & familiarity with the practical aspects of operation and maintenance activities
- Illustrate the concepts discussed and be provided with the necessary experience in applying them
- Use & follow the guidelines & best industrial practices related to operation, control, inspection & testing of pipelines

## Targeted Competencies:

- Main aspects of pipeline efficient and safe operation
- Approaches to pipeline flow control and measurements
- Processes of material degradation due to aging and workload
- Best practices for pipeline cleaning and maintenance
- Inspection procedures and estimating remaining life of equipment

## **Course Content:**

### **Unit 1: Overview of Technical Characteristics of Pipelines:**

- Selection & sizing of pipelines: flow rate, MAWP, pumping power: ASME B31.3
- Selection of pipeline material and interaction with working fluid
- Operation of pump and compressor stations
- Pipeline flow control and measurements: custody transfer

### **Unit 2: Operation & Material Degradation:**

- Pipeline material aging: erosion, corrosion & stress corrosion cracking
- Corrosion Direct Assessment: External ECDA and internal ICDA Methods
- Cathodic protection, coating and other technologies: outer & inner surface
- Metal loss inline inspection ILI and smart pigging NDT monitoring
- Pipeline fatigue, cracks, seam defects and ruptures

### **Unit 3: Operation & Safety Management:**

- Safety Instrumentation, Control Valves and Other Safety Accessories
- Transient operation and effects and water hammer
- Pipeline failure prevention & root cause analysis
- Leak detection methods LDAR and patrolling & surveillance: SCADA
- Inspection RBI, Hydrostatic test methodology

### **Unit 4: Maintenance Technologies:**

- Pipeline maintenance & cleaning technologies: pipeline reconditioning
- Monitoring of pipeline vibrations and support integrity
- Repair technologies: welding of composite sleeves and segment replacements
- Maintenance of valves, fittings and accessories
- Valve repair: hot tapping, temporary plugging stopple

### **Unit 5: Testing & Monitoring in Operation:**

- Hydrostatic testing: allowable operating pressure and hydrostatic test pressure
- Reliability and availability of pipelines in operation
- Risk-based inspection RBI
- Fitness for Service FFS
- The estimate of remaining life of equipment

### **Unit 6: Environmental Impact & Sustainability:**

- Assessment of environmental impact during pipeline construction, operation, and decommissioning phases
- Implementation of sustainable practices in pipeline management, such as minimizing carbon footprint and reducing emissions
- Compliance with environmental regulations and standards governing pipeline operations
- Integration of renewable energy sources and green technologies in pipeline infrastructure
- Monitoring and mitigation strategies for environmental risks, including spills, habitat disruption, and water contamination

## **Unit 7: Advanced Technologies & Innovations:**

- Exploration of cutting-edge technologies shaping the future of pipeline engineering, such as robotics, drones, and artificial intelligence
- Utilization of remote sensing and monitoring systems for real-time data collection and analysis
- Development of smart pipelines equipped with sensors for predictive maintenance and anomaly detection
- Integration of blockchain technology for enhanced security and transparency in pipeline operations and transactions
- Adoption of advanced materials and coatings for improved durability, corrosion resistance, and leak prevention



**Registration form on the :  
Pipeline Inspection, Maintenance, and Integrity**

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Complete & Mail or fax to Mercury Training Center at the address given below

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