€TRAINING

Pipeline Operations and Maintenance

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Introduction:

This training program is designed to equip participants with the knowledge and skills required to effectively manage and maintain pipeline infrastructure. It is tailored to optimize pipeline efficiency, reliability, and safety standards, ensuring the seamless operation of critical infrastructure.

Program Objectives:

At the end of this program, 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 Audience:

- 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 of high importance
- The operation, technical service, and maintenance professionals from various processing plants involved in the 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

Program Outlines:

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.