



FE084: Pipeline Operations & Maintenance: *Equipment, Protection and Inspection*



Training Description:

Pipeline systems for oil and gas industry play important role in modern industrial operations. The purpose of this intensive training course is to present essential 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 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. The course will include several workshops with real problems from industrial practice which will enable discussions and exchange of experiences.

This training course will highlight:

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

Training Objectives:

By the end of the training, 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 necessary experience in applying them
- ✓ Use & follow the guidelines & best industrial practices related to operation, control, inspection & testing of pipelines

Training Designed for:

This course is intended for 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 planning of new production lines and retrofitting plants and introducing new technologies, Technical professionals responsible for maintenance and repair of equipment.

Training Program:

DAY ONE:

- ❖ Pre-Test
- ❖ **Overview of Technical Characteristics of Pipelines**
 - Overview of main elements of oil and gas pipeline systems





- 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
- Workshop: Examples and solutions

DAY TWO:

❖ Operation & Material Degradation

- Pipeline material ageing: 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
- Workshop: Examples and solutions

DAY THREE:

❖ 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
- Workshop: Examples and Solutions

DAY FOUR:

❖ 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)
- Workshop: Examples and solutions

DAY FIVE:

❖ 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)
- Estimate of remaining life of equipment

❖ Course Conclusion

❖ Final Examination and EVALUATION

Training Requirement:

“Hand’s on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”





This training course is available upon request in English or Arabic. Content, location and duration can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Methodology:

The emphasis in the training course will be on the explanation of all technical phenomena and providing answers to problems that are encountered in everyday industrial practice related to installation, operation and maintenance, as well as repair and alterations of pipeline systems. Each learning point will be reinforced with practical examples. There will be ample opportunities for active discussion and sharing professional experiences and exchange that will help solidify the gained knowledge.

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures, Concepts, Role Play
- 30% Workshops & Work Presentations, Techniques
- 20% Based on Case Studies & Practical Exercises
- 20% Videos, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

As per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 16:00	Last Session

For training registrations or in-house enquiries, please contact:

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Training & Career Development Department

