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# FE084:
# Pipeline Operation & Maintenance

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## Training Description:

This intensive training course is designed to provide participants with an up-to-date overview of pipeline operation and maintenance. It fills the gap from commissioning to the operation and maintenance of pipeline systems, covering pipeline, metering, pumping, and compression.

It is designed to impart know-how to operation and maintenance personnel while providing an in-depth coverage of the subjects that pipelines often face in the assessment of operation and maintenance tasks and techniques.

The course describes pipeline systems' operation and sequentially the steps involved in problem assessment of pipeline and appurtenances as well as the required ensuing maintenance works.

Pipeline reliability/availability assessment is also presented in the course. This provides a rational step in assessing pipeline risks, reliability, and hence availability from a technical as well as business point of view.

The course will cover the elements of pipeline operation and maintenance; the operation and maintenance organization; operating the pipeline system; applying pipeline system maintenance, pipeline segment replacement, pipeline protection, corrosion control and pipeline welding techniques; the valve standards/applicable codes; the types for pipeline applications and valve operators; and the automatic line-break controls, side/takeoff valves, station tie-ins and valve assemblies.

At the end of the course, the participants will be able to identify the valve automation for liquid pipelines; carryout hydrocarbon measurement; recognize the purposes of field measurement; operate and maintain pump and compressor station; implement automation and control of pipelines, system architecture, SCADA system, advanced applications, liquids measurement and accounting; and employ pipeline system operational reliability/availability assessment.

## Training Objectives:

By the end of the training, participants will be able to:

- ✓ Apply systematic techniques on pipeline operation and maintenance
- ✓ Identify the elements of pipeline operation and maintenance covering the trends in pipeline system development and the pipeline transmission systems
- ✓ Discuss the operation and maintenance organization including its general functions in a pipeline organization, factors that influence organizational structure, organizational structure of a pipeline, codes, policies and procedures and asset management
- ✓ Operate pipeline system through applying pipeline operational planning, gas pipeline transportation, liquid transportation and special operational activities/issues
- ✓ Employ pipeline system maintenance, right-of-way and site maintenance, pipeline pigging and pipeline repair
- ✓ Illustrate pipeline segment replacement, pipeline protection/corrosion control and pipeline welding techniques
- ✓ Recognize valve standards/applicable codes, definition and types for pipeline applications and valve operators
- ✓ Determine automatic line-break controls, side/takeoff valves, station tie-ins and valve assemblies

- ✓ Describe valve automation for liquid pipelines, valve characteristics–pressure drop, valve application ranking and identification and valve maintenance requirement
- ✓ Carryout hydrocarbon measurement and discuss the purposes of field measurement, the primary, secondary and tertiary measurement devices and systems, fluid property measurement and facility design
- ✓ Operate and maintain pump and compressor station in a professional manner
- ✓ Implement automation and control of pipelines, system architecture, SCADA system, advanced applications, liquids measurement and accounting
- ✓ Employ pipeline system operational reliability/availability assessment and identify failure data for pipeline systems components

## Training Designed for:

This course is intended for pipeline operation engineers, pipeline maintenance engineers, maintenance staff and inspectors responsible for the integrity, maintenance, repair and operation of pipelines and piping systems.

## 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".

Practical sessions will be organized during the course for participants to practice the theory learnt. Participants will be provided with an opportunity to carryout various exercises using one of our state-of-the-art simulators "Valve Sizing Software", "Valve Software 3.0", "Valvestar 7.2 Software", "PRV2SIZE Software", "Gas Ultrasonic Meter (USM) Sizing Tool Software", "Liquid Turbine Meter and Control Valve Sizing Tool Software", "Liquid Ultrasonic Meter Sizing Tool Software", "Orifice Flow Calculator Software", "Centrifugal Pumps and Troubleshooting Guide 3.0", "SIM 3300 Centrifugal Compressor Simulator", "CBT on Compressors" and "HMI SCADA".

Contents 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 Program:

*DAY ONE:*

- ❖ Elements of Pipeline Operation & Maintenance
  - Background & History, Trends in Pipeline System Development
  - Pipeline Transmission Systems, Operation & Maintenance Elements
- ❖ Operation & Maintenance Organization
  - General Functions in a Pipeline Organization, Factors that Influence Organizational Structure
  - Organizational Structure of a Pipeline, Codes, Policies & Procedures, Asset Management
- ❖ Recap

*DAY TWO:*

- ❖ Overview of Pipeline System Operation

- Pipeline Operational Planning, Gas Pipeline Transportation Liquid Transportation, Special Operation Activities /Issues

❖ Pipeline System Maintenance

- Overview of Pipeline Maintenance Activities, Right-of-way & Site Maintenance, Pipeline Pigging, Pipeline Repair, Pipeline Segment Replacement, Pipeline Protection /Corrosion Control, Pipeline Welding Techniques & Branch Connections

❖ Recap

*DAY THREE:*

❖ Valves & Operators

- General & History, Valve Standards/Applicable Codes, Definition & Types for Pipeline Applications, Valve Operators, Automatic Line-Break Controls, Side/Take off Valves, Station Tie-ins, Valve Assemblies, Valve Automation for Liquid Pipelines, Valve Characteristics–Pressure Drop, Valve Application Ranking & Identification, Valve Maintenance Requirement

❖ Hydrocarbon Measurement

- Scope, Definitions, Purposes of Field Measurement, Primary Measurement, Devices Secondary Measurement Device, Tertiary Measurement Devices & Systems, Fluid Property Measurement, Facility Design, Operations, Standards

❖ Recap

*DAY FOUR:*

❖ Pump & Compressor Station Operation

- Design of Pump & Compressor Stations, Compressor Station Systems, Pump Station Systems, Operation of Gas Turbines & Auxiliary System, Operation of Reciprocating Engines & Auxiliary Systems, Operation of Electric Drivers, Operation of Centrifugal Compressors & Auxiliary Systems, Operation of Reciprocating Compressors & Auxiliary Systems, Operation of Pumps & Auxiliary Systems

❖ Pump & Compressor Station Maintenance

- Site Maintenance of Pump & Compressor Stations, Oil Terminals, Gas Turbine Maintenance, Reciprocating Engine Maintenance, Electric Driver Maintenance Centrifugal Compressor Maintenance, Reciprocating Compressor Maintenance, Pump Maintenance, Condition Monitoring, Troubleshooting & Failure Investigation

❖ Practical Sessions

- This hands-on, highly-interactive training includes real-life case studies and exercises

*DAY FIVE:*

❖ System Automation

- Automation & Control of Pipelines, Automation & Control System Architecture, SCADA System, Advanced Applications, Liquids Measurement & Accounting

❖ Pipeline System Operational Reliability/ Availability Assessment

- Reliability Assessment, Failure Data for Pipeline Systems Components, Reliability Assessment Applications

❖ Course Conclusion

❖ POST-ASSESSMENT and EVALUATION

## Training Methodology:

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

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

## Training Certificate(s):

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

## Training Fees:

**TBA 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:**

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|---|---|
| 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 - 13:00 | Recess (Prayer Break & Lunch) |
| 13:00 - 14:00 | Last Session |

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

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