

**TRAINING TITLE**

**MANAGEMENT OF PROCESS FACILITIES METERING AND CUSTODY TRANSFER SYSTEMS**

**Training Duration**

5 day

**Training Venue and Dates**

|                   |  |   |                |         |                |
|-------------------|--|---|----------------|---------|----------------|
| Ref. No.<br>PE120 | Management of Process Facilities<br>Metering and Custody Transfer<br>Systems | 5 | 15-19 Sep 2025 | \$5,500 | ABU DHABI, UAE |
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In any of the 4 or 5-star hotels. The exact venue will be informed later.

**Training Fees**

- \$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch

**Training Certificate**

**Define** Management Consultants Certificate of course completion will be issued to all attendees.

**TRAINING DESCRIPTION**

The smallest error in the flow measurement of materials like oil, gas, or chemicals being transferred between a producer (supplier) and customer may cost a company millions of dollars in a year.

Custody Transfer takes place any time fluids are changing possession from one party to another e.g., from producer to pipeline, pipeline to plant, or pipeline to storage facility. Custody Transfer refers to any agreed metering condition in a sales contract between supplier while Fiscal Metering refers to metering of a commercial transaction that should comply with legal obligations and so in this case there is no discussion about the metering requirements.

The custody transfer system must generate detailed and indisputable cargo reports, based on accurate flow measurements and standardised calculations.

Custody and Fiscal transfer systems are more than just flow-meters and they represent a combination of highly engineered flow measurement systems for the intended application.

Custody and Fiscal transfer metering requires exceptional accuracy, repeatability while the applied methods and measuring result are auditable.

Requirements for permissible errors of custody transfer meters are recommended in International Standards like AGA, OIML and ISO.

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This course introduces participants to a variety of flow measurement technologies that are used in custody transfer applications while the objective is to gain an understanding about how to achieve the requirements by means of differential pressure (DP) measurement, Turbine meters, Positive displacement meters, Coriolis flow measurement, Magnetic and Ultrasonic flow measurement.

Participants will gain the ability to determine if a metering system is fit for the purpose while other key learning objectives of this course include the understanding of the principles of Fluid Dynamics, Meter runs, Flow computers, related Quality systems, applied specification of Accuracy terms, Calibration and Proving systems.

### TRAINING OBJECTIVES

At the end of this course the delegates should be able to describe:

- Utilities required for fiscal flow metering
- The aim of Loss Control
- Fiscal metering station
- Fluid Dynamics – Liquids and Gases
- Energy conservation according to Bernoulli's Law
- The types of Flow Patterns and influence on flow measurements
- Flow measurement based on  $\Delta P$  measurement
- Flow meters for Oil & Gas : Turbine, Positive Displacement, Thermal Mass, Coriolis, Ultra Sonic, Vortex and EMF meter
- OIML classification of metering devices and recommendations for fiscal metering
- Applied Accuracy Terminology and manufacturer specification
- Applied Custody & Fiscal Metering contracts
- Moisture and HC Dew-point measurements
- Application of Process Gas Chromatography
- Heating Value Measurements
- Flowmeter Calibration
- Proving and Validation
- Flow computer dedicated functions
- Application of International Metering Standards for Oil & Gas
- Multiphase Flow and Water Cut measurements

### WHO SHOULD ATTEND?

- Instrumentation Engineers & Technicians

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- Supervisory Engineers,
- Process engineers,
- Production engineers,
- Operators and Control room personnel dealing with fiscal, custody transfer and allocation flow metering.

### **TRAINING METHODOLOGY**

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussions

### **COURSE PROGRAM:**

#### **Day 1**

- Introduction to Fiscal and CT Metering
- Loss Control & LACT
- Applied Accuracy Terminology
- Fluid Dynamics

#### **Day 2**

- Continuation – Fluid Dynamics
- Principles of Gas Chromatography
- Heating Value Measuring Methods
- Moisture and HC Dew-Point Measurements

#### **Day 3**

- Applied types of Density measurements
- Standard Measurement Recommendations

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- Flow Metering using  $\Delta P$
- Flow Metering that are applied based on other principles; like PD meters, the Turbine flow meters, Transit time type Ultra Sonic flow-meters, Coriolis Mass Flow measurement, Thermal Mass flow, Electro Magnetic and Vortex?

**Day 4**

- Standardised Gas Flow Metering standards (AGA)
- Fiscal Gas Metering Station Design
- Flow Calibration and practical considerations:
  - What is the difference between Calibration and Proving?
  - What are the different types of flow meter calibration systems?
  - What are the issues concerning testing, calibration and presentation of proving data?
  - What alternative type of Turbine meter calibration is applied?
  - What are the trends and best practices?

**Day 5**

- Metering Prover Systems
  - What are the main types of Prover systems and their specific reasons of application,
  - How is the way of operation of Tank provers, Piston provers, Displacement types prover, Bi-directional Pipe prover and Ball Prover
  - What are the reasons for application of a Master Meter system?
  - What are important general prover issues?
  - Multiphase Flow and Water Cut measurements
  - Why is MPF metering not suitable as CT / fiscal metering?
  - What are the three phase flow properties?
  - What is meant by “Water-Cut” and how is it measured?
  - What are the measuring principles for WC like absorption spectroscopy,
  - What are the applied three phase metering techniques?

**NOTE:**

**Pre-& Post Tests will be conducted.**

**Case Studies, Group Exercises, Group Discussions, Last Day reviews, and assessments will be carried out.**

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