Training Title

FLOW MEASUREMENT & GAS COMPRESSION FOUNDATIONS

Training Duration

5 days

Training Venue and Dates

REF PE037	Flow Measurement & Gas Compression Foundations	5	07-11 October 2024	$6,500	London, UK.

In any of the 4 or 5 star hotels. The exact venue will be intimated once finalized.

Training Fees

$6,500 per participant for Public Training. Fees Includes Course Materials/Handouts, Tea/Coffee, refreshments, International Buffet Lunch.

Training Certificate

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

COURSE OVERVIEW

COURSE OBJECTIVES

- **Learn fundamentals of hydrocarbon accounting and sampling techniques and how to accurately report HC measurements.**
- **Understand the basic fundamentals of Hydrocarbons and its properties**
- **Detailed knowledge on of hydrocarbon Production and treatment**
- **Understand the Process variable and fundamentals of control system.**
- **Understand in detail the concept of Gas measurement.**
- **Understand the principle flow measurement**
- **Detailed knowledge of various flow meters and its construction and design.**
- **Understand metering skid and Meter proving system.**

WHO SHOULD ATTEND?

The program is ideal Operators I , Operators II, Supervisory and Middle management level personnel who operating and /or supervising oil & gas production facilities. This course is suitable for Operating personal from refineries, gas plant and LNG operation whose responsibilities include safe and efficient operation practices in oil and gas operation.

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

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start by raising the most relevant questions, and motivate everybody find the right answers. The delegates will also be encouraged to raise their own questions and to share in the development of the right answers using their own analysis and experiences.

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

COURSE OUTLINE

DAY 1

Fundamentals of Hydrocarbon Process- Oil and Gas production and process, Oil and Gas treatment.
Process Variables - Flow, Pressure, Temperature, and Level.
Sensing element, Transmitter, controller, control valve. Process control fundamentals.
Fundamentals Gas Measurement:-Flow rate, definition, Units, Mass flow rate, volumetric flow rate, SI and MKS units, conversion of units.

DAY 2

Flow Measurement- Flow sensing devices
Direct flow measuring devices– Orifice plate, Venturi tube, Pitot tube. Design, construction and operation Relation between flow and pressure.
Indirect flow meters: - Impeller meter, Turbine flow meter, Vortex meter, design, construction and operation
Variable area flow meters, Electrical flow meters, Magnetic flow meters - Design, construction and operation

DAY 3

Gas/liquid fuel measurement: equipment and calculation methods
Orifice Plate

Basic Principle, Design, construction, Flow rate calculations, various examples.
Orifice factors (Basic calculation- Meter Data and Fluid Data)
Design of orifice plate based on maximum expected flow rate and maximum range factor, bore size design.
Daniel Orifice, Orifice plate calibration.
Practical review of P&ID for orifice plate flow measurement.

DAY 4

Metering skid:-Gas flow measurement and Crude oil measurement. Custody Transfer meters, point of transfer of custody, LACT.

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Flow Meter accuracy and integrity, meter prover, Meter proving stations, Practical review of meter skid and Meter proving system using P&ID.

DAY 5

Sampling and Quality

Analysis and verification of GOR and sampling test results. Calculation of specific gravity, molecular weight and gross/net heating values. Sampling procedure for gas and condensate and type of containers to be used (Basics of Measurements and Sampling), Various case studies, practical examples, P&ID reviews.

End of program assessment and certificate distribution.

TRAINING OUTCOME

Up on finishing the course candidates are able to through knowledge of the working principle of Gas measurement and flow measurement, various flow meters and its design and construction. Candidates will get detailed knowledge of metering skid and Meterprover system. They are able to demonstrate their skills in safety, safeguard, start up and shut down procedures of distillation columns.

They will understand how to make sampling and other laboratory calculations for part of their daily routing jobs.

NOTE:

Pre & Post Tests will be conducted

Case Studies, Individual & Group Exercises, Project works (making in to groups), Role plays, Group Discussions, Last Day Review & Assessments will be carried out.

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