

## Oil and Gas Flow Measurement & Control

### Course general description:

The demand to Oil and Gas Flow Measurement is increasing in the oil and gas industry worldwide. meters can offer a range of cost effective options from periodic monitoring of well production to their use in shared pipeline allocation systems including fiscal allocation. Each application will have specific measurement criteria, budget and uncertainty targets. The cost of meters and their complex integration of measurement technologies can add pressure to the selection of suitable meters especially for more challenging conditions.

### Audience:

This course is intended for professionals working in risk management, process safety, operations, and safety leadership roles, including:

- Personnel who require knowledge of, or who will be working with liquid/gas flow measurement systems
- Managers, Metering Engineers , Process Engineers , Production Engineers
- Metering Technicians, Analyzer Technicians, Allocation Engineers, Production Technicians, Production Supervisors, Instrument Supervisors, Graduate Engineers, Instrument Technicians

### Course objectives:

By the end of this course, participants will:

- Understand the advanced principles and applications of the oil & gas flow measurement
- Be able to select the proper measurement technique suitable for the application

### Course duration:

5 days

### Course location:

Dubai

### Course contents:

#### **Day-1:**

- Introduction
- Fluid Properties
- Course introduction
- Metering systems overview
- Design criteria and regulations
- Uncertainty in measurement
- Allocation principles

#### **Day-2:**

- Prover loop and associated components
- Primary flow measurement devices
- Turbine meter
- Orifice meter
- Ultrasonic meter
- Coriolis meter
- V-cone meter
- Magnetic meter

- Multiphase meter

**Day-3:**

- Secondary measurement instruments
- Liquid/gas quality measurement
- Sampling & analysis
- Gas chromatographs
- Computer equipment overview
- Liquid flow computers
- Gas flow computers
- Prover computers
- Supervisory systems
- Metering management
- Documentation
- Record keeping and reporting
- Calibration and maintenance

**Day-4:**

- Control systems
- Open loop system
- Closed loop system
- Fundamentals of process control
- The feedback control loop
- On - off controller
- Proportional controller
- Proportional & integral controller
- Proportional & integral & derivative controller
- Description of key points in the operation of control systems like: DCS, PLC, UPS, SCADA, etc

**Day-5:**

- Logic, integration and loops in control systems .
- Control system response and best practices in ESD .
- Key points in emergency response action plan (ERAP).
- Advanced control techniques
- Fail safe

**Methodology:**

- 50% lectures & concepts
- 10% Videos
- 10% Case studies
- 10% Exercises
- 10% Discussions
- 10% Software (if applicable or examples)

**Course code: (TPRS045)**