

# Datasheet: Flow Measurement Consultancy Training Course Prospectus



## Introduction

Fiscal and custody transfer systems play a key role in the hydrocarbon industry as they have a direct impact on the revenue stream and profitability. A small error due to the applied methods and measurement may cost the buyer or the seller millions of dollars.

KELTON offer a three-day flow measurement-training course for hydrocarbon liquid and gas as it relates to the instrumentation involved. The course will benefit delegates with little knowledge of flow measurement as well as experienced instrument and metering engineers. This course has been conducted for many years with over 5,000 delegates having attended.

## CPD Accreditation

Delegates attending the KELTON accredited three-day course can request a CPD Certificate of Attendance and record their attendance towards their formal CPD requirements for their professional body, institute or employer.

## The CPD Standards Office

CPD PROVIDER: 21347  
2018 - 2020  
[www.cpdstandards.com](http://www.cpdstandards.com)



## Key Objectives of the Standard Flow Measurement Training Courses

- Identification of the key design requirements of liquid and gas fiscal and custody transfer metering systems
- Understand the terminology, definitions and international standards utilised within measurement systems
- Understand the Importance of low measurement uncertainty in quantity and quality measurement systems
- Understand the principles and applications of multiple meters/meter runs, flow computers, quality systems, calibration, verification, proving and supporting systems
- Understand the fundamental requirements for traceability, auditability and the determination of system uncertainty.
- Appreciation and understanding of the importance and impact of flow profiles in relation to flow measurements; laminar flow, turbulent flow and swirl
- Understand the problems with erosion, corrosion, cavitation and obstructions in liquid and gas fiscal and custody transfer metering systems
- Be able to describe and understand current meter technology, Installation requirements and applications, with regards to flow meters utilised for liquid and gas measurement; including differential pressure (DP) measurement, turbine meters, Coriolis flow measurement and ultrasonic flow measurement
- Understand the requirements and impact of temperature and pressure measurements

## About KELTON™

Fully accredited, KELTON is the leading independent measurement consultancy and software developer for the oil and gas industry. For well over two decades, KELTON has helped many international and national operators to ensure their full compliance with industry regulations. Whether clients require inspection, auditing or certification as part of System Compliance, uncertainty calculations for System Assurance or System Support – in KELTON they find a partner they can trust.

Services include:

- System Compliance
  - Inspection
  - Audit
  - Certification
- System Assurance
  - Design uncertainty
  - Modelling uncertainty
  - System uncertainty
- System Support
  - Manual/guidelines
  - Procedure generation
  - Educational
- Measurement Software
  - Desktop applications
  - Database applications
  - Pipeline applications

KELTON encompasses ISO/EN 9001 & 14001, BS/OHSAS 1800 and UKAS type 'C' Accreditation, is Microsoft Certified and is recognised as an Investor in People. Support is available from three strategic locations; UK, Qatar and Abu Dhabi.

If additional information is required visit:

[www.kelton.co.uk](http://www.kelton.co.uk)



# Datasheet:

## Flow Measurement Consultancy

### Training Course Prospectus



- Understand the requirements of the measurement of density;
  - Liquid densitometers
  - Gas densitometers
  - Determination from composition
- Understand the various types of liquid meter proving systems;
  - Master meter
  - Volume
  - Displacement
- Understand gas meter verification systems;
  - In series
  - Z-configuration
- Understand the relevance, requirements and importance of sampling;
  - Manual sampling
  - Automatic samplers
- Understand the key functionality and operation of gas chromatographs
- Understand the fundamentals of flow computers, calculation routines and verification.

#### Dedicated Courses

KELTON also provide bespoke flow measurement training courses that are designed to suit customer requirements. These courses can be three or five days depending on the range of equipment and topics to be addressed. Many of the courses are delivered on site. Customers include; Shell, Centrica, Hess, DUSUP, RasGas, Qatargas, SPDC, Qatar Shell, BAPCO, BG and many more.

#### Other Courses Available

- Two-day flow measurement of hydrocarbon liquid
- Two-day flow measurement of gas
- Two-day introduction to flow measurement auditing
- One-day multiphase flow measurement
- One-day wet gas flow measurement
- One-day introduction to uncertainty in measurement
- One-day introduction to allocation systems

#### Learning Outcomes

Each delegate will achieve a detailed understanding of the following theoretical aspects;

- The legal and commercial requirements for hydrocarbon liquid/gas metering
- Appreciate design criteria and importance of accuracy in quantity and quality measurements
- Basics of measurement uncertainty
- Measurement concepts and types of error
- The concepts, principles of operation and equipment used for typical liquid/gas metering systems, gas chromatographs, meter proving, sampling and analysis
- The concepts, principle of operation and hardware used for typical flow computers, prover control microcomputers and supervisory systems
- Typical operations, control functions and record keeping requirements for hydrocarbon liquid/gas metering systems

Each delegate will be issued with a certificate of attendance on completion of the course.

#### Testimonial

“.....Once again, thank you for the knowledge imparted to support the metering and measurement function in Shell Nigeria”.

Franklyn Ogoleh – (Metering Engineer) – Shell Petroleum Development Company of Nigeria (SPDC).