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# Flow Meter Selection and Multiphase Measurement Training Course

18 – 22 July 2027
Muscat

# Flow Meter Selection and Multiphase Measurement Training Course

**Ref:** 3110_118054 **Date:** 18 – 22 July 2027 **Location:** Muscat **Fees:** 6500 GBP

Flow Meter Selection and Multiphase Measurement is a 1-week training course for instrument engineers, production engineers and metering specialists, built around a meter selection dossier that each participant completes for a real duty. Wells, process plants and utility networks depend on figures that decide allocation, billing and control, and a poorly matched meter quietly distorts every one of them. Jupiter Prime Training runs this flow measurement course.

## Why Flow Meter Selection and Multiphase Measurement Matters Now

Three forces shape flow measurement today. Production from mature fields brings rising water cut and gas breakthrough, so meters chosen for clean single-phase duty now see mixtures they were never sized for. Unmanned sites shift effort from test separators to multiphase meters. Partners and auditors also ask how each allocated number was produced. An organisation that matches each meter to its fluid and range, and keeps calibration evidence, settles disputes quickly; one that does not carries hidden bias in production and sales figures.

## Who Gains Most from Flow Meter Selection and Multiphase Measurement

- Engineers responsible for specifying meters on new projects and plant modifications
- Engineers responsible for well testing, production reporting and allocation figures
- Specialists responsible for calibration, proving and meter maintenance records
- Engineers responsible for process control loops that rely on flow signals
- Engineers responsible for reviewing vendor proposals and factory acceptance results

An asset or field team that sends its instrument, production and maintenance engineers together gains most, because they leave with one shared basis for choosing and checking meters.

## Flow Meter Selection and Multiphase Measurement Capabilities

Participants move from a fluid description to a defensible meter choice and a plan to keep that choice honest over time.

- Specify the fluid, range and accuracy envelope a meter must meet — project datasheet sign-off
- Weigh single-phase meter principles against viscosity, conductivity and installation limits — vendor shortlisting
- Assess how a multiphase meter derives oil, water and gas rates without separation — well testing strategy
- Calculate a measurement uncertainty budget from sensor and fluid model errors — allocation partners
- Design a calibration and in-situ verification schedule — maintenance planners
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Communicate a meter recommendation with its limits and evidence — operations and finance reviewers

## Key Flow Meter Selection and Multiphase Measurement Terms

- Turndown — the ratio between the highest and lowest flow a meter measures within its stated accuracy.
- Water cut — the share of water in the produced liquid stream, usually given as a percentage of total liquid.
- Gas volume fraction — the share of gas in the total volume flowing through a meter at line conditions.
- Meter factor — the correction applied to a meter's reading after comparison with a reference or prover.
- Phase fraction — the proportion of oil, water or gas occupying the pipe cross-section at a measurement point.
- Uncertainty budget — a structured list of error sources combined to state the doubt attached to a flow result.

## Flow Meter Selection and Multiphase Measurement Day by Day

### Day 1: Fluids, Duties and Measurement Purpose

- Fluid Property Profiles — Which Meter Principles Remain Viable
- Flow Regime and Velocity Profile — Expected Distortion at the Meter
- Turndown and Operating Envelope — Range a Meter Must Cover
- Accuracy Versus Repeatability — What the Duty Actually Requires
- Measurement Purpose Statement — Custody, Allocation or Process Control

### Day 2: Single-Phase Meter Principles

- Differential Pressure Elements — Pressure Loss and Straight Run Needs
- Direct Mass Flow Meters — Density Output and Vibration Sensitivity
- Ultrasonic Transit-Time Meters — Path Count and Fouling Risk
- Electromagnetic and Vortex Meters — Conductivity and Low-Flow Limits
- Positive Displacement and Turbine Meters — Viscosity and Wear Trade-Offs

### Day 3: How Multiphase Meters Measure

- Phase Fraction Sensing — Gamma, Microwave and Impedance Approaches
- Gas Volume Fraction and Water Cut — Where Uncertainty Grows
- Velocity Measurement Without Separation — Throat Pressure and Cross-Correlation
- Pressure-Volume-Temperature Inputs — Fluid Model Effects on Results
- Multiphase Versus Test Separator — When Each Suits a Well

## Day 4: Calibration, Verification and Uncertainty

- Flow Calibration Rigs and Proving — Traceability of Each Reading
- In-Situ Verification and Diagnostics — Drift Detection Between Calibrations
- Uncertainty Budget Construction — Combining Sensor and Model Errors
- Reference Sampling and Tracer Checks — Confirming Water Cut and Salinity
- Meter Factor Records — Audit Trail for Allocation Disputes

## Day 5: Practising the Meter Selection Dossier

- Duty Datasheet Drafting — Applying Day 1 Envelope Definitions
- Candidate Meter Scoring Matrix — Applying Day 2 Principle Limits
- Multiphase Case Review — Applying Day 3 Fraction and Velocity Methods
- Verification Schedule Setting — Applying Day 4 Drift and Proving Records
- Meter Selection Dossier Completion — Recommendation, Uncertainty and Checks

## Applying Flow Meter Selection and Multiphase Measurement After the Course

- Rescore one existing meter against its current duty envelope and record whether its principle still suits the fluid.
- Build an uncertainty budget for one multiphase or allocation meter and agree a verification interval with maintenance.

## Flow Meter Selection and Multiphase Measurement Questions FAQ

### What is flow meter selection and multiphase measurement, and why does it matter now?

It is the discipline of matching meters to fluid, range and accuracy needs and measuring mixed oil, water and gas streams. It matters now because ageing fields, unmanned sites and closer scrutiny of allocated volumes expose poorly chosen meters.

### Which roles gain most from flow meter selection and multiphase measurement?

Instrument, production and metering engineers gain most. You benefit if you specify meters, report well rates or maintain calibration records.

### How does flow meter selection and multiphase measurement differ from a general instrumentation course?

It concentrates on flow alone. A general instrumentation course spreads across pressure, level and temperature; here you study flow principles, multiphase sensing, uncertainty and verification.

## What do you bring back from flow meter selection and multiphase measurement?

You bring back a meter selection dossier for one of your own duties. It holds the datasheet, scored candidates, an uncertainty budget and a verification schedule that colleagues can review and reuse.

## Flow Meter Selection and Multiphase Measurement: The Way Forward

The meter selection dossier first informs whether an existing or proposed meter suits its duty. Instrument engineers use it to brief vendors, production engineers to judge test frequency, and maintenance teams to set proving intervals. After its first use, revisit the fluid envelope: changing water cut and gas content often move a duty outside the range on which the original choice was based.