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COURSE BROCHURE

Process Gas Chromatograph Maintenance and Fault Finding Training Course

3 – 7 October 2027
Muscat

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Registered in the United Kingdom and Saudi Arabia

Process Gas Chromatograph Maintenance and Fault Finding Training Course

Ref: 2310_86179 **Date:** 3 – 7 October 2027 **Location:** Muscat **Fees:** 6500 GBP

Process Gas Chromatograph Maintenance and Fault Finding is a 1-week training course for analyser and laboratory technicians who keep online chromatographs reporting reliable composition to the control room, and it ends with each participant's Analyser Fault-Finding Guide. Plants now run tighter product specifications and closer energy margins, so a drifting analyser quickly turns into off-spec product or a wasted reprocessing loop. The course is delivered by Jupiter Prime Training.

Why Process Gas Chromatograph Maintenance Matters Now

Three forces shape online chromatography today: advanced process control loops that act directly on analyser readings, smaller instrument crews covering more analyser houses, and custody and emissions reporting that relies on traceable composition values. A site that maintains its process chromatographs well keeps control loops closed, product on grade and reporting defensible. Poor maintenance sends loops to manual and erodes operator trust. The course rests on sample conditioning design, valve timing and validation against reference blends.

Who Gains Most from Process Gas Chromatograph Maintenance

- Technicians responsible for routine servicing of analyser house chromatographs and their sample loops
- Laboratory staff responsible for preparing reference blends and cross-checking online results
- Instrument technicians responsible for valves, ovens, heated lines and shelter utilities
- Analyser support staff responsible for alarm response and first-line fault diagnosis
- Shift technicians responsible for restoring analysers after process upsets or power trips

Analyser crews from one refinery, gas plant or petrochemical complex gain most when several members attend together and agree one shared fault-finding method.

Process Gas Chromatograph Maintenance Capabilities

Participants trace a faulty reading from sample tap to chromatogram and correct its cause.

- Inspect sample conditioning systems for lag, condensation and adsorption — the operator relying on timely readings
- Service sampling and column-switching valves and verify their timing — the control engineer tuning loops
- Maintain columns, ovens and detectors to restore separation and response — the process engineer watching product quality
- Specify carrier and utility gas quality checks — the shift supervisor planning analyser uptime
- Apply calibration and validation routines with reference blends — the laboratory confirming reported values
- Build a structured fault-finding record for each analyser — the maintenance planner setting service intervals

Key Process Gas Chromatograph Maintenance Terms

- Sample conditioning system — The filters, regulators, heaters and flow controls that deliver a clean, representative sample to the analyser at the right state.
- Column switching — Use of timed valves to direct parts of the sample between columns, enabling backflush, heart-cut and faster cycles.
- Thermal conductivity detector TCD — A universal detector that responds to differences in thermal conductivity between carrier gas and eluting components.
- Flame ionisation detector FID — A detector that measures ions formed when organic compounds burn in a hydrogen flame, giving high hydrocarbon sensitivity.
- Retention time window — The expected elution time range used by the analyser to identify each peak and gate its integration.
- Reference blend — A certified gas mixture of known composition used to calibrate the analyser and validate its reported results.

Process Gas Chromatograph Maintenance Day by Day

Day 1: The Analyser in Its Process Context

- Analyser House Layout and Utilities — Shelter Readiness and Safe Access
- Process Tap and Fast Loop Design — Sample Representativeness and Lag Time
- Chromatograph Cycle and Reporting Chain — Control Room Trust in Readings
- Carrier and Utility Gas Supply — Purity Checks and Cylinder Changeover
- Failure History Review Sheet — Prioritising Analysers for Attention

Day 2: Sample Systems and Valves

- Filters, Coalescers and Membrane Separators — Contamination and Liquid Carry-Over
- Heated Lines and Vaporising Regulators — Dew Point and Condensation Control
- Rotary and Diaphragm Sampling Valves — Leak Checks and Rebuild Intervals
- Column-Switching Timing Tables — Backflush and Heart-Cut Adjustment
- Stream Selection Manifolds — Cross-Contamination Between Streams

Day 3: Columns, Ovens and Detectors

- Packed and Capillary Column Care — Bleed, Activity and Replacement Choice
- Oven Temperature Stability Checks — Retention Shift and Drift
- TCD Filament and Bridge Servicing — Baseline Noise and Sensitivity
- FID Jet, Flame and Gas Ratio Tuning — Ignition Failures and Response Loss
- Peak Shape Diagnosis Charts — Tailing, Fronting, Split and Ghost Peaks

Day 4: Calibration, Validation and Alarms

- Reference Blend Handling and Traceability — Calibration Confidence
- Response Factor and Retention Window Updates — Peak Identification Accuracy
- Control Charting of Validation Results — When to Recalibrate or Repair
- Analyser Diagnostic Alarms and Status Flags — Operator Response Rules
- Online Versus Laboratory Result Comparison — Resolving Disagreement

Day 5: Practising the Analyser Fault-Finding Guide

- Sample Loop Fault Scenario — Applying Day 2 Inspection Steps
- Chromatogram Fault Scenario — Applying Day 3 Peak Diagnosis
- Calibration Drift Scenario — Applying Day 4 Control Charts
- Preventive Service Schedule Drafting — Intervals by Analyser Duty
- Analyser Fault-Finding Guide Completion — Symptom, Cause and Corrective Action

Applying Process Gas Chromatograph Maintenance After the Course

- Walk the sample system of one critical analyser, measure lag time and record condensation or leak points for correction.
- Start a control chart of reference blend results for two analysers and agree recalibration triggers with the laboratory.

Process Gas Chromatograph Maintenance Questions FAQ

What is process gas chromatograph maintenance and why does it matter now?

It is the servicing and diagnosis of online chromatographs that report composition to process control. It matters now because control loops, product quality and reporting depend directly on analyser readings, while crews cover more analysers with fewer people.

Which roles gain most from process gas chromatograph maintenance training?

Analyser, instrument and laboratory technicians gain most. A shared diagnostic method shortens analyser downtime for each of them.

How does process gas chromatograph maintenance differ from laboratory chromatography troubleshooting?

It focuses on field analysers rather than bench instruments. This course covers sample conditioning, stream switching and validation of continuous online results rather than manual injections.

What do you bring back from process gas chromatograph maintenance training?

You bring back a fault-finding record for your own analysers. It links each symptom to likely causes and corrective steps, plus a preventive service schedule your crew can adopt.

Process Gas Chromatograph Maintenance: The Way Forward

The Analyser Fault-Finding Guide first informs which analysers receive sample-system work and which need only recalibration. Analyser technicians use it at the shelter, and supervisors use it to set service intervals. After its first use, revisit the lag-time and validation evidence to judge whether the intervals match each analyser's real duty and failure pattern.