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COURSE BROCHURE

Dissolved Gas Analysis for Transformers and Cables Training Course

23 – 27 November 2026
Vienna

Dissolved Gas Analysis for Transformers and Cables Training Course

Ref: 2071_76298 **Date:** 23 – 27 November 2026 **Location:** Vienna **Fees:** 6600 GBP

Dissolved Gas Analysis for Transformers and Cables is a 1-week training course for electrical maintenance and condition monitoring engineers who turn oil sample results into a fault diagnosis and asset action register for their fleet. Insulating oil carries early evidence of arcing, partial discharge and overheating long before a protection relay trips, so reading it well protects supply and capital. Jupiter Prime Training delivers this dissolved gas analysis course.

Why Dissolved Gas Analysis for Transformers and Cables Matters Now

Three forces shape oil-filled asset care today: ageing transformer and cable fleets running closer to their thermal limits, a shift from time-based to condition-based maintenance, and online gas monitors that produce far more readings than teams once handled. An organisation that interprets fault gases accurately plans outages, avoids catastrophic failures and extends asset life; one that misreads them replaces healthy units or misses faults. The course rests on established interpretation approaches: the key gas method, gas ratio methods such as the Rogers ratios, and the Duval triangle and pentagon graphical methods.

Who Gains Most from Dissolved Gas Analysis for Transformers and Cables

- Engineers responsible for transformer condition assessment and outage recommendations
- Specialists who plan and supervise insulating oil sampling on site
- Engineers who maintain high-voltage oil-filled cable circuits and their pressure systems
- Laboratory and monitoring staff who report gas-in-oil results to asset owners
- Reliability engineers who rank electrical assets for repair or replacement

Substation maintenance groups gain most when sampling, laboratory and planning members attend together.

Dissolved Gas Analysis for Transformers and Cables Capabilities

Participants practise moving from a raw chromatography report to a defensible fault call and an action with a timescale.

- Specify sampling points, containers and handling steps that preserve gas content — laboratory reliability
- Apply key gas, ratio and Duval methods to classify thermal and electrical faults — asset owners
- Calculate gas generation rates and set alarm levels from fleet trends — monitoring engineers
- Assess cable oil results alongside pressure and partial discharge evidence — cable circuit managers
- Weigh retest, online monitoring, outage or replacement options — maintenance planners

- Communicate diagnoses and confidence levels in plain terms — operations leaders

Key Dissolved Gas Analysis for Transformers and Cables Terms

- Fault gas — a gas such as hydrogen, methane, ethylene or acetylene released when oil or paper insulation breaks down under stress.
- Gas chromatography — the laboratory technique that separates and measures each gas extracted from an insulating oil sample.
- Duval triangle — a graphical method that plots relative methane, ethylene and acetylene levels to classify the likely fault type.
- Rate of gas generation — the change in a gas concentration over time, often more telling than one reading.
- Furan analysis — measurement of compounds released by ageing cellulose paper, used to estimate the remaining life of winding insulation.
- Oil-filled cable — a high-voltage cable whose paper insulation is impregnated with low-viscosity oil held under pressure along the circuit.

Dissolved Gas Analysis for Transformers and Cables Day by Day

Day 1: Insulation Chemistry and Fault Mechanisms

- Mineral and Ester Oil Properties — Fluid Choice and Gas Behaviour
- Thermal Decomposition of Oil and Paper — Linking Gases to Temperature
- Partial Discharge and Arcing Signatures — Separating Electrical From Thermal Faults
- Gas Solubility and Partition Coefficients — Interpreting Sealed Versus Breathing Units
- Transformer and Cable Failure Case Histories — Recognising Early Warning Patterns

Day 2: Sampling and Laboratory Practice

- Syringe and Bottle Sampling Procedures — Preserving Dissolved Gas Content
- Cable Sampling at Joints and Terminations — Access and Pressure Safety
- Headspace and Vacuum Gas Extraction — Choosing a Laboratory Method
- Gas Chromatography Reports and Detection Limits — Judging Result Quality
- Moisture, Acidity and Furan Tests — Assessing Overall Insulation Ageing

Day 3: Interpretation Methods

- Key Gas Method — First Screening of Fault Type
- Rogers and Doernenburg Ratios — Cross-Checking a Fault Classification
- Duval Triangle and Pentagon — Resolving Mixed or Ambiguous Faults
- Carbon Oxide Ratios — Judging Paper Involvement in a Fault
- Cable Oil Gas Profiles — Adapting Methods to Cable Circuits

Day 4: Trending and Maintenance Decisions

- Typical Concentration Values by Fleet — Setting Meaningful Alarm Levels
- Gas Generation Rate Calculation — Deciding Retest Intervals
- Online Gas Monitor Data Streams — Filtering Noise From Real Change
- Condition Health Index Scoring — Ranking Units for Intervention
- Outage, Degassing or Replacement Options — Weighing Risk Against Cost

Day 5: Practising the Fault Diagnosis and Asset Action Register

- Sampling Plan Review for a Substation — Applying Field Procedures
- Multi-Method Diagnosis of Case Samples — Combining Interpretation Tools
- Trend Charts for a Transformer Fleet — Applying Rate Calculations
- Diagnosis Report to Operations Leaders — Stating Confidence and Urgency
- Fault Diagnosis and Asset Action Register — Completing the Team Output

Applying Dissolved Gas Analysis for Transformers and Cables After the Course

- Re-run the last two years of oil results for critical transformers through the key gas, ratio and Duval methods.
- Audit one sampling round against the syringe procedure and correct steps that lose gas.

Dissolved Gas Analysis for Transformers and Cables Questions FAQ

What is Dissolved Gas Analysis for Transformers and Cables and why does it matter now?

It is the measurement and interpretation of gases dissolved in insulating oil to detect faults early. Ageing fleets and condition-based maintenance make accurate gas interpretation central to avoiding failures and planning outages sensibly.

Which roles gain most from Dissolved Gas Analysis for Transformers and Cables?

Electrical maintenance, condition monitoring and reliability engineers gain most.

How does Dissolved Gas Analysis for Transformers and Cables differ from a general transformer maintenance course?

It focuses on insulating oil evidence rather than mechanical servicing. It goes deeper into sampling, gas interpretation and trend-based decisions than a broad servicing course.

What do you bring back from Dissolved Gas Analysis for Transformers and Cables?

You bring back a structured way to diagnose faults from oil results. It includes a sampling checklist, an interpretation routine and a ranked register of actions.

Dissolved Gas Analysis for Transformers and Cables: The Way Forward

The fault diagnosis and asset action register gives each transformer and cable circuit a fault call, a confidence level and an action. Its first use is deciding which units need retesting or an outage in the next maintenance window. Planners and asset owners use it together, revisiting alarm levels after a year of trend data.