JUPITER PRIME

Consulting • Training • Advisory

جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

High Voltage Test Techniques for Cables, Transformers and Switchgear Training Course

20 – 24 June 2027
Kuala Lumpur

High Voltage Test Techniques for Cables, Transformers and Switchgear Training Course

Ref: 3159_119986 **Date:** 20 – 24 June 2027 **Location:** Kuala Lumpur **Fees:** 4900 GBP

High Voltage Test Techniques for Cables, Transformers and Switchgear is a 1-week training course for test engineers and commissioning technicians, and each participant leaves with a high voltage test session plan and acceptance record for one asset. New connections, cable replacement campaigns and tighter outage windows mean every energisation now depends on test evidence that is safe to collect and sound to judge. Jupiter Prime Training runs this course around that evidence.

Why High Voltage Test Techniques Matter Now

Three pressures shape high voltage test techniques today. Utilities and industrial sites are commissioning more cable circuits, transformers and switchboards in shorter outage windows, so test crews must choose the right voltage source first time. Asset owners increasingly ask for trend data, not single readings, to support life-extension decisions. Shared contractor and owner sites raise the stakes of exclusion zones and discharge steps. Good practice gives confident energisation; weak practice brings over-stressed insulation, missed defects and handover disputes. The course follows internationally recognised test practice, described in general terms.

Who Gains Most from High Voltage Test Techniques

- Test engineers who choose test voltages, durations and sources
- Commissioning technicians who connect test sets, run sequences and record readings
- Cable jointing supervisors who must prove each joint and termination before energisation
- Maintenance staff repeating periodic insulation checks
- Quality inspectors witnessing acceptance tests for owners

A commissioning or test department gains most when its engineers and technicians attend together and leave with one shared set of acceptance criteria and safety steps.

High Voltage Test Techniques Capabilities

These outcomes turn test set readings into energise-or-hold judgements that both contractor and owner can accept.

- Select alternating, direct, very low frequency or impulse sources for each asset type — the agreed test method
- Calculate test voltage, charging current and test set capacity for long cables — equipment hire
- Apply insulation resistance, polarisation index and dielectric loss measurements — life-extension decisions
- Design a safe test area with exclusion zones, earthing and discharge steps — site safety approval

- Assess readings against acceptance limits and earlier results — the energise or hold decision
- Build a high voltage test session plan and acceptance record — handover to the asset owner

Key High Voltage Test Techniques Terms

- Withstand test — a raised voltage held for a set time to prove insulation survives.
- Very low frequency testing — slow alternating testing that lets long cables use a small test set.
- Polarisation index — the ratio of ten-minute to one-minute insulation resistance.
- Dissipation factor — the ratio of resistive to capacitive current in insulation.
- Test set capacity — the current a test source can supply to the object's capacitance.
- Discharge and earthing stick — the tool that drains stored charge from tested plant.

High Voltage Test Techniques Day by Day

Day 1: Test Purpose and Site Readiness

- Factory, Site Acceptance and Periodic Tests — Choosing the Test Stage
- Asset Test History and Nameplate Data — Setting the Baseline
- Test Area Barriers, Exclusion Zones and Signage — Site Safety Approval
- Permits, Isolation Confirmation and Test Earths — Release for Testing
- Roles of Test Lead, Observer and Owner Witness — Clear Authority

Day 2: Insulation Resistance and Dielectric Measurements

- Insulation Resistance Tests at Graded Voltages — Moisture and Surface Leakage
- Polarisation Index and Dielectric Absorption Ratio — Winding Condition Judgement
- Dissipation Factor and Capacitance Measurement — Bushing and Cable Ageing
- Temperature and Humidity Correction of Readings — Fair Comparison Over Time
- Guard Terminal Connections — Separating Surface From Volume Current

Day 3: Alternating, Direct and Impulse Voltage Testing

- Power Frequency Withstand With Resonant Test Sets — Transformer and Switchboard Proof
- Very Low Frequency Testing of Extruded Cables — Cable Acceptance Choice
- Direct Voltage Testing and Its Limits on Polymer Cables — Method Selection
- Lightning Impulse Test Circuits and Waveform Checks — Type and Routine Proof
- Test Set Capacity and Charging Current Calculation — Equipment Sizing

Day 4: Interpreting Results and Avoiding Damage

- Acceptance Limits From Owner Specifications — Pass or Fail Rules
- Trend Sheets Comparing Earlier Readings — Early Warning of Deterioration
- Over-Stressing Risks From Excessive Test Voltage — Protecting Aged Insulation
- Breakdown Location After a Failed Test — Repair Scope Decisions
- Test Report Structure and Witness Signatures — Defensible Handover Evidence

Day 5: Practising the Test Session Plan and Acceptance Record

- Method Selection for a Chosen Cable or Transformer — Applying Day 3 Sources
- Safety Layout and Discharge Sequence — Applying Day 1 Site Readiness
- Reading Interpretation Exercise With Sample Results — Applying Day 4 Limits
- Peer Review of Draft Plans — Spotting Gaps Before Site Use
- Completed Test Session Plan and Acceptance Record — Owner Sign-Off

Applying High Voltage Test Techniques After the Course

- Lead a review of one recent cable or transformer test report against the acceptance limits and trend sheet method taught.
- Run a site readiness check before the next test session, covering exclusion zones, test earths and discharge sequence.

High Voltage Test Techniques Questions FAQ

What are high voltage test techniques and why do they matter now?

High voltage test techniques are the methods used to prove insulation of cables, transformers and switchgear before and during service. They matter now because outage windows are shorter and owners expect comparable evidence.

Which roles gain most from high voltage test techniques training?

Test engineers and commissioning technicians gain most. Jointing supervisors, maintenance staff and quality inspectors also benefit.

How do high voltage test techniques differ from a circuit breaker testing or partial discharge course?

High voltage test techniques cover withstand and insulation tests across cables, transformers and switchgear. A breaker testing course focuses on timing and mechanism checks, and a partial discharge course on locating discharge sources.

What do you bring back from high voltage test techniques training?

You bring back a test session plan and acceptance record for one real asset. It sets out method, voltage, safety layout, limits and sign-off.

High Voltage Test Techniques: The Way Forward

The high voltage test session plan and acceptance record first informs which test method and voltage suit the next asset due for energisation. Test engineers, commissioning technicians and owner witnesses use it during testing and at handover. After its first use, revisit the acceptance limits and trend comparisons as each new result extends the record.