JUPITER PRIME

Consulting • Training • Advisory

جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

LV and MV Switchgear Inspection and Safe Switching Training Course

jupiterprime.uk

info@jupiterprime.uk

Registered in the United Kingdom and Saudi Arabia

LV and MV Switchgear Inspection and Safe Switching Training Course

LV and MV Switchgear Inspection and Safe Switching is a 1-week training course for electrical engineers and technicians who prepare a switchgear inspection record and switching sequence for one substation or motor control centre. Ageing panels, rising fault levels and thinner electrical crews make every racking operation and breaker test a safety-critical task. Jupiter Prime Training delivers this course on LV and MV switchgear inspection and safe switching.

Why LV and MV Switchgear Inspection and Safe Switching Matters Now

Three pressures shape switchroom work today. Many plants run low and medium voltage boards well past their original service life, so contact wear, loose busbar joints and dried lubricant are common. Site safety managers and insurers now scrutinise arc flash exposure and switching authorisations more closely after high-profile incidents. A site that inspects and tests switchgear on a clear basis avoids nuisance trips and burn injuries; one that does not risks both. The course links this work to the asset management principles of ISO 55001 and the maintenance terminology of EN 13306.

Who Gains Most from LV and MV Switchgear Inspection and Safe Switching

- Technicians who rack, test and service air and vacuum circuit breakers
- Engineers who set inspection intervals and sign off switchgear test results
- Protection staff who check relay settings and trip circuits on feeder panels
- Authorised persons who write and execute switching schedules for isolation
- Facilities electricians who look after building distribution boards and motor control centres

An electrical maintenance crew from one plant or campus gains most when several members attend together.

LV and MV Switchgear Inspection and Safe Switching Capabilities

Participants practise reading switchgear condition from tests and visual signs, and turning that evidence into safe, recorded switching.

- Assess breaker condition from contact resistance, timing and visual wear — repair or replace decisions
- Test insulation with resistance and polarisation index methods — energisation approval
- Apply secondary injection checks to protection relays and trip coils — protection engineers
- Specify thermographic and partial discharge surveys for live panels — inspection planners
- Build a switching sequence with isolation, earthing and proving dead — authorised persons
-

Communicate arc flash boundaries and protective equipment needs — site safety managers

Key LV and MV Switchgear Inspection and Safe Switching Terms

- Arc Quenching — the process by which a breaker extinguishes the arc between opening contacts using air, vacuum, oil or gas.
- Contact Resistance — the electrical resistance across closed breaker contacts; a rising value signals wear or contamination.
- Polarisation Index — the ratio of ten-minute to one-minute insulation resistance readings, showing moisture or ageing in insulation.
- Secondary Injection — testing a protection relay by feeding simulated current and voltage into its inputs.
- Racking — moving a withdrawable breaker between connected, test and disconnected positions inside its cubicle.
- Arc Flash Boundary — the distance from live parts at which an arc could cause a second-degree burn.

LV and MV Switchgear Inspection and Safe Switching Day by Day

Day 1: Switchgear Types and Duty

- Air, Vacuum, Oil and Gas-Insulated Breaker Families — Technology Selection
- Moulded Case and Air Circuit Breakers in LV Boards — Application Limits
- Arc Quenching Principles and Interrupting Ratings — Fault Level Adequacy
- Busbar, Cable Termination and Enclosure Construction — Weak Points
- Single-Line Diagram Reading — Supply Paths and Interlocks

Day 2: Inspection and Condition Assessment

- Visual Inspection Checklist for Cubicles — Heat Marks, Tracking and Dust
- Infrared Thermography of Live Panels — Hot Joint Detection
- Partial Discharge and Ultrasound Surveys — MV Insulation Defects
- Mechanism Lubrication and Spring Charging Checks — Operating Reliability
- Inspection Interval Setting by Criticality — Maintenance Calendar

Day 3: Testing Breakers and Insulation

- Contact Resistance Measurement — Wear Trend Against Baseline
- Breaker Timing and Travel Analysis — Mechanism Health
- Insulation Resistance and Polarisation Index Testing — Energisation Readiness
- Vacuum Interrupter Integrity Testing — Bottle Replacement
- Test Result Recording and Trending — Repair or Replace Choice

Day 4: Protection and Safe Switching

- Overcurrent and Earth Fault Relay Settings — Discrimination Checks
- Secondary Injection and Trip Circuit Supervision — Proving Protection Works
- Switching Schedule Writing — Step Order and Cross-Checks
- Isolation, Earthing and Proving Dead — Permit Issue Conditions
- Arc Flash Labelling and Protective Equipment Selection — Exposure Control

Day 5: Practising the Switchgear Inspection Record

- Case Study from a Hospital Main Distribution Board — Nuisance Trip Fault Finding
- Case Study from a Water Treatment MV Substation — Breaker Failure to Close
- Racking Procedure Walk-Through — Interlock and Position Verification
- Defect Ranking From Inspection and Test Findings — Outage Planning
- Switchgear Inspection Record and Switching Sequence Assembly — Peer Challenge and Handover

Applying LV and MV Switchgear Inspection and Safe Switching After the Course

- Carry out a thermographic and visual survey of one switchroom and rank the defects found.
- Rewrite the switching schedule for one feeder isolation using the step and cross-check method.

LV and MV Switchgear Inspection and Safe Switching Questions FAQ

What is LV and MV switchgear inspection and safe switching, and why does it matter now?

It is the practice of checking, testing and operating low and medium voltage switchgear so it trips when needed and is switched without harm. It matters now because ageing boards and higher fault levels raise arc flash risk.

Which roles gain most from LV and MV switchgear inspection and safe switching?

Electrical technicians, engineers, protection staff and authorised persons gain most.

How does an LV and MV switchgear inspection and safe switching course differ from a high-voltage breaker overhaul course?

It covers the low and medium voltage boards found in most plants and buildings, with a focus on inspection and switching. A high-voltage overhaul course strips transmission breakers down; here you test, inspect and operate distribution switchgear safely.

What do you bring back from LV and MV switchgear inspection and safe switching?

You bring back an inspection record and switching sequence for one switchroom. It lists test results, ranked defects and a checked step order for isolating a feeder.

LV and MV Switchgear Inspection and Safe Switching: The Way Forward

The switchgear inspection record first informs which defects must be fixed at the next planned outage. Technicians use it on the job, engineers to plan outages and authorised persons to switch with confidence. After its first use, revisit the arc flash labels and relay settings, because network changes can quietly raise fault levels.