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COURSE BROCHURE

# Advanced Structured Isolation and Electrical Repair Verification Training Course

21 June – 2 July 2027
Singapore

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Registered in the United Kingdom and Saudi Arabia

# Advanced Structured Isolation and Electrical Repair Verification Training Course

**Ref:** 2550_96944 **Date:** 21 June – 2 July 2027 **Location:** Singapore **Fees:** 12000 GBP

Structured Isolation and Electrical Repair Verification is a 2-week training course for electrical maintenance engineers, supervisors and senior technicians who isolate, repair and restore motors, switchgear, control circuits and distribution equipment, and who leave with a permit-linked repair verification dossier. Ageing plant and leaner crews mean every repair must be proven safe. Jupiter Prime Training delivers this course on structured isolation and electrical repair verification.

## Why Structured Isolation and Electrical Repair Verification Matters Now

Three pressures meet at the repair bench. Electrical assets installed decades ago are failing in ways their drawings no longer describe; experienced electricians are retiring faster than their judgement can be passed on; and insurers, safety leaders and plant owners now expect a written trail from the first isolation point to the final energisation. An organisation that handles this well restores equipment quickly with no stored energy surprises and no repeat faults. One that handles it badly invites arc events, mistaken circuits and repairs that fail within weeks. The course rests on the hierarchy of energy control, the proving-dead sequence and evidence-based root cause methods.

## Who Gains Most from Structured Isolation and Electrical Repair Verification

- Engineers who authorise isolation schemes and sign permits for electrical work
- Supervisors who sequence breakdown repairs and assign competent persons to each task
- Senior technicians who carry out fault tracing, component replacement and functional testing
- Commissioning leads who accept repaired equipment back into live service

Maintenance departments that send an issuing authority, a supervisor and a lead technician together gain most, because they can rebuild their isolation and sign-off routine as one crew.

## Structured Isolation and Electrical Repair Verification Capabilities

Participants move from locating a defect to proving, on paper and on the circuit, that the repaired item is safe and sound.

- Design an isolation scheme with every energy source, lock point and test point identified — the permit issuing authority
- Apply a proving-dead sequence with a verified tester before contact with conductors — the person in charge of work
- Trace faults in motor, starter and control circuits using structured half-split logic — the breakdown supervisor
- Specify post-repair tests and acceptance values for each equipment class — the commissioning lead
- Build a root cause record that separates the failed part from the failure mechanism — the reliability engineer
- Communicate restoration status and residual restrictions at permit cancellation — operations and shift control

## Key Structured Isolation and Electrical Repair Verification Terms

- Point of isolation — the device that physically separates equipment from every energy source and can be secured in the open position.
- Proving dead — confirming absence of voltage with a tester checked on a known live source before and after the test.
- Permit to work — a written authorisation that defines the equipment, the isolations applied, the work allowed and the people responsible.
- Stored energy — charge, spring tension or rotation that remains after isolation, such as capacitors, closing springs or coasting motors.
- Insulation resistance test — a direct-current test that measures leakage through insulation to judge whether windings or cables are fit to energise.
- Return to service — the controlled handback of repaired equipment, including test results, removal of locks and cancellation of the permit.

## Structured Isolation and Electrical Repair Verification Day by Day

### Day 1: Failure Landscape and Energy Sources

- Electrical Failure Modes Across Ageing Plant — Where Repair Effort Is Spent
- Energy Source Inventory for Each Equipment Class — Scope Of Isolation
- Single-Line Diagram Walkdown — Confirming Drawings Match Installed Circuits
- Stored And Back-Fed Energy Paths — Hidden Hazards Before Repair
- Incident Reviews From Manufacturing And Water Utilities — Lessons For Crews

### Day 2: Designing the Isolation Scheme

- Isolation Hierarchy And Device Selection — Securing The Correct Break Point
- Multi-Source Isolation Sheets — Sequencing Locks Across Shared Supplies
- Personal And Group Lock Boxes — Accountability When Crews Overlap
- Earthing And Shorting Of Isolated Conductors — Protection Against Re-Energisation
- Isolation Certificates — Linking Physical Locks To Written Records

## Day 3: Permits and Authorised Roles

- Permit Types For Electrical Work — Matching Controls To Task Risk
- Issuing Authority And Person In Charge — Dividing Responsibilities Clearly
- Cross-Referenced And Suspended Permits — Managing Interacting Jobs
- Shift Handover Of Live Permits — Keeping Control Across Rotations
- Permit Audit Checklists — Finding Gaps Before An Incident Does

## Day 4: Proving Dead and Test Instruments

- Voltage Indicator Selection And Category Ratings — Fitness For Each Circuit
- Prove-Test-Prove Routine — Confidence Before Touching Conductors
- Clamp Meters And Multimeters In Fault Work — Choosing The Right Reading
- Insulation Resistance And Polarisation Index — Judging Winding Condition
- Instrument Calibration Records — Trust In Every Test Result

## Day 5: Structured Fault Finding in Control Circuits

- Half-Split Fault Tracing — Narrowing Defects In Fewer Steps
- Ladder And Wiring Diagram Reading — Locating Interlocks And Permissives
- Relay, Contactor And Timer Faults — Separating Coil From Contact Failure
- Sensor And Field Device Signals — Distinguishing Wiring From Device Faults
- Intermittent Fault Logging — Capturing Events That Vanish On Inspection

## Day 6: Motor and Drive Repair

- Winding Resistance Balance And Surge Comparison — Deciding Rewind Or Replace
- Bearing And Alignment Checks — Mechanical Causes Of Electrical Trips
- Starter And Overload Coordination — Restoring Correct Protection Settings
- Variable Speed Drive Fault Codes — Separating Drive From Motor Defects
- Rotation And No-Load Run Tests — Accepting A Repaired Motor

## Day 7: Switchgear and Distribution Repair

- Low And Medium Voltage Breaker Mechanism Faults — Repair Scope Decisions
- Contact Resistance Measurement — Verifying Joints And Busbar Connections
- Thermographic Hot Spot Findings — Prioritising Corrective Work
- Cable Fault Location And Jointing Checks — Restoring Feeder Integrity
- Protection Relay Secondary Injection — Proving Trips After Repair

## Day 8: Root Cause and Repeat Failure Control

- Failure Evidence Preservation — Keeping Parts And Readings For Analysis
- Five Whys And Cause-And-Effect Diagrams — Reaching The Failure Mechanism
- Fault Tree For Electrical Trips — Testing Competing Explanations
- Repeat Failure Registers — Spotting Patterns Across Assets
- Corrective Action Tracking — Closing Causes Rather Than Symptoms

## Day 9: Verification and Return to Service

- Post-Repair Test Plans By Equipment Class — Defining Acceptance Values
- Functional Checks Of Interlocks And Trips — Proving Safety Functions Work
- Lock Removal And Permit Cancellation Sequence — Controlled Re-Energisation
- Residual Restrictions And Temporary Repairs — Informing Operations Clearly
- Repair History Entries In Maintenance Systems — Evidence For Future Crews

## Day 10: Practising the Repair Verification Dossier

- Isolation Scheme For A Multi-Source Motor Control Centre — Applying Day 2
- Permit And Handover Simulation — Applying Day 3 Role Divisions
- Fault Tracing Exercise On A Faulted Starter Panel — Applying Day 5
- Root Cause Summary For A Repeat Breaker Trip — Applying Day 8
- Permit-Linked Repair Verification Dossier — Final Assembly And Peer Review

## Applying Structured Isolation and Electrical Repair Verification After the Course

- Audit five recent permits against the isolation sheet and proving-dead record, and correct the template where steps were missing.
- Run a root cause review on the most frequent electrical trip in the past quarter and publish acceptance tests for its repair.

## Structured Isolation and Electrical Repair Verification Questions FAQ

### What is structured isolation and electrical repair verification, and why does it matter now?

It is the disciplined practice of isolating every energy source, repairing the fault and proving the repair before handback. It matters now because ageing assets, thinner crews and closer safety scrutiny leave no room for unverified repairs or uncontrolled energy.

### Which roles gain most from structured isolation and electrical repair verification?

Permit issuers, maintenance supervisors and senior technicians gain most. Commissioning leads also benefit.

### How does structured isolation and electrical repair verification differ from a fault analysis or high voltage switching course?

It focuses on the repair cycle of plant equipment rather than system fault calculation or network switching. Fault analysis courses model currents and protection; switching courses cover network operations. Here the emphasis is permits, hands-on repair and proof of fitness for service.

## What do you bring back from structured isolation and electrical repair verification?

You bring back a permit-linked repair verification dossier built on a real equipment case. It contains an isolation scheme, test records, a root cause summary and acceptance criteria that your crew can adapt as a standard for future repairs.

## Structured Isolation and Electrical Repair Verification: The Way Forward

The permit-linked repair verification dossier first informs whether a repaired asset can be handed back to operations. Issuing authorities, supervisors and technicians use it at every breakdown, and reliability engineers draw on its records. After its first use, revisit the acceptance values and the isolation sheet together, since field experience usually shows where either was too loose.