
Electrical Fault Finding, Lockout and Repair Control Training Course for Maintenance Leaders

10 – 14 May 2027
Cape town





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Programme Summary

Electrical fault finding, lockout and repair control is the subject of this one-week training course for maintenance leaders, electrical supervisors and senior electrical engineers, ending in a fault response pack for one facility. Electrical faults stop production and expose people to energy, yet response often depends on individual habit rather than agreed method. The programme moves from diagnosis to test evidence, safe isolation, repair planning and return to service, using cases from process plants and building services. Mars Training Centre UK delivers this programme on electrical fault finding, lockout and repair control to mixed-organisation cohorts.

The Business Case

A fault that is searched by trial and error costs production hours and raises the chance of unsafe work on live or stored energy. Where isolation, testing and repair records differ between shifts and contractors, each stoppage starts from a new debate. A shared method gives leaders a basis to direct fault response, approve isolations and decide when equipment may be restored.

- Fault Search Time: Falls as faults are narrowed by a stated method and test evidence.
- Energy Isolation Incidents: Fall as isolation is planned, proven and recorded before work.
- Repeat Failures: Fall as repairs and restoration tests are written into a controlled work pack.

Principles and Evidence Base

- Fault Diagnosis Method: Uses stated hypotheses and staged elimination, applied in Sessions 1 and 2.
- Energy Isolation and Lockout Principles: Set the isolate, lock, prove sequence applied in Session 3.
- Permit to Work Principles: Link isolation to authorised work and are applied in Sessions 3 and 4.
- Test Evidence Practice: Requires calibrated instruments and recorded readings, applied in Sessions 2 and 4.

Intended Participants

- Maintenance leaders who direct fault response and decide when work may start and equipment may restart.
- Electrical supervisors who plan isolations and oversee repairs on running plant.
- Senior electrical engineers who diagnose recurring faults and approve repair options.
- Reliability and safety leads who review isolation records and repeated electrical failures.

Typical functions include refineries, power stations, manufacturing plants and large building services teams.



Learning Outcomes

1. Participants will be able to diagnose an electrical fault by ranking hypotheses and narrowing the search in stages.
2. Participants will be able to construct a test sequence that proves a fault with recorded readings.
3. Participants will be able to evaluate an isolation plan for completeness, lockout coverage and proof before work.
4. Participants will be able to prioritise repair options by risk, downtime and recurrence.
5. Participants will be able to design a restoration test and return to service sign-off for repaired equipment.
6. Participants will be able to justify a fault response decision to a plant manager with its evidence and records.

Programme Structure

Day 1: Electrical Fault Finding Foundations

How does a fault present itself, and how is the search narrowed?

- Fault Symptom Log
- Single-Line Diagram Reading Sheet
- Fault Classification Table
- Half-Split Search Diagram
- Hypothesis Ranking Sheet

Day 2: Test Instruments and Fault Evidence

How is a fault proven by measurement rather than assumption?

- Continuity and Insulation Test Record
- Voltage and Current Reading Sheet
- Instrument Check Procedure
- Test Result Interpretation Table
- Fault Evidence Log

Day 3: Safe Isolation and Lockout

How is equipment made safe, and proven safe, before work begins?

- Energy Isolation Point Schedule
- Lockout Device and Tag Register
- Isolation Sequence Plan
- Proof of Dead Check Sheet
- Permit to Work Linkage Form



Day 4: Repair Planning and Return to Service

How is a repair planned, controlled and returned to service?

- Repair Option Comparison
- Repair Work Pack
- Restoration Test Plan
- Return to Service Sign-off Form
- Contractor Handover Checklist

Day 5: Fault Response Pack for One Facility

Do the diagnosis, evidence, isolation and restoration records support one fault response?

- Applying the Session 1 Half-Split Search Diagram
- Testing the Session 2 Fault Evidence Log
- Reviewing the Session 3 Isolation Sequence Plan
- Checking the Session 4 Return to Service Sign-off Form
- Completing the Fault Response Pack

Methodology

The programme uses a structured exercise method built on a shared case of a plant with a motor control centre, a distribution board and a failed pump circuit. Participants build each artefact on prepared fault data, then adapt it to a facility they know.

- Suggested activity: Ranking fault hypotheses from a symptom log and choosing the first test.
- Suggested activity: Reviewing an isolation plan for a missing lock point.
- Suggested activity: Presenting a restoration test plan to a mock sign-off panel.

Capstone Output

Each participant completes a fault response pack for one facility. It holds a fault classification and search plan, a test evidence log, an isolation sequence plan, a repair work pack and a return to service sign-off. The pack is used at work to brief electrical maintenance teams and contractors before the next stoppage.

Frequently Asked Questions

Is electrical fault finding training suitable for leaders who no longer work on the tools?

Yes. Electrical fault finding, lockout and repair control is taught through cases and templates, assuming electrical or maintenance experience but no recent hands-on fault work.



Which concepts does electrical fault finding and lockout training rest on?

Electrical fault finding training rests on fault diagnosis method, energy isolation and lockout principles, permit to work principles and test evidence practice, applied to industrial plants and facilities.

How is the pack from electrical fault finding and lockout training used at work?

You use the fault response pack to brief electrical maintenance teams and contractors, direct isolations and set restoration tests before the next stoppage.

How does electrical fault finding differ from electrical safety awareness training?

Electrical fault finding centres on diagnosis, isolation planning, repair control and restoration records, while electrical safety awareness training covers general hazards, protective equipment and safe behaviour.