Electrical Systems Commissioning Testing and Startup Course

28 February – 4 March 2027
Johannesburg

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Ref: 986_175008 **Date:** 28 February – 4 March 2027 **Location:** Johannesburg **Fees:** 6000 Euro

Overview

Electrical Systems Commissioning Testing and Startup Course is a one-week intermediate course for electrical engineers, commissioning engineers, testing technicians, maintenance staff, and project teams who leave with an Electrical Energization and Handover Dossier. Participants plan inspection, acceptance testing, safety controls, energization, functional proving, startup, fault resolution, and turnover using traceable evidence. The course connects installation verification with operational readiness. Agile Leaders Training Center delivers intermediate learning in electrical commissioning and startup.

Who Should Attend

- Teams responsible for planning and coordinating electrical commissioning activities
- Personnel responsible for inspection, measurement, and acceptance test records
- Engineers responsible for energization readiness and startup sequencing
- Maintenance staff responsible for fault resolution and operational handover
- Project teams responsible for punch lists, documentation, and turnover

The course assumes participants can read single-line diagrams and basic test data; it leaves out detailed system design, relay setting calculations, live-work authorization, and manufacturer-specific certification.

Departments and Industries

The course supports departments that verify, energize, and hand over electrical assets.

- Power generation, utilities, and substations
- Oil, gas, petrochemical, and process facilities
- Manufacturing, mining, and industrial plants
- Construction, engineering, and project delivery
- Operations, maintenance, safety, and quality teams

Learning Objectives

By the end of this course, participants will be able to:

- Build a commissioning plan and system boundary register
- Apply inspection and acceptance testing sequences
- Evaluate electrical safety and energization readiness
- Analyze protection, interlock, and functional test evidence
- Diagnose startup faults through structured records
- Use punch lists and handover dossiers for turnover

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Course Agenda

Day 1: Commissioning Strategy and Boundaries

- System Completion and Commissioning Phase Map
- Commissioning Responsibility and Interface Matrix
- Inspection and Test Plan Structure
- System, Subsystem, and Energization Boundary Register
- Document, Drawing, and Test Record Control Log

Day 2: Inspection and Acceptance Testing

- IEC 60364-6 Initial Verification Sequence
- Visual Inspection and Installation Conformity Checklist
- Continuity, Insulation Resistance, and Polarity Test Sheet
- Earth System and Protective Conductor Test Record
- Switchgear, Transformer, Cable, and Motor Acceptance Matrix

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Day 3: Protection and Functional Proving

- Protection Relay Secondary Injection Test Plan
- Trip Circuit and Breaker Timing Verification Sheet
- Control Logic and Interlock Cause-and-Effect Matrix
- Metering, Alarm, and Communication Point Checklist
- Functional Test Defect and Retest Register

Day 4: Energization, Startup, and Handover

- NFPA 70E Electrically Safe Work Condition Checklist
- Energization Readiness and Authorization Gate
- Electrical Startup Sequence and Hold-Point Map
- Abnormal Indication and Fault Isolation Decision Tree
- Punch List, As-Built, and Handover Dossier Index

Day 5: Integrated Commissioning Practice

- Exercise on Commissioning Boundary and Sequence Planning
- Exercise on Acceptance Test Evidence Review
- Exercise on Protection and Interlock Fault Analysis
- Exercise on Energization Readiness Decision
- Capstone Exercise: Electrical Energization and Handover Dossier

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Practical Exercises

The course uses suggested activities that convert field evidence into controlled commissioning decisions.

- Suggested activity: build an inspection and test plan from a system boundary
- Suggested activity: review test results and classify defects, retests, and hold points
- Suggested activity: evaluate energization readiness using safety and document gates
- Suggested activity: assemble a handover dossier with evidence gaps and actions

FAQs

Who suits electrical systems commissioning and startup training, and what does it assume?

Electrical, commissioning, testing, maintenance, and project personnel suit the course. It assumes the ability to read single-line diagrams and basic test information but does not require specialist protection design or manufacturer authorization.

How does electrical commissioning training differ from electrical maintenance training?

Commissioning training proves that newly installed or modified systems meet requirements and are ready for energization and handover. Maintenance training focuses on preserving condition, finding deterioration, and restoring equipment already in service.

What electrical tests are used before energization?

Pre-energization evidence can include visual inspection, continuity, insulation resistance, polarity, earthing, cable tests, transformer checks, switchgear tests, protection proving, control logic, interlocks, alarms, metering, and communication checks. The applicable set follows system scope and approved procedures.

What is an electrical energization readiness review?

An energization readiness review confirms boundaries, completed tests, resolved critical defects, approved drawings, settings, safety controls, permits, isolation status, operating responsibility, communication arrangements, and contingency actions before electrical power is applied.

What belongs in an electrical commissioning handover dossier?

A handover dossier normally includes approved procedures, inspection and test records, certificates, settings, marked-up and as-built drawings, defect status, punch lists, operating information, spare requirements, training records, and signed acceptance evidence.

Conclusion

Participants leave with an Electrical Energization and Handover Dossier linking boundaries, test plans, results, safety gates, startup sequences, defects, and acceptance evidence. The dossier changes scattered records into a controlled readiness decision. Teams can reuse it to coordinate commissioning, reduce unresolved interfaces, and support accountable turnover.