



Practical Electrical Engineering Course for Facilities and Non-Electrical Engineers



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Introduction:

Practical electrical engineering for facilities and non-electrical engineers is a 5-day course for facilities, mechanical and maintenance engineering staff that ends with a Facility Electrical System Review and Maintenance Plan for a case site. Organisations lose uptime when engineers responsible for buildings and plants cannot read the supply arrangement, judge a cable or breaker rating, or plan electrical upkeep without waiting for a specialist. Nominees already run or maintain building services or plant equipment, and each day uses inspection walkthroughs of switchrooms, motor circuits and standby power records. CoreConcept Training Center delivers this practical electrical engineering course.

Course Objectives:

- Interpret voltage, current, power and power factor values on facility meters, nameplates and single-line diagrams
- Check transformer, switchboard, cable and earthing arrangements against IEC 60364 installation principles
- Select and verify motor starting methods, variable frequency drive settings, lighting controls and standby power sequences
- Confirm that breakers, fuses and residual current devices suit the circuits they protect and discriminate correctly
- Diagnose common electrical faults with insulation resistance, clamp meter and thermal inspection results under a safe isolation routine
- Prepare a Facility Electrical System Review and Maintenance Plan for a building or plant

Target Audience:

- Facilities engineering staff responsible for building services, power supply continuity and contractor oversight
 - Mechanical engineers who look after pumps, fans, compressors and chillers driven by electric motors
 - Maintenance engineers and planners who schedule inspection, testing and repair of plant equipment
 - Utilities and energy staff who monitor consumption, power factor and standby generation
 - Engineers from civil, process or instrumentation backgrounds who take on electrical asset responsibilities
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Course Outline:

Day 1: Electrical Fundamentals and the Facility Power Baseline

- Ohm's Law and Power Equations Applied to Facility Loads
- Single-Phase and Three-Phase Supply Quantities Compared
- Real, Reactive and Apparent Power Triangle Basics
- Facility Single-Line Diagram Walk From Intake to Final Circuit
- Electrical Asset Register Baseline for a Building or Plant

Day 2: LV Distribution Equipment and IEC 60364 Installation Principles

- Distribution Transformer Nameplate, Tap Settings and Cooling Classes
- Main Switchboards, Sub-Distribution Boards and Busbar Ratings
- IEC 60364 Part 5 Wiring Systems and Cable Types
- Cable Current Capacity and Voltage Drop Hand Check
- IEC 60364 Earthing Arrangements and Protective Conductor Roles

Day 3: Motors, Drives, Lighting and Standby Power in Daily Operation

- Induction Motor Nameplate Data, Slip and Full-Load Current
- Direct-On-Line, Star-Delta and Soft Starter Selection Criteria
- Variable Frequency Drive Affinity Law Savings on Pumps and Fans
- Lighting Circuit Loads, Control Methods and LED Retrofit Checks
- Standby Generator, UPS and Automatic Transfer Switch Sequences

Day 4: Protection, Power Quality, Safe Isolation and Fault Finding

- MCB, MCCB and Fuse Ratings With Discrimination Basics
- Residual Current Devices and IEC 60364 Shock Protection Measures
- Power Factor Correction Capacitors and Harmonic Heating Effects
- Safe Isolation, Lock-Off and Electrical Permit Hand-Back Points
- Insulation Resistance, Clamp Meter and Thermal Scan Fault Finding

Day 5: Inspection Walkthrough and Facility Electrical Maintenance Plan

- Case Facility Load Schedule and Maximum Demand Review
 - Switchroom and Motor Control Centre Inspection Walkthrough Findings
 - Standby Power and Transfer Test Record Assessment
 - Preventive Maintenance Task Intervals for Electrical Assets
 - Facility Electrical System Review and Maintenance Plan Completion
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Skills You Will Gain:

- Single-Line Diagram Interpretation
- Load and Maximum Demand Estimation
- Cable Rating and Voltage Drop Checking
- Motor Starter and Drive Selection
- Standby Power Sequence Verification
- Protective Device Coordination
- Power Factor Improvement
- Electrical Maintenance Planning

Why Attend This Course:

- Deliver a Facility Electrical System Review and Maintenance Plan to the facilities manager and the maintenance planner
- Decide whether a tripping feeder, an overheating motor or a failed transfer test needs a setting change, a repair or a specialist study
- Avoid unplanned outages, nuisance trips, reactive power penalties and contractor rework caused by unchecked electrical assumptions
- Share load schedules, inspection checklists and test record templates with maintenance and operations colleagues

Conclusion:

Back at work, the participant hands the Facility Electrical System Review and Maintenance Plan to the facilities manager, the maintenance planner and the site electrical lead or contractor. They use it to prioritise corrective work on switchboards, cables and motor circuits, set inspection and test intervals, and decide where standby power, power factor or lighting upgrades justify funding. After the first quarter under the plan, the unit should compare unplanned electrical outages, nuisance trips, generator test results and energy bills against the baseline and revise the tasks that have not delivered.

Frequently Asked Questions FAQ:

What should participants know before the practical electrical engineering course for facilities and non-electrical engineers?

Participants should hold an engineering role in facilities, mechanical or maintenance work and be familiar with their own site equipment. No electrical degree is needed. Bringing an anonymised single-line diagram, load list or maintenance schedule helps them apply the walkthroughs and the plan to their own facility.

How does practical electrical engineering for facilities and non-electrical engineers differ from a power distribution design course?

It equips engineers who run and maintain buildings and plants to understand, check and look after electrical systems. Distribution design courses train electrical engineers to perform short-circuit, load flow and relay coordination studies, which appear here only as basics needed to read results.

Why does power factor matter in practical electrical engineering for facilities?

Power factor shows how much of the current drawn does useful work. A low value means more current for the same output, so cables, transformers and generators run hotter and supply charges can rise; locally connected capacitors reduce the reactive current that inductive motor loads draw.

What do participants take back from the practical electrical engineering course for facilities and non-electrical engineers?

Participants take back a Facility Electrical System Review and Maintenance Plan for a case site, with a load schedule, switchroom inspection checklist, standby power test assessment and preventive maintenance task list they can adapt to their own building or plant.
