CONCEPT

Temporary Electrical Installations on Construction Sites: Design, Earthing and Inspection

12 – 16 July 2027
London - Central London four-star



Temporary Electrical Installations on Construction Sites: Design, Earthing and Inspection

Ref: 658_18483 **Date:** 12 – 16 July 2027 **Location:** London - Central London four-star **Fees:** 23000 SAR

Introduction:

Temporary electrical installations on construction sites are rebuilt every few weeks as structures rise, cranes move and trades change, and many site shocks and fires trace back to a missing earth, a bypassed RCD, a crushed cable or a board fed from the wrong generator. This Core Concept course prepares site electrical staff to plan a phased temporary supply, size generators, lay out site distribution boards, route and guard cables, earth the installation and run inspection and tagging. Participants produce a Temporary Site Power Design and Inspection Plan for a case construction site.

Course Objectives:

- Estimate phased construction loads for tower cranes, hoists, welding sets, pumps, cabins and lighting and choose between a utility connection and generator supply
- Specify generator sets, fuel autonomy and paralleling arrangements and lay out site distribution boards from the intake to the final outlets
- Select, route and guard flexible and armoured cables so that site traffic, excavation and scaffolding cannot damage them
- Design site earthing with electrodes, protective conductors and 30 mA RCD protection matched to the earthing arrangement in use
- Run a pre-energisation inspection, periodic testing and tagging regime and connect it to the permit to work and isolation procedure
- Control alterations as the site grows, then hand over and dismantle the temporary installation safely

Target Audience:

- Site electrical engineers who design and extend temporary power for building and infrastructure projects
- Electrical supervisors and chargehands who install, alter and maintain site distribution boards and cable runs
- Contractor and subcontractor electrical leads who connect plant, welding sets and welfare cabins to the site supply
- HSE advisers who inspect temporary electrical arrangements and audit tagging records
- Plant coordinators who manage generators, lighting towers and portable tools on site

Course Outline:

Day 1: Temporary Site Supply Context and Phased Load Estimation

- Construction Phase Power Profile: Enabling Works, Frame, Envelope and Fit-Out
- Site Electrical Incident Patterns: Crushed Cables, Bypassed RCDs and Open Earths
- Construction Load Schedule for Tower Cranes, Hoists, Pumps, Welding Sets and Cabins
- Diversity and Motor Starting Allowances in Site Maximum Demand Estimates
- Utility Connection Versus Generator Supply Decision Matrix

Day 2: Generators, Earthing Arrangements and Site Distribution Assemblies

- Prime-Rated Generator Sizing for Largest Load Step and Voltage Dip
- Generator Paralleling Basics: Voltage, Frequency and Phase Matching with Droop Load Sharing
- TN-S, TN-C-S, TT and IT Arrangements on Construction Sites and Broken PEN Conductor Risk
- Site Distribution Board Hierarchy: Incoming Assembly, Main Distribution and Outlet Units
- Reduced Low Voltage Transformers and Separated Supplies for Portable Tools and Hand Lamps

Day 3: Cable Routing, Residual Current Protection and Site Earthing Installation

- Flexible and Armoured Cable Selection for Abrasion, Water and Sunlight Exposure
- Cable Routing Plan: Overhead Catenaries, Buried Runs, Ramps and Crossing Protectors
- Earth Electrode Installation, Soil Resistivity Readings and Protective Conductor Bonding
- 30 mA RCD Selection, Discrimination Between Board Levels and Test Button Routine
- Floodlighting Towers, Task Lighting and Welding Return Current Paths

Day 4: Wet and Hazardous Locations, Inspection Regimes and Change Control

- Wet Locations, Confined Spaces and Flammable Atmosphere Zones Overview for Temporary Supplies
- Pre-Energisation Test Sequence: Continuity, Insulation Resistance, Earth Fault Loop and RCD Trip Time
- Portable Equipment Inspection, Testing and Colour-Coded Tagging Intervals
- Permit to Work and Lockout Interface for Alterations to Energised Site Distribution
- Temporary Installation Change Register for Relocated Boards, Extended Runs and Added Loads

Day 5: Case Site Walkthrough and the Temporary Site Power Design and Inspection Plan

- Case Construction Site Walkthrough: Phased Layout, Crane Radius and Traffic Routes
- Temporary Supply Single-Line Sketch and Board Location Plan for the Case Site
- Defect Spotting Exercise on Photographed Site Boards, Cables and Tool Leads
- Handover Pack and Safe Removal Sequence for Site Demobilisation
- Temporary Site Power Design and Inspection Plan Presentation and Peer Challenge

Skills You Will Gain:

- Construction Load Estimation
- Generator Set Specification
- Site Distribution Layout
- Cable Route Protection
- Site Earthing Design
- Residual Current Protection
- Installation Inspection and Testing
- Temporary Installation Change Control

Why Attend This Course:

- Return with a Temporary Site Power Design and Inspection Plan built on a case construction site
- Spot the board, cable and earthing defects that precede site shocks and fires during a routine walk
- Challenge contractor generator and cabling proposals with your own load and protection checks
- Compare temporary power practice with peers from building, civil, energy and industrial projects

Conclusion:

A temporary site supply stays safe only while its loads, earthing, protection and cable routes are rechecked each time the site changes. The course moves from phased load estimation and the supply decision, through generator sizing, paralleling, earthing arrangements and board hierarchy, to cable routing, RCD protection and site lighting, then on to wet and hazardous locations, inspection and tagging, permit interfaces and change control. The final day applies these methods on a case site walkthrough and produces a Temporary Site Power Design and Inspection Plan ready for the project team.