



Overhead Lines, Maintenance and Construction Training

Description

Course Description

Overhead Lines form the majority of Transmission and Distribution Circuits due to their much lower cost than equivalent cables at the same voltage and current ratings. An Overhead Line is a set of 3 wires, one for each phase, referred to as the conductors. At Transmission Voltage Levels the conductors are normally strung on steel-latticed towers of many different shapes and size. However at Distribution (lower voltages), constructions in timber and occasionally reinforced concrete are used. The seminar addresses the technology over a wide range of voltage levels for both transmission and distribution circuits.

Course Objective

- To ensure delegates develop their existing knowledge and are acquainted with latest developments in Overhead Line Technology.
- In addition that the principles can be appropriately applied in every day work to improve their personal effectiveness and efficiency.

Course Outline

- Overhead Lines versus Underground Cables
- Support Structures
- Steel Lattice Towers
- Wooden Poles
- Overhead Line Foundations
- Soil Investigation
- Foundation Types
- Foundation Design
- Site Works

- Overhead Line Routing
- Objectives
- Preliminary Routing
- Survey Equipment Requirements
- Aerial Survey
- Ground Survey
- Ground Soil Conditions
- Wayleaves, Access and Terrain
- Optimisation
- Detailed Line Survey and Profile
- Computer-aided Techniques
- Structures, Towers & Poles
- Environmental Conditions
- Typical Parameters
- Effect on Tower or Support Design
- Conductor Loads
- Substation Gantry Worked
- Structure Design
- Lattice Steel Tower Design Considerations
- Tower Testing
- Pole and Tower Types
- Pole Structure
- Tower Structure
- Conductors
- Environmental Considerations
- Conductor Selection
- Types of Conductor
- Aerial bundled conductor
- Conductor Breaking Strength
- Bi-Metal Connectors
- Lightning
- Insulator arcing horn co-ordination
- Surge Divertors
- Load-Flow Constraints in Power Networks
- Calculated Ratings
- Power Carrying Capacity
- Corona Discharge Line Rating Calculation
- Worked Example and Exercise
- Design Span
- Clearances and Loadings
- Distribution Voltage Clearances
- Transmission Voltage Level Clearances
- Overhead Line Clearance Calculations
- Worked Example and Exercise
- Overhead Line Fittings
- Aerodynamic Phenomena
- Suspension Clamps

- Sag Adjusters
- Other types of Fittings
- Overhead Line Impedance
- Inductive Reactance
- Capacitive Reactance
- Resistance
- Worked Example and Exercise
- Overhead Line Maintenance
- Case Studies

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