



*Training Course:
Design of Distribution Networks and Load
Growth Estimation*

*13 - 24 June 2027
Cairo (Egypt)*

Training Course: Design of Distribution Networks and Load Growth Estimation

Training Course code: EN235694 From: 13 - 24 June 2027 Venue: Cairo (Egypt) - Training Course Fees: 6950 € Euro

Introduction

Electrical distribution networks are essential for delivering power from substations to end users efficiently, reliably, and safely. With increasing demand, urban expansion, and integration of renewable energy, accurate network design and load growth estimation have become critical for long-term planning and operational stability.

This 10-day advanced training program, developed by [Global Horizon Training Center](#), provides a comprehensive approach to the design of electrical distribution systems and forecasting future load demand. It integrates engineering principles, planning methodologies, and practical tools to support efficient and scalable network development.

Participants will gain the knowledge and skills required to design robust distribution networks, analyze load requirements, and plan for future growth while ensuring system reliability and cost-effectiveness.

Course Objectives

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

- Understand distribution system structures and components
- Design electrical distribution networks radial, ring, mesh
- Perform load calculations and demand analysis
- Estimate future load growth using forecasting techniques
- Apply voltage regulation and loss minimization strategies
- Integrate distributed generation and renewable energy
- Ensure system reliability, safety, and compliance
- Optimize network performance and expansion planning

Target Audience

- Electrical and Power Engineers
- Distribution and Utility Engineers
- Planning and Design Engineers
- Energy and Infrastructure Professionals
- Consultants and Technical Specialists

Outline

Day 1: Fundamentals of Distribution Systems

- Overview of power distribution networks
- Components feeders, transformers, switchgear
- Voltage levels and configurations
- Distribution system classifications

Day 2: Network Topologies and Design Concepts

- Radial, ring, and mesh systems
- Design criteria and standards
- Reliability and redundancy considerations
- Urban vs rural network design

Day 3: Load Characteristics and Demand Analysis

- Types of electrical loads
- Load profiles and diversity factors
- Demand and load factor calculations
- Peak load estimation

Day 4: Load Flow and Voltage Regulation

- Load flow analysis basics
- Voltage drop calculations
- Reactive power and power factor correction
- Voltage control methods

Day 5: Distribution Equipment Selection

- Transformers and sizing
- Cable and conductor selection
- Protection devices and coordination
- Switchgear and network components

Day 6: Loss Reduction and Efficiency Optimization

- Technical and non-technical losses
- Energy efficiency techniques
- Network reconfiguration
- Capacitor placement

Day 7: Load Growth Estimation Techniques

- Forecasting methods trend analysis, regression, AI basics
- Demand growth models
- Impact of urban development and industrialization
- Scenario-based forecasting

Day 8: Integration of Renewable Energy and Distributed Generation

- Solar and wind integration

- Distributed energy resources DER
- Smart grids and energy storage
- Grid stability considerations

Day 9: Reliability, Safety, and Standards

- Reliability indices SAIDI, SAIFI
- Fault analysis and protection coordination
- Safety standards and regulations
- Compliance with IEC/IEEE

Day 10: Integrated Network Design & Final Workshop

- Designing a complete distribution network
- Load forecasting and expansion planning
- Cost analysis and optimization
- Case study and group project
- Final review and evaluation

Registration form on the Training Course: Design of Distribution Networks and Load Growth Estimation

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Payment Method

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