SCANDINAVIAN ACADEMY
For Training and Development

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Course: Power Distribution Equipment

Code	City	Hotel	Start	End	Price	Language - Hours
790	Budapest (Hungary)	Hotel Meeting Room	2025-03-31	2025-04-04	5450 €	En - 25

Introduction

Power distribution equipment which are reliable, safe, and efficient are essential for an electrical installation. This Power Distribution Equipment training course includes the construction, operation, and maintenance aspects of the equipment namely the transformers, circuit breakers, ring main unit, switches, and protection devices. Safe operations are essential as they are protected by modern and sophisticated relays and protection devices. Power distribution can either be overhead or underground and auxiliary power is obtained by means of uninterruptible power supply.

Protection systems are installed to prevent faults from damaging electrical plant and to initiate isolation of faulted sections to maintain continuity of supply elsewhere on the system. Recent changes in technology together with changes in the way utilities and industrial organisations operate, has greatly emphasized the development of integrated protection and control.

This training course will feature:

- The construction and operations of transformers
- The characteristics of circuit breakers
- The importance and role of UPS and batteries
- The types of maintenance
- The functionalities of protection relays

What are the goals?

- Understand the major power distribution equipment
- Determine the various types maintenance strategies
- Explain the different types of circuit breakers
- Analyse the characteristics of oil immersed transformers
- Design a simple electrical power distribution incorporating the main power distribution equipment

Who is this training course for?

- Electrical engineers
- Electrical supervisors
- Power engineers
- Managers in-charge of electrical installations
- Project engineers

Course Outline

Day One: Distribution Power Transformers Types, Characteristics, Operations and Protection:

- Types and design of power transformers
- Oil immersed transformers
- Major components of a power transformer
- Vector groups for transformers
- Cooling systems for transformers
- Fault level and impedance percentage of a transformer

Day Two: Construction and Characteristics Switches and Circuit Breakers:

- Construction and operation of load break switch, earth switches and isolators
- Construction and operation of molded case circuit breaker

- Construction and operations of air circuit breaker
- The electronic trip of an air circuit breaker
- The construction and operation of vacuum circuit breaker
- Characteristics of vacuum circuit breaker

Day Three: SF6 and High Voltage Circuit Breakers:

- SF6 arc quenching characteristics
- SF6 circuit breaker operations and characteristics
- Live tank high voltage circuit breaker
- Dead tank high voltage circuit breaker
- Safety of SF6 circuit breakers
- New alternative grid green gas

Day Four: Auxiliary Power by Means of Batteries and Uninterruptible Power Supply (UPS):

- Critical loads and distribution equipment categories
- Types of online and offline UPS design
- Components functionalities of a UPS
- Double conversion UPS
- Redundancy and parallel operation of UPS
- UPS operational modes

Day Five: Maintenance and Safety of Power Distribution Equipment:

- Functionalities of numerical relays
- Maintenance strategies
- Partial discharge and its effects
- Merits of thermography
- Power quality measurement instruments
- Wrap up session and Q&A session

The Scandinavian Academy for Training and Development employs modern methods in training and skills development, enhancing the efficiency of human resource development. We follow these practices:

- **Theoretical Lectures:**
  - We deliver knowledge through advanced presentations such as PowerPoint and visual materials, including videos and short films.
- **Scientific Assessment:**
  - We evaluate trainees skills before and after the course to ensure their progress.
- **Brainstorming and Interaction:**
  - We encourage active participation through brainstorming sessions and applying concepts through role play.
- **Practical Cases:**
  - We provide practical cases that align with the scientific content and the participants specific needs.
- **Examinations:**
  - Tests are conducted at the end of the program to assess knowledge retention.
- **Educational Materials:**
  - We provide both printed and digital scientific and practical materials to participants.
- **Attendance and Final Result Reports:**
  - We prepare detailed attendance reports for participants and offer a comprehensive program evaluation.
- **Professionals and Experts:**
  - The programs scientific content is prepared by the best professors and trainers in various fields.
- **Professional Completion Certificate:**
  - Participants receive a professional completion certificate issued by the Scandinavian Academy for Training and Development in the Kingdom of Sweden, with the option for international authentication.
- **Program Timings:**
  - Training programs are held from 10:00 AM to 2:00 PM and include coffee break sessions during lectures.