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Training and Development

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Course: Electrical Power Systems for Non Engineers

Code	City	Hotel	Start	End	Price	Language - Hours
794	Hamburg (Germany)	Hotel Meeting Room	2025-03-10	2025-03-14	5950 €	En - 25

Introduction

This Electrical Power Systems for Non-Engineers is dedicated to non-engineers to understand the basic and operations of electrical power systems. Commencing with the conventional method of generation of electricity to the fundamentals of renewable energy electrical power generation. In the transmission and distribution of electrical power the functions of power transformers, circuit breakers, electric motors, and earthing systems. Safety and hazards of electricity are the focal points in all electrical installations

Basic single line diagram interpretation is essential for the understanding of the electrical installation power flow. The emphasis of alternating current (AC) systems will encompass the basic electrical units like voltage, current, power, power factor a frequency of a single-phase and three-phase systems. Maintenance culture complimented by standard testing and measuring instruments is essential to ensure the reliability and security of an electrical power system.

This training course will feature

- Generation, transmission, and distribution of electricity
- Types of AC single-phase and three-phase network systems
- Power and power factor in an AC system
- Protection devices in an electrical installation
- Electrical safety and electric shock hazards



What are the goals?

- Understand the generation, transmission, and distribution of electricity
- Analyze Grounding systems and electrical safety
- Determine Electric shock risks and arc flash hazards
- Have a better understanding of electrical faults and protective devices
- Familiarize with main electrical equipment like transformers, motors and circuit breakers

Who is this training course for?

- Mechanical engineering engineers
- Mechanical engineering technicians
- Safety officers
- Civil engineering personnel
- Administrative and management staff

Course Outline

Day One: The AC Network and Electric Shock Hazards:

- Generation, transmission and distribution of electricity single phase and three-phase
- Types of AC network, star and delta configurations
- Power, voltage, current, impedance and power factor
- Importance of network earthing systems
- Types of earthing systems
- Electrical safety and electric shock hazards

Day Two: Operation of Various Types of Electrical Protection Devices:



- Fuses for low voltage, medium voltage and high voltage
- Miniature circuit breaker (MCB) construction and operation principles
- Molded case circuit breaker (MCCB) construction and operations
- Air circuit breakers
- Vacuum circuit breakers
- SF6 circuit breakers

Day Three: Distribution Power Transformers and AC Motors:

- Construction and types of transformers
- Functionalities of the transformer components
- Transformer cooling systems
- Types of AC single phase motors
- Three-phase AC induction motors
- Starting methods of AC motors

Day Four: The Interpretation and Use of Drawings:

- Importance of electrical drawings
- Single line diagram symbols
- Interpretation of electrical drawings
- Tracing a single line diagram
- Identify the components in a single line diagram
- Design a single line diagram

Day Five: The Use of Common Test Equipment and Maintenance:

- Digital multi meter
- Insulation resistance tester
- Importance and significance of maintenance
- Maintenance strategies in an electrical installation
- Types of maintenance
- Wrap up 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.