



**SCANDINAVIAN ACADEMY**  
Training and Development

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# Course: Introduction to High Voltage Equipment and Power Systems

Code	City	Hotel	Start	End	Price	Language - Hours
637	Frankfurt (Germany)	Hotel Meeting	2025-07-14	2025-07-18	5950 €	En - 25

## Course Introduction:

High voltage equipment and power systems play a crucial role in electricity generation, transmission, and distribution. Understanding the operation, maintenance, and safety aspects of high voltage components is essential for engineers, technicians, and power system professionals. This training program provides participants with a deep understanding of high voltage equipment, grid infrastructure, fault analysis, insulation coordination, and system protection techniques.

Through a mix of theoretical instruction, hands-on exercises, and real-world case studies, participants will develop essential skills to ensure the safe and efficient operation of high voltage systems.

## Course Objectives:

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

- Understand the fundamentals of high voltage engineering and power systems.
- Identify key components of high voltage substations and transmission networks.
- Apply best practices for insulation coordination and surge protection.
- Analyze power system faults and implement effective protection schemes.
- Ensure compliance with safety regulations and industry standards.
- Optimize high voltage maintenance strategies for improved reliability.



## Target Audience:

- Electrical Engineers and Technicians
- Power System Operators and Supervisors
- Substation and Grid Maintenance Personnel
- Transmission and Distribution Engineers
- Energy Regulators and Utility Professionals
- Anyone working with high voltage infrastructure

## Course Outline

### Day 1: Fundamentals of High Voltage Power Systems

- Overview of power generation, transmission, and distribution
- Voltage classifications and system configurations
- Key components: transformers, circuit breakers, insulators
- Introduction to electrical stress and insulation requirements

### Day 2: High Voltage Equipment and Grid Infrastructure

- Design and operation of high voltage substations
- Transmission line components and construction methods
- Reactive power compensation and voltage stability
- Hands-on session: Analyzing high voltage system components

### Day 3: Fault Analysis and Protection Systems

- Types of faults in high voltage networks (short circuits, overloads)
- Protection schemes: differential, distance, and overcurrent protection
- Relay coordination and fault isolation techniques
- Case study: Investigating real-world high voltage system faults



## **Day 4: Insulation Coordination and Surge Protection**

- Types of insulation and their applications
- Surge arresters and transient voltage protection
- Partial discharge monitoring and diagnostic techniques
- Practical workshop: Testing and evaluating insulation performance

## **Day 5: Safety, Maintenance, and Compliance in High Voltage Systems**

- High voltage safety procedures and risk mitigation
- Maintenance strategies for substations and transmission networks
- Regulatory compliance and industry best practices



The Scandinavian Academy for Training and Development adopts the latest scientific and professional methodologies in training and human resource development, aiming to enhance the efficiency of individuals and organizations. Training programs are delivered through a comprehensive approach that includes:

- Theoretical lectures supported by PowerPoint presentations and visual materials (videos and short films).
- Scientific evaluation of participants before and after the program to measure progress and knowledge acquisition.
- Brainstorming sessions and practical role-playing to simulate real-life scenarios.
- Case studies tailored to align with the training content and participants work nature.
- Assessment tests conducted at the end of the program to evaluate the achievement of training objectives.

Each participant receives the training material (both theoretical and practical) in printed form and saved on a CD or flash drive. Detailed reports, including attendance records, final results, and overall program evaluations, are also provided.

Training materials are prepared professionally by a team of experts and specialists in various fields. At the end of the program, participants are awarded a professional attendance certificate, signed and accredited by the Scandinavian Academy for Training and Development.

### **Program Timings:**

- 9:00 AM to 2:00 PM in Arab cities.
- 10:00 AM to 3:00 PM in European and Asian cities.

### **The program includes:**

- A daily buffet provided during the sessions to ensure participants comfort.