SCANDINAVIAN ACADEMY
For Training and Development

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Course: Principles of the Maintenance of Electrical Switchgear

Code	City	Hotel	Start	End	Price	Language - Hours
638	Athens (Greece)	Hotel Meeting Room	2025-04-28	2025-05-09	9450 €	En - 50

Course Introduction:

Electrical switchgear is a vital component in power distribution, providing protection, control, and isolation in electrical systems. Proper maintenance of switchgear is essential to ensure operational reliability, prevent failures, and extend the lifespan of electrical installations. This comprehensive training course will equip professionals with the knowledge and skills needed to perform effective maintenance, troubleshooting, and safety procedures for electrical switchgear systems.

Through a mix of theoretical instruction, practical exercises, and case studies, participants will develop a deep understanding of switchgear components, maintenance strategies, safety protocols, and compliance with industry standards.

Course Objectives:

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

- Understand the function, classification, and components of electrical switchgear.
- Identify potential failure modes and maintenance requirements.
- Implement preventive, predictive, and corrective maintenance techniques.
- Conduct insulation resistance testing, thermal imaging, and contact resistance testing.
- Apply safety procedures, including Lockout/Tagout (LOTO) and arc flash hazard mitigation.
- Diagnose faults and troubleshoot electrical switchgear effectively.

- Ensure compliance with industry standards such as **IEC 62271, IEEE C37, and NFPA 70E**.

Target Audience:

- Electrical Engineers and Technicians
- Maintenance and Operations Personnel
- Power System Engineers
- HSE Officers and Safety Professionals
- Industrial Electricians
- Anyone responsible for switchgear maintenance and reliability

Course Outline

Day 1: Introduction to Electrical Switchgear

- Overview of switchgear functions and classifications
- Types of switchgear: Low voltage (LV), Medium voltage (MV), and High voltage (HV)
- Key components: Circuit breakers, fuses, disconnect switches, relays, and busbars
- Understanding switchgear failure modes

Day 2: Switchgear Maintenance Strategies

- Importance of preventive maintenance
- Predictive maintenance techniques and condition monitoring
- Corrective maintenance approaches
- Reliability-Centered Maintenance (RCM) best practices

Day 3: Electrical Testing and Diagnostic Procedures

- Insulation resistance testing and dielectric strength tests
- Contact resistance measurement techniques

- Thermal imaging for condition assessment
- Partial discharge analysis and monitoring

Day 4: Maintenance of Circuit Breakers and Protective Relays

- Types of circuit breakers (Air, SF6, Vacuum, Oil)
- Maintenance procedures for different breaker types
- Overcurrent relay testing and calibration
- Troubleshooting relay coordination issues

Day 5: Safety Considerations in Switchgear Maintenance

- Lockout/Tagout (LOTO) and isolation procedures
- Arc flash hazard analysis and PPE selection
- Safe work practices for live equipment maintenance
- Emergency response planning and risk mitigation

Day 6: Switchgear Cleaning, Lubrication, and Component Inspection

- Best practices for cleaning and contamination control
- Lubrication of moving components
- Inspection and replacement of worn-out parts
- Hands-on session: Performing a switchgear maintenance routine

Day 7: Troubleshooting and Fault Diagnosis

- Common switchgear faults and symptoms
- Interpreting test results and analyzing failure causes
- Electrical failure case studies and root cause analysis
- Steps for restoring normal operations safely

Day 8: Power System Protection and Coordination

- Protective device coordination principles
- Selective tripping and fault isolation
- Coordination study methodologies
- Case study: Designing an effective protection scheme

Day 9: Compliance with Standards and Regulations

- Overview of IEC 62271, IEEE C37, NFPA 70E
- Regulatory requirements for switchgear maintenance
- Documentation and reporting best practices
- Ensuring workplace compliance and audit preparation

Day 10: Final Assessment

- Review of key concepts and best practices
- Developing a structured maintenance and compliance strategy
- Mock inspection and practical competency assessment

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.