

Scandinavian Academy
Training Center

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Riyadh - Al Khaleej District - Sheikh Abdul Aziz Bin Abdul Rahman Bin Bishr Street - 13223 - Office No. 5 | P.O.BOX : 13224

Course: Power Quality and Reliability

Code	City	hotel	Start	End	price	Language - Hours
EE-792SA	Riyadh	Hotel Meeting Room	2027-04-04	2027-04-08	12950 SR	En - 25

Introduction

Power quality determines reliability of electrical equipment operation, performance of the assigned functions by it, service life. Problems of power quality attracted increased attention because of power quality degradation and not meeting customer expectations. Poor power quality has been shown to lead to reduced efficiencies, increased risk of downtime and higher energy and operating costs.

When it comes to power quality issues, the easiest and most effective solution to avoid unplanned shutdowns is the correction of voltage anomalies coming from the grid. This can be accomplished using harmonic filters, capacitors and other protective equipment.

Rises in non-linear and other challenging loads in modern electrical networks present unique power quality challenges. Sensitive operations, irregular loads and isolated or weaker grids demand stricter grid codes and power quality standards to safeguard the reliability of an electrical system for smooth industrial and commercial processes. Harmonics distortions, voltage variations, poor power factor and load unbalance are among the key elements that not only test the reliability of modern electrical systems but also induce overall greater system losses. This Power Quality and Reliability training course will ensure that your Power Systems Meet Customer Expectations.

This training course will feature

- Basic terminology and definitions
- Voltage sags and interruptions
- Effects of fault clearing on voltage
- Reliability indices
- Transient overvoltage`s and arresters

- Understanding and mitigating harmonics
- Analysis of AC power and steady-state voltage regulation

What are the goals?

- Understand common power quality and reliability terms
- Know how to assess the impact of voltage sags on sensitive electrical equipment
- Comprehend the influence of fault clearing on voltage stability
- Calculate and use standardized reliability indices
- Understand the sources of transient overvoltage`s and be able to specify arresters
- Know why harmonics are produced and be able to implement mitigation methods
- Analyze the components of AC power and understand the relationship with voltage regulation

Who is this training course for?

- Engineers and technicians new to the power industry
- Intermediate-level engineers and technicians who seek to improve system reliability
- Professionals involved with the assessment of power quality
- Facility engineers and consultants responsible for mitigating power quality issues
- Engineers tasked with monitoring system performance and reliability

Course Outline

Day One: Introduction and Power Quality Issues:

- Power quality definition and basics
- Importance of good and reliable power quality
- Quantifying power quality
- ITI curve
- Causes of voltage sags

- Causes of interruptions

Day Two: Transient Voltage Excursions:

- Motor starting
- Switching and traveling waves
- Capacitor switching
- Lightning
- Lightning shielding and grounding
- Ferro resonance

Day Three: Reliability Indices, Effects of Fault Clearing on Power Quality:

- IEEE-defined reliability indices
- Interpreting reliability indices
- Fault clearing
- Reclosing strategies
- Fuse saving philosophy
- Fuse blowing philosophy

Day Four: Insulation Coordination, Arresters, and Steady-State Voltage Regulation:

- Basic impulse level
- Insulation systems
- Insulation testing
- Arrester selection and application
- Load tap changers and voltage regulators
- Effects of steady-state voltage on system operation

Day Five: Harmonics and Mitigation Techniques:

- Fundamentals of harmonics

- Causes and effects of harmonics
- AC power and power factor
- Mitigating harmonic effects
- K-factor transformers
- Harmonic filters

The Scandinavian Academy for Training Center 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 Center.

Program Timings: 9:00 AM to 2:00 PM

The program includes:

- A daily buffet provided during the sessions to ensure participants comfort.
- A closing ceremony on the final day to distribute certificates and celebrate participants achievements.
- **Note: All prices are exclusive of 15% Value Added Tax (VAT).**

Our Success Partners

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