MERCURY

Modern Electrical Power Systems Training Course

31 Mar - 20 Apr 2025
Munich (Germany)

Istanbul - Turkey: +90 539 599 12 06
Amman - Jordan: +962 785 666 966
London - UK: +44 748 136 28 02

MERCURY

Modern Electrical Power Systems Training Course

Ref.: 9087_310641 **Date:** 31 Mar - 20 Apr 2025 **Location:** Munich (Germany) **Fees:** 5200 **Euro**

Introduction:

Modern electrical power systems increase the efficiency of power generation, transmission, and distribution and help to lower the carbon footprint for a greener world. This modern electrical power systems engineering course includes the green generation of electricity using renewable energy sources.

This seminar also discusses the introduction and merits of Smart and Micro Grids. The modern electrical power systems engineering course emphasizes determining and controlling fault levels, active and reactive power, voltage, and frequency, which are essential in a modern electrical power system. Additionally, modern mitigation techniques address power quality issues.

Participants in this modern electrical power systems engineering course will learn how power system stability is ensured, incorporating the Flexible AC Transmission System FACTS. This technology has evolved and matured with high power ratings.

These systems supply the network as quickly as possible with inductive or capacitive reactive power tailored to its particular requirements. This modern electrical power systems engineering training, in turn, improves the transmission quality and efficiency of the power transmission system.

Targeted Groups:

- Designers.
- Engineers.
- Technicians.
- Professionals are involved with the planning, operating, and maintaining power systems and electrical engineering for small to large-scale power networks, from around 11kV upwards.
- Professionals from the Distribution Companies.
- Power Utilities and Engineering Professionals in the Electricity Supply Industry and Petrochemical Companies who deal with aspects of generation, transmission, and distribution.

Course Objectives:

By the end of this electrical power systems training course, participants will be able to:

- Understand alternative forms of generation and embedded generation.
- Optimize power flow for absolute power and use FACTS devices to improve system operation, including the DSM approach.
- Learn about new CT and VT optical transducers and protection systems using microprocessor relays.
- Address nonlinear loads and inject Harmonics at the PCC point of standard coupling.
- Engage in diagnostic monitoring of the plant, particularly GIS substations.
- Explore high-speed fault limiters and thermal monitoring systems for cables.

Istanbul - Turkey: +90 539 599 12 06
Amman - Jordan: +962 785 666 966
London - UK: +44 748 136 28 02

MERCURY

Targeted Competencies:

Participants in this electrical power systems training course will gain competencies in:

- Understand the various types of renewable energy generation, transmission, and distribution.
- Know the significance and merits of intelligent grids.
- The importance of reactive power.
- Learn about power quality issues and mitigation methods.
- The flexible AC transmission system merits.

Electrical Power System Protection Training:

This modern electrical power systems engineering course, dedicated to electrical power system protection training, will significantly benefit participants who require a deeper understanding of protection systems.

This modern electrical power systems engineering course provides insights into the design and operation of protective devices and systems, helping the participants earn an electrical power system protection certificate upon completing this module.

Furthermore, this modern electrical power systems engineering training will delve into the latest methodologies and technologies in fault detection, isolation, and system restoration, essential components of a robust and reliable modern electric power system.

Course Content:

Unit 1: Introduction to Modern Electric Power Systems:

- Overview of Typical and Modern Systems covering Generation, Transmission and Distribution, and the SMART Grid.
- Determination of Flow of Real P and Reactive Power Q.
- Characteristics and Impact of System and Transformer Fault Levels.
- Control of Reactive Power and Voltage.
- Control of Active Power and System Frequency.
- Effects of Reactive Power Compensation on Voltage Profile.
- Overview of Power System Disturbances.

Unit 2: Current Operational Problems and System Operations:

- Coping with Rising Demand for Power, Carbon Footprint Reduction, and Global Warming.
- Symmetrical, Asymmetrical Faults and Effects on Positive, Negative, and Zero Sequence Components.
- Monitoring of Plant Condition - for instance, temperature.
- Power System and Substation Automation.
- Increasing Problems of Heavily Loaded Systems - Stability, Voltage Dip.
- Transmission Voltage Levels - Line and Cable Design, Power Loading, and De-rating for Temperature Effects.
- Learn significant causes of power system failures.

Istanbul - Turkey: +90 539 599 12 06
Amman - Jordan: +962 785 666 966
London - UK: +44 748 136 28 02

MERCURY

Unit 3: Emerging Technologies in Electrical Power System Analysis and Green Renewable Energy:

- Renewable Energy and the Environment - Solar Power, Geothermal Power, Wind Power, Environmental Friendly Storage Batteries.
- Green Generation? Is it possible on a large scale, or are there stability problems?
- Demand Side Management - Remote Load Control - Minimizing Demand - Optimizing Transmission - Coping with Dips and Swells.
- Optical Current Transducers for Protection - Optical Current Sensors Eliminate CT Saturation.
- High Voltage Applications - Surge Protection, Fault Current Limiters, Network Switching.
- Nonlinear Loads - Harmonics at PCC - Filtering - G5/4 Requirements.
- Triple Harmonics and Mitigation Techniques.

Unit 4: Digital Substations, FACTS, and HVDC Link:

- Digital Substation Architecture.
- Flexibility in AC Systems FACTS - Static VAr Compensation - Series Controlled Capacitors.
- Changing Maintenance Schedules, Remote Surveillance of Plant, and the Introduction of Unmanned Substations.
- Data Logging.
- HV-DC Links for Stability Improvement.
- Optical Cable Temperature Monitoring.
- SCADA and Artificial Intelligence Systems for Fault Diagnostics.

Unit 5: Numerical Protection Relays and State-of-the-Art Fault Current Limiter:

- Advanced Protection and Control Techniques.
- Numerical Relay and Protection Functions.
- Electrical Insulation - Air and SF6 - The Problems.
- Condition Monitoring of Plant.
- Is - Fault Current Limiter, How to Apply.
- GIS Diagnostics - Partial Discharge Techniques.

Istanbul - Turkey: +90 539 599 12 06
Amman - Jordan: +962 785 666 966
London - UK: +44 748 136 28 02

MERCURY

Registration form on the :
Modern Electrical Power Systems Training Course

code: 9087 **From:** 31 Mar - 20 Apr 2025 **Venue:** Munich (Germany) **Fees:** 5200 **Euro**

Complete & Mail or fax to Mercury Training Center at the address given below

Delegate Information

Full Name (Mr / Ms / Dr / Eng):
.....
Position:
.....
Telephone / Mobile:
.....
Personal E-Mail:
.....
Official E-Mail:
.....

Company Information

Company Name:
.....
Address:
.....
City / Country:
.....

Person Responsible for Training and Development

Full Name (Mr / Ms / Dr / Eng):
.....
Position:
.....
Telephone / Mobile:
.....
Personal E-Mail:
.....
Official E-Mail:
.....

Payment Method

☐ Please invoice me

☐ Please invoice my company