

Training Title

POWER SYSTEM PROTECTION IN UTILITIES & INDUSTRIAL ELECTRICAL NETWORKS

Training Duration

5 days

Training Venue and Dates

REF EE042	Power System Protection in Utilities & Industrial Electrical Networks & Protective Relaying	5	18-22 Feb	\$4,250	Dubai, UAE
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In any of 5 star hotel. Exact venue will be informed later.

Training Fees

- 4,250 US\$ per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch

Training Certificate

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

Language: English

TRAINING OVERVIEW

COURSE DESCRIPTION

Delegates will gain an overall appreciation of the applicable standards and working practices for:

- ❖ Equipment Design and selection of Electrical Equipments
- ❖ Installation
- ❖ Testing and Commissioning
- ❖ Maintenance

WHO SHOULD ATTEND

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Managers, Engineers and Technicians, responsible for the design, installation and testing of electrical installations, who require to refresh their knowledge and skills.

TRAINING METHODOLOGY

The latest educational methods and strategies are employed. The course is designed to maximize delegate participation. From the outset the goals of each participant are discussed to ensure needs are fulfilled as far as possible. Questions and answers are encouraged throughout and at the daily wrap-up sessions. This gives participants the opportunity to discuss with other delegates and the presenter their specific problems and appropriate solutions. All delegates take away a manual of all

the material presented. Only minimum note taking is encouraged to ensure maximum delegate attention during the seminars.

30% Lectures

30% Workshops and work presentation

20% Group Work & Practical Exercises

20% Videos & General Discussions

OUTLINE

Equipment design, installation, testing and maintenance

- Review of basics of Electrical Engineering
- Generation / Utility side equipment: Generators, switchgears, industrial & Current Transformers, Fuse, Switch and Combination units, Circuit Breakers, Contractors, Protection and metering
- And Grounding, Selection of cables, Energy savings and reduction of losses due to power quality problems. Introduction to panel design: Switch gears and Switchboards System Earthing.
- Installation: cable laying, termination and earthing.
- Testing: Type test, Routine test, Site Test (commissioning test)
- Maintenance and failure reduction: Conditions Monitoring, Periodic Test, Visual Inspection, and Failure Reporting.

Power System Design

- Power system design issues, system stability, protection and control
- Power system modeling: Line sequence impedances, Generator sequence impedances.
- Transformer impedances, Per unit parameters
- Power system grounding
- Performance & design of transmission lines, design of EHV transmission lines, advantages and disadvantages of HVAC and HVDC
- Selection of sizes and locations of generating stations and substations
- Designs of distribution systems, economics of distribution systems

Power System Electrical Transients

- Transients characterization, balanced fault analysis, Unbalanced fault analysis
- Three phase faults, asymmetric faults, Fault transients, Fault Monitoring / Recording, Effects of grounding, Grounding potential rise-safety
- Electromechanical Transients and Stability, System Stabilization

Protection Fundamentals

- Protection philosophy, Zones of protection, Protective equipment, overcurrent protection
- Overvoltage and Undervoltage protection, Overfrequency and Underfrequency protection
- Zone distance protection, Differential protection
- Pilot relaying, Computer relaying

Power System Protection & Control

- Principles of circuit interruption, types of circuit-breakers and switch gears
- SF6 power circuit breakers, voltage control, power system control
- Control of reactive power & power factor
- Interconnected control & frequency ties, supervisory control

Case Studies, Last Day Review, Discussions & Assessments will be carried out.



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