

Design Of Electric Switchboards (IV and MV) Only Of Design and Engineering Engineers Course

Venue Information

Venue: London UK

Place:

Start Date: 2025-12-15

End Date: 2025-12-19

Course Details

Net Fee: £4750.00

Duration: 1 Week

Category ID: EAPET

Course Code: EAPET-7

Syllabus

Course Description

Switchgear (and circuit breakers) are obviously critical components in electrical distribution systems and their operation significantly affects the overall operation of the system. The two day workshop will discuss application, installation, maintenance and testing issues relating to medium and high voltage switchgear and circuit breakers.

There will also be a coverage of low voltage switchgear. You will receive a thorough grounding in switchgear theory and standards. You will gain a solid understanding of the issues associated with the proper application, installation and maintenance of these critical items of equipment with an overriding emphasis on safety.

This comprehensive five day workshop emphasises medium voltage switchgear which represents most of the switchgear installed on electrical distribution systems. The focus here is on air blast, oil, SF6 and vacuum circuit breakers. Case studies covering the main manufacturer's equipment will illustrate the important practical

- Selection of appropriate type and rating of circuit breakers and switchgear.
- Fundamentals of operation of switchgear. Switchgear components (CTs, VTs, relays, cable terminations).
- Safe operational policies including safety rules and safety documents.
- Able to discuss different LV forms of separations. Fully understand how to size and select different type of motor starters.
- Diagnostic tools and test equipment for switchgears.
- Safe maintenance policies including safe working in switch rooms, indoor and outdoor substations.

Course Outlines

- Introduction to LV & HV Switchgear.
- Breaking of AC currents.
- Transient restrike recovery voltage (TRRV). Surge arresters.
- Metal clad & metal enclosed switchboards.
- LV forms of separation.
- Load flow studies (rated current).
- Calculation of fault currents (simplified methods, PU, MVA & Symmetrical components). Breaking & Making Capacities.
- Different types of LV Circuit breakers/contactors (ratings & tripping units/curves).
- Sizing of motor starters (DOL, Star/Delta, Auto transformer & soft starters).
- Fuse sizing for distribution transformers & motors.
- Type 1 & type 2 co-ordination for motor starters.
- Dimensioning of LV switchboards (MCC & power centers).
- Different types of HV Circuit breakers (Oil, Vacuum, Gas & Air type).
- Merits & demerits of each type of HV breakers.
- Different de-rating factors (temperature, altitude, etc ...).
- Breaking capacity de-ratings according to IEC/ANSI C37.010.
- Bus bar sizing/cross sectional area/current density & skin effect.
- Specifications for switchboards.
- Overview of protection & measuring units.
- Different types electrical diagrams.
- Panel scheduling.
- Type & routine tests on switchgear.

Course Evaluation & Summary