Introduction

The purpose of the course is to enable participants who do not have an academic background in electrical engineering to understand the basic principles of the various electrical equipment that they may encounter in their working environment so that they can do a better job. The focus will be on medium voltage equipment between 1kV to 36kV.

Scope of Training

Course content for Senior Authorised Electrical Persons (SAEP)

Day 1	Transformers & Motors
Day 2	Generators & Protection
Day 3	Switchgear & Electrical Safety
Day 4	Assessment for **3** people only

**Additional days required for more assessments

Program Designed For

Authorized persons and young electrical engineer & managers.

Duration

4 Days

Your Instructor

Lee Chong Kiow

Simon Augustine

Minimum Pax

6 Pax

Course Contents

Power Transformers

- Basic principles of voltage, current and power transformers
- Dry and oil-filled transformers
- Conservator and sealed type of transformers
- Cooling of transformers
- Use of tap-chargers
- Off-circuit and on-load tap-chargers
- Windings and vector groups
- Accessories

AC Motors

- Synchronous and induction motors
- Squirrel cage induction motors
- Use of contractors to control motors
- Starting methods, current and voltage dip
- Soft starts and variable speed drives

Introduction to Protection

- Purpose and principle of protection
- Components of protection scheme
- Disturbances in power systems
- Zones of protection
- Unit and non-unit protections
- Main and back-up protections
- Differential and overcurrent-earth fault protections

What to do after a relay trips?

- How to make use of the disturbance and events recorders in modern protection relays to understand the nature and location of faults in a power system before taking appropriate action

Course Contents

Introduction to Switchgear

- Purpose, types and functions of switchgear – circuit breaker, contactor, switch, earthing switch and disconnector
- MV CB – oil, minimum oil, vacuum and SF6
- Ring main unit
- LV air and MV vacuum contactors
- Characteristics of CBs – opening, arcing and breaking times
- Features, advantages and disadvantages of gas-insulated switchgear
- Understanding various ratings of medium voltage switchgear

Dangers of Electrical Arc Flash & Blast

- Differences between and consequences of arc flash and blast.
- Need for arc flash studies based on IEEE 1584
- Understanding the terms working distance, incident energy and flash protection boundary
- Understanding the use of the various categories of PPE in limiting injuries to first degree burns

Electrical Safety Rules

- Review of typical Electricity Safety Rules
- Competent and authorised persons
- Permit to work, sanction for tests and limitation of access
- Caution, danger and earthed notices
- Need for isolation, earthing and tagging before starting electrical work
- Need to check test equipment before and after use

Training Methodology

- Participants are free to bring any technical documents or single-line diagrams for any discussions.
- Written test will be conducted at the end of each session or the course.