Global Horizon
TRAINING CENTER

Training Course:
Safe Operation & Maintenance of Circuit Breakers and Switchgears

8 - 12 December 2025
London (UK)
Landmark Office Space - Oxford Street

Training Course:
Safe Operation & Maintenance of Circuit Breakers and Switchgears

Training Course code: MI6055 From: 8 - 12 December 2025 Venue: London (UK) - Landmark Office Space - Oxford Street
Training Course Fees: 6000 Euro

Introduction

Circuit breakers, fused switches, and switchgear in the form of motor Control Centres MCC are necessary system items for the electrical control of the electrical plant. The safe use of these devices and associated equipment require correct initial selection, operation, and maintenance. It is also necessary to have a detailed understanding of how these devices should be installed, the local substation and system ratings, and how the various breakers operate, in order to enable accurate troubleshooting and subsequent repair.

Safe Operation & Maintenance of Circuit Breakers and Switchgear will equip participants with new or refreshed skills to ensure that circuit breakers and switchgear are installed, operated safely, and maintained in a fashion that ensures safe and stable operation. Also, they will be able to identified faults and ensure the underlying causes are identified to reduce possible further failures.

Course Objectives

The objectives of this seminar are to present:

- Understanding of the operational characteristics of circuit breakers and switchgear.
- Understanding of troubleshooting procedures, as applied to circuit breakers and associated switchgear.
- Improved capability in the use of test equipment.
- A better understanding of failure modes and failure analysis as applied to fuses, circuit breakers, and switchgear. In relation to air brake, vacuum, and SF6 devices.
- Refreshed awareness of electrical safety concerns within substations and control centres
- Ability to determine fault levels in substations

Course Process

The course is conducted as modular lectures with encouragement for the participant to interact.

Case studies are included to illustrate typical system arrangements in the range of voltages from 400V up to 36kV. Delegates are requested to bring general details of their companies approach to substation design and type of equipment employed at the various voltage levels employed. Drawings and plant ratings are useful.

Questions are welcomed throughout the course and during break sessions.

Course Benefits

- Greater personal confidence in approaching working safely with power switchgear
- Understanding "competence" and Health and Safety at work
- Awareness of the fault level and fault currents within the equipment
- Detailed understanding of the various interrupting mediums, air, vacuum and SF6
- Understanding protection, isolation, and switching
- Appreciating the differences between earthing and bonding
- Understanding of the need to carry out appropriate maintenance, inspection, test and certification of installations, equipment and appliances in the range 0.4 - 36kV

Carefully selected examples and case studies will be used to illustrate the material being discussed and in particular, emphasis will be given to ensure that the material is appropriate to the organizations represented.

Course Results

- A better understanding of the operational characteristics of circuit breakers and switchgear.
- A better understanding of troubleshooting procedures, as applied to circuit breakers and associated switchgear.
- An improved capability in the use of test equipment.
- A better understanding of failure modes and failure analysis as applied to fuses, circuit breakers, and switchgear. In relation to air brake, vacuum, and SF6 devices.
- A refreshed awareness of electrical safety concerns within substations and control centers.

Core Competencies

- Knowledge of types of switchgear and disconnectors
- Understanding of electrical systems and their load and fault requirements
- Overview of substation layouts and equipment from 0.4 - 36kV
- Health and Safety and equipment fault voltages during earth fault conditions
- Maintenance, inspection, testing and certification of switching plant
- Understanding electrical hazards, safe working distances, and permits to work
- Recognition of unsafe situations
- Safe earthing of equipment during maintenance, lockouts, and labels

Course Outlines

Day One

The Technology of Circuit Breakers and Switchgear

- Typical substation arrangements and MCC's
- Definitions and terminology
- Fault level calculations
- Motor and generator fault contributions
- Low voltage equipment
- Medium voltage equipment
- High voltage equipment
- Nameplate ratings - interpretation
- CT's and VT's
- Basic protection requirements
- Case studies

Day Two

Operation of various types of interrupting equipment

- Fuses - motor starting types
- Fused switches
- Molded case type breakers
- Air break switches
- Vacuum contactors - fused
- Vacuum circuit breakers
- SF6 puffer, rotating arc devices
- Special insulating requirements for 36kV
- Solid and gaseous insulation - problems!

Day Three

The Operation and Maintenance of Circuit Breakers and Switchgear

The Use of Test Equipment

- Digital voltmeter DVM
- Oscilloscopes
- Megger
- Frequency meter
- Temperature probes/ IR pyrometers
- Ammeters
- Power meters
- Load banks
- Cable fault locators

Special Techniques

- NEC checklists to ensure the correct installation
- Troubleshooting of Electrical Equipment
- Methods
- Terminology
- Principles
- Special techniques
- Case studies/ examples
- Single line drawings
- Group exercises and case studies

Day Four

The Interpretation and Use of Drawings

- Single-line electrical drawings
- Control schematics
- Basic generic wiring lists
- Nameplate information
- Logic and standard symbols
- Step and touch potential?

The Development of a Job Plan

- Identification of the troubleshooting step-by-step sequence
- Procedure preparation
- Documentation
- Follow-up
- Safety considerations and training
- Case studies

Day Five

The Identification and Repair of Problems/ Failures

- Common mode failures
- Phase imbalance - lost phase
- Phase sequence checkout
- Contact pitting/arcing - why?
- Load and fault rating
- Electronic component failure
- Fusing
- Switches
- Control circuits
- Ground faults - cable and busbar faults

- Case studies
- A review of Safety Requirements
- Area classifications
- NEC electrical codes
- Safety information

Registration form on the Training Course: Safe Operation & Maintenance of Circuit Breakers and Switchgears

Training Course code: MI6055 From: 8 - 12 December 2025 Venue: London (UK) - Landmark Office Space - Oxford Street Training Course Fees: 6000 Euro

Complete & Mail or fax to Global Horizon Training Center (GHTC) 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 find enclosed a cheque made payable to Global Horizon
- ☐ Please invoice me
- ☐ Please invoice my company

Easy Ways To Register

Telephone: +201095004484 to provisionally reserve your place.	Fax your completed registration form to: +20233379764	E-mail to us : info@gh4t.com or training@gh4t.com	Complete & return the booking form with cheque to:Global Horizon 3 Oudai street, Aldouki, Giza, Giza Governorate, Egypt.