



HORIZON

HORIZON ENGINEERING SOLUTIONS LTD

**ACCESS TO HIGH VOLTAGE SUBSTATIONS &
SWITCHROOMS**

COURSE OVERVIEW SUMMARY



Introduction

It is a legislative requirement that everyone required to work on, or adjacent to, electrical systems must have sufficient technical knowledge, training, and experience (or be under suitable supervision) to prevent Danger. This is the fundamental definition of a Competent Person.

Access to Substations and Switchrooms is required to ensure proactive maintenance and inspections can be completed on critical infrastructure and assets. Everyone involved in this type of work must be trained, assessed, and then Authorised in writing by an Authorising Engineer on behalf of the owner of the electrical system.

This course:

- Is for persons who require access to High Voltage (HV) Substations and Switchrooms, and are required to work in the vicinity of, but not on electrical equipment.
- Applies only to Substations containing enclosed electrical Switchgear.
- Defines the arrangement of apparatus and equipment in Substations and Switchrooms, safety procedures, understanding of access keys, and steps to be taken in an emergency.
- Ensures an awareness of High Voltage Systems and the safety requirements for working in the vicinity of all electrical equipment.
- Defines electrical hazards and the precautions necessary to avoid danger.
- Will ensure everyone who attends and is assessed as having an understanding have demonstrated their professionalism, safe behaviour, and competence to understand and manage their responsibilities when entering, working inside or exiting electrical substations and switchrooms.
- Addresses and satisfies the training requirement of an Electrical Safety Rules Authorisation process.

Aim

This course aims to enable persons to be presented for assessment or nomination as Competent Persons and allow them to enter Substations and Switchrooms for defined tasks and to recognise the dangers associated with high voltage power equipment, up to and including 11000-Volts (11kV).

These tasks may include:

- Installation and maintenance of fixed Fire Systems
- Facilities Management type work or activities
- Inspections
- General maintenance

Certification

Candidates who successfully complete the course and written assessment will receive a Horizon Engineering Solutions Certificate of Training.

It is essential that the owner of the electrical system subsequently completes their own Authorisation process defined within their Electrical Safety Rules and procedures. This will ensure Persons are deemed Competent by an Authorising Engineer prior to accessing Substations or Switchrooms.

Duration

The course and written assessment will be completed on a 0.5-day basis in Horizon Engineering Solutions bespoke facility in Belfast.

Course Content

- (1) Roles and responsibilities of a Competent Person
- (2) Legislation – practical application
- (3) Danger – general and inherent
- (4) Access and egress routes
- (5) Substation visit
- (6) Electrical hazards and precautions
- (7) Signs and notices associated with Substations and Switchrooms
- (8) Hazard identification & Risk Assessment
- (9) Emergency procedures and incidents
- (10) Course review & Written Assessment

Detail of Course Content

(1) Roles and Responsibilities of a Competent Person

- A Competent Person (CP) is defined in legislation as ‘a person with sufficient technical knowledge and experience to enable them to avoid danger’.
- Comply with Electrical Safety Rules, Site Rules, Procedures, and any other documentation issued by the owner of the Electrical System.
- Awareness of:
 - Time v. Risk
 - Personal Risk Perception
 - Habit
 - ‘Alpha Moments’

(2) Legislation – practical application

- Overview of Health and Safety at Work Order – employer and employee duties.
- Overview of Electricity at Work Regulations – absolute and SWRP sections applicable to HV Substations and Switchrooms.

(3) Danger

Danger is the risk of injury, or the probability of an injury occurring. The principal risks associated with Substation access are:

- General:
 - Slips
 - Trips
 - Falls
- Inherent:
 - Shock, burns.
 - Fires, arcing.
 - Explosion, sudden and uncontrolled release of energy.

(4) Access and Egress

- Importance of Substations and Switchroom designated entry and exit routes.
- Access keys may be issued to Competent Persons or be signed out/ in from Security.
- Locks – ensure lock-in not possible, after exit - ‘shake hands with lock’.
- Check condition of hinges, locks and doors prior to opening.
- Report presence in Substation when required – entry and exit times.
- Awareness of loose duct covers, manholes and trap-doors.
- Assess whether SF6, oil or other substances are used in Switchgear.
- Identify whether ACM is present and define hygiene discipline and reporting protocols if damaged or dust identified.

(5) Substation Visit

- Visit and tour of Horizon HV Substation, Transformer Room/ HV Switchgear/ LV Switchroom.
- Voltage levels.
- Transformers, Switchgear, batteries.
- Arrangement of equipment in High Voltage Substations.
- Reporting abnormalities.

(6) Electrical hazards and precautions

- Situation awareness – noise, sight, smell, feel.
- SF6 precautions
- Partial discharge – awareness.
- Oil or compound leaks.
- DC Voltage, batteries, acid, fumes.
- Integrity of electrical equipment – HV & LV.
- Ability to disable auto-fixed fire equipment.
- Availability of insulated rescue hook & fire extinguisher.

(7) Signs and Notices

- Substation designation/ location/ What3Words/ Emergency contact details.
- No Smoking notices.
- Danger notices.
- PPE notices.
- Gas and substances.
- ACM notices.

(8) Hazard identification & Risk Assessment

- Lone Worker or less than 3 persons – virtual Dynamic Risk Assessment – no need to record.
- Visual check of electrical equipment.
- Visual check of building or enclosure – leaks, cracks, defects.
- Check Substation Log Book.
- Identify potential slip, trip, or fall hazards.
- Identify PPE required for task.
- Housekeeping, hygiene, tools, and materials.

(9) Emergency procedures and incidents

- Identification of means of escape.
- Procedure for electrical fault operation events – CB trip, Switchgear defect.
- Reporting defects – electrical and building fabric.
- Reporting Near Miss events.
- Environmental events – leaks, spills, bunds.

(10) Course review & Written Assessment

- 45-minute open book, written assessment.
- 95% pass rate.