



INTRODUCTION TO Electrical Circuit Protection

Course Introduction:

All modern industrial and commercial business processes rely on a continuous and secure supply of electricity; electrical circuit protection plays a vital role in achieving this. In order to prevent severe supply disruption and minimize health and safety risks, systems need to be protected from the consequences of overload and fault conditions. The course is ideal for delegates with a background in electrical power systems.

Course Objectives:

This course will:

- Explore how electrical circuit protection systems function and the role they execute
- Highlight the importance of electrical circuit protection, examining the protection of all major plant by
- providing an insight into selecting circuit settings and resolving protection issues
- Offer practical workshops to reinforce material covered on the course.

Course Outline:

Protection basics

- Why do we need circuit protection?
- How can protection be achieved?
- Protection of plant and equipment
- Protection of site personnel
- Protection by system design
- Faults (causes, types)
- System arrangements that influence protection.

General design concepts

- Design philosophy
- Protection quality
- Protection zones
- Main and backup protection
- Types of fault
- Basic protection components
- HV protection components
- Overcurrent protection.

Protection software introduction General design concepts (continued)

- Grading by time and current

- Earth fault protection
- Unit protection
- Distance protection
- LV protection components
- Intertripping
- Summary.

Overview of BS 7671 requirements • Terminology

- Protection against Overcurrent
- Fault current protection
- Requirements relating to maximum and minimum short-circuit and earth faults - Disconnection time requirements
- Overload current protection
- Co-ordination of cables and protective devices.

Equipment protection

- Generators
- Introduction
- Small, embedded and large generators
- Busbars and switchgear
- Speed and stability
- Main and check schemes - Frame earth leakage.
- Transformers
- Types of fault
- Small distribution transformers - Large industrial transformers.

Equipment protection (continued)

- Incomers and feeders
- Differential protection
- Overcurrent and earth fault protection - Distance protection.
- Motors
- UPS.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts

- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Fees:

To be advised as per course locations. This rate includes participant's manual, Hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee / Tea
08:20 - 10:00	First Session
10:00 - 10:20	Coffee / Tea / Snacks
10:20 - 12:20	Second Session
12:20 - 13:30	Lunch Break & Prayer Break
13:30 - 15:00	Last Session