



POWER SYSTEM PROTECTION in Heavy Industries

Course Introduction:

The continuity of Electrical Power Supply is very important to the consumers specially, for industrial sector where the curtail of electrical power supply is costly. It is important to take the necessary action to prevent the faults, and if they do occur, to minimize possible damage or possible power disruption. A protection system continuously monitors the power system to ensure maximum of electrical supply with minimum damage to life, equipment and property. Protective relays are used in power systems to assure maximum continuity of service. They are constantly monitoring the power system to detect unwanted conditions that can cause damage to property and life. Protective relays are found throughout small and large power Systems from generation through transmission, distribution, and utilization. A good understanding of their application, operation and maintenance is essential for the operating and maintenance personnel in order to understand how they fit into modern power systems.

Course Objectives:

By the end of the course, participant will be able to:-

- Understand the protection principles of distribution systems and power system elements.
- Be able to know the different faults occurred on distribution systems and the power system elements including the methods of discrimination of these faults.
- Know the types of relays and their applications.
- Be able to protect distribution lines, busbars, power transformers, motors and generators
- Knowing the fault reasons in electrical networks and Its effect on the electrical quantities
- Reviewing the Grounding System of generation, Transmission and Distribution Networks and how it affects the electrical quantities, short circuit level and protection system
- Understanding main concepts of protection equipment and its necessity in electrical System

Who Should Attend?

This course is intended for Engineers & supervisors who work in transmission, distribution, maintenance, operation, control and analysis of Electrical Networks.

Course Outline:

CHAPTER 1: INTRODUCTION AND BASICS

CHAPTER 2: GENERATION OF POWER AND GENERATING PLANTS

CHAPTER 3: SUBSTATIONS AND NEUTRAL GROUNDING

CHAPTER 4: INTRODUCTION TO SWITCHGEAR

CHAPTER 5: SHORT CIRCUIT CALCULATIONS

CHAPTER 6: CIRCUIT BREAKERS

CHAPTER 7: FUSES

CHAPTER 8: PROTECTIVE RELAYS

CHAPTER 9: PROTECTION OF ALTERNATORS AND TRANSFORMERS

CHAPTER 10: PROTECTION OF BUS BARS, FEEDERS AND TRANSMISSION LINES

CHAPTER 11: PROTECTIVE EARTHING

CHAPTER 12: HAZARDS OF ELECTRICITY

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

