

Distribution Network Load

COURSE DURATION: 5 Days

COURSE OBJECTIVES:

This course is devoted to develop the qualifications of Utilities Electrical Power Engineers to be capable of proper distribution system planning.

This enables the engineers to develop plans for existing networks rehabilitation and expansion. As well, they will be capable of proper planning of the distribution networks in newly developing areas in the manner that these networks can supply the present and future loads at the standard voltages with the highest efficiency and supply reliability.

WHO SHOULD ATTEND?

In general, electrical power engineers can take part in this course, preferably, those engineers who have experience in distribution systems operation and maintenance. Design and projects engineers should take part.

MATERIAL LANGUAGE: English

PRESENTATION LANGUAGE: English/Arabic

TRAINING METHODOLOGY:

Each course participant will receive a copy of the comprehensive course notes. The instructor will discuss the topics using transparencies, power point, videotapes, and C.D.. The course is designed to have an interactive format to maximize delegate participation. Questions and answers are encouraged throughout and at the daily sessions. Needs-based case studies and examples will be discussed in problem solving workshop sessions. This gives participants the opportunity to discuss with other delegates and presenter their specific problems and appropriate solutions.

COURSE CONTENTS:

DAY 1

1. INTRODUCTION

2. DISTRIBUTION NETWORK ENGINEERING

- 2.1 Distribution system, supply requirements
- 2.2 Medium voltage network
- 2.3 Low voltage network
- 2.4 Types of network configuration
 - 2.4.1 Mesh network
 - 2.4.2 Interconnected network
 - 2.4.3 Link arrangement
 - 2.4.4 Open loop
 - 2.4.5 Radial system
- 2.5 Auxiliary system

Day 2

3. ELECTRICAL EQUIPMENT IN DISTRIBUTION SYSTEMS

- 3.1 Substation (grid station)
 - 3.1.1 Types of substation (indoor – outdoor)
 - 3.1.2 Site location
 - 3.1.3 Design philosophy
 - 3.1.4 Bus bar arrangements (H.V , . M.V)
 - 3.1.5 Switchgear
 - 3.1.6 Power transformer
 - 3.1.7 Auxiliary systems



- 3.2 Medium voltage network components
 - 3.2.1 Distribution substation
 - 3.2.2 Overhead line feeders
 - 3.2.2.1 Pole mounted transformer
 - 3.2.2.2 Pole mounted voltage regulator
 - 3.2.2.3 Pole mounted capacitor
 - 3.2.2.4 Pole mounted switch
 - 3.2.2.5 Pole mounted auto-recloser
 - 3.2.3 Underground cable feeders
 - 3.2.3.1 Kiosks
 - 3.2.3.2 Cables
 - 3.2.3.3 Switches

4. NETWORK OPERATION IMPROVEMENT

- 4.1 Reconfiguration
- 4.2 Reactive power compensation
- 4.3 Distribution automation
 - 4.3.1 SCADA system
 - 4.3.2 Geographic information system (GIS)
 - 4.3.3 Automatic meter reading (AMR)
- 4.4 Fault detection
- 4.5 Preventive control for credible cases

DAY 4.

5. LOADS AND ENERGY FORECASTING

6 LOAD FLOW

7 Fault studies

DAY 5.

8. CASE STUDIES