COURSE OVERVIEW

This course serves as an introduction to the operating principles of high voltage power capacitor banks with particular focus on shunt connected capacitor banks.

Power capacitors form an integral part of equipment used in the reactive compensation areas of power systems and network planning. The term reactive compensation is widely used in the ESI (Electrical Supply Industry) to identify a method employed to decrease the amount of apparent power required in a network by adding reactive power to the system, hence the term compensation.

BENEFITS OF ATTENDING

- Understanding, appreciation and awareness of reactive power consumption of loads
- Use of power capacitors to mitigate reactive power
- Power factor improvement techniques
- Voltage improvement and load losses reduction in networks
- Understanding of the application of shunt capacitors to enhance compliance to NRS 048 and other quality control requirements

COURSE OUTCOMES

- Centralised power system compensation in a network
- Safety aspects of capacitors interlocks
- Construction
- Protection schemes

COURSE OBJECTIVE

- On successful completion of this course, participants will be able to:
 - Describe the function of basic capacitor banks protection relays used in system protection
 - Appreciate the construction of power capacitors
 - Appreciate internal arrangements of capacitor cans
 - Appreciate the capacitor cans configurations
 - o Economic benefits of power factor improvement

COURSE OUTLINE

This course aims to provide some background information on the purpose and application of series and shunt capacitor banks in power systems as well as filter shunt capacitor banks. The course covers but is not limited to the following:

- 1. Purpose of capacitors
 - Introduction Series connected Shunt connected
- 2. Capacitor Banks Configurations Introduction Delta connected capacitors

Single star connected capacitors Double star connected capacitors

3. Capacitor Banks Protection

Introduction to terms used Internal External Over Current protection Cascade overcurrent Earth faults Restricted Earth Fault

4. Worked examples

Power Factor Improvement

WHO SHOULD ATTEND

- Engineering professionals involved in large-scale projects
- Field Services Staff Control and Primary plant
- Project Engineers and Managers involved in the design of and planning of shunt capacitor banks
- Anyone wishing to appreciate the purpose of shunt capacitors in a power system