

POWER CABLES TECHNOLOGY: DESIGN, FABRICATION, INSTALLATION AND TESTING

INTRODUCTION:

Back to Basics! It is becoming increasingly important for utilities & industries to evaluate underground cable alternatives, as overhead rights-of-way become more difficult to locate, and as regulatory agencies require increasing detail on the technical issues and costs associated with underground cables. When a cable is going to be installed, proper design engineering and construction methods can provide a reliable system at a substantially lower cost. Cable utilization practices are changing rapidly, as regards system types, design tools, suppliers, installers, installation methods, accessories, configurations, etc.

This course is designed to ensure that those responsible for the selection, laying, operation, maintenance and monitoring of power cables understand the technical issues involved and comply with relevant specifications and requirements.

OBJECTIVES

Upon completion of this course, a participant should be able to:

- Understand of the fundamentals of cables and cable engineering,
- Appreciate of current operational and design practice including cable ratings and selection,
- Select Power Cables by using the appropriate methods,
- Appreciate cable installation and maintenance policies,
- Perform testing and preventative maintenance on power cables,
- Ensure safety and longer equipment life,
- Understand of the issues and pitfalls surrounding specifying and purchasing cables;
- Know current issues and new developments relating to power cables

PRESENTER

Dr. Ahmed Zobaa, PhD, SMIEEE, MIEE, MISES

Ahmed Faheem Zobaa received the B.Sc.(hons.), M.Sc. and Ph.D. degrees in Electrical Power & Machines from the Faculty of Engineering at Cairo University, Giza, Egypt, in 1992, 1997 and 2002. Currently, he is a Senior Lecturer in Renewable Energy at University of Exeter in Cornwall, UK. Also, He has been an Associate Professor in Electrical Power & Machines at Cairo University, Egypt. He was an Instructor in the Department of Electrical Power & Machines, with the Faculty of Engineering at Cairo University, Giza, Egypt, from 1992 to 1997, Teaching Assistant from 1997 to 2002, and Assistant Professor from 2003 to April 2008. His main areas of expertise are power quality, photovoltaic energy, wind energy, marine renewable energy, grid integration, and energy management. Dr. Zobaa is an Editor-In-Chief for International Journal of Renewable Energy Technology. Also, He is serving as Editorial Board member, Editor, Associate Editor, and Editorial Advisory Board member for many international journals. Dr. Zobaa is a registered Chartered Engineer. Also, he is a registered member of Engineering Council UK, and Egyptian Society of Engineers.

PROGRAM

DAY ONE

- Introduction, Course Goals.
- Cable Principles: electrical stresses, thermal considerations and design approaches.
- Cable types.
- Cable Components.
- Typical Applications.

DAY TWO

- Primary and Secondary Distribution Networks.
- Conventional and Non-Conventional Cable System.
- Cable Constants.
- Current Carrying Capacity
- Choice of Cable Area According to Voltage Drop and Short Circuit
- Cable Sizing

DAY THREE

- Distribution Cables.
- Accessories: terminals, splices — field assembled and prefabricated, bonding apparatus, pressurizing plants, etc.
- Feeder Protection.
- Cable Manufacturing: paper cables, extruded dielectric cables, suppliers, quality control, testing, factory inspection.
- Maintenance of Cables and Accessories

DAY FOUR

- BASEC- The British Approvals Service for Electric Cables.
- Installation Advice.
- Upgrading, monitoring, other special topics.
- Fault Location in Distribution Systems.
- Examples.
- What can go wrong! & Discussion.

DAY FIVE

- Distribution Cable Installation.
- Cable Splicing and Termination.
- Measuring and Testing of Power Cable Installations.
- Standards & Specifications.
- Cable Asset Management.