Electrical Engineering: Design, Installation and Maintenance

Energy Milestones Corporation

Advancing Professionals to the next level

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Electrical Engineering: Design, Installation and Maintenance

Overview

This course begins with the fundamental principles that always apply to ensure safe ty. This Electrical Engineering training course then progresses through basic design procedures, inspection, testing and maintenance requirements, concluding with a review of power quality problems that affect the reliability of an installation where high technology interfaces with a supply.

Course Objectives

The participant on this course will gain detailed knowledge of:

- The safety factors required by national and international standards
- The functional considerations that a designer has to take into account
- How new technology can impact on the design particularly power quality
- Safety requirements during installation, inspection and testing
- Inspection and testing techniques that affect the maintenance requirements
- How to improve productivity by improving the reliability of an installation

Course Content

1. Preliminary Design Requirements

The design process requires consideration of the installation requirements with respect to the load characteristics, the circuit arrangements, and the source of supply.

- Building Services
- Purpose of an Installation
- Cables
- External Influences
- Transformers
- Compatibility
- Protective Devices
- Maintainability

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Course Content

2. Design Characteristics

To enable work to begin on any electrical installation a detailed specification is required. This specification will be based on the safety and functional requirements considered in Day .

- **Electrical Safety**
- **Cable Installation**
- **IEC 60364**
- **Cable Terminations Hot and Cold Shrinks**
- **Wiring Regulations**
- **Inspection and Testing**
- **Cable Sizing**
- **Documentation**

3. Designing an Installation

Building on the first two days of the training course this module puts into practice the theo ries developed.

- **Single Phase Design**
- **Power Quality**
- **Three Phase Design**
- **Cable Requirements**
- **Protective Device Selection**
- **Installation Method**
- **Earthing and Bonding**
- **Source of Supply**

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Course Content

4. Commissioning and Testing

The requirements for any maintenance routine begin during the design process and continue though installation into operation. In many countries there is also a legal requirement to maintain an installation in a safe condition.

- **The Need to Maintain**
- **Test Results**
- **What is Maintenance?**
- **Documentation**
- **Introduction to Commissioning**
- **Harmonics**
- **Inspection**
- **Earth Leakage**

5. Periodic Maintenance

After the initial verification of the safety and function of the installation it is necessary tonsure that safety remains effective throughout the lifetime of the installation.

- **Maintenance Planning**
- **Periodic Inspection**
- **Equipment Reliability**
- **Complex Testing**
- **Categories of System**
- **Harmonic Analysis**
- **Safety Critical**
- **Records**

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Targeted Audience

- Mechanical and Electrical Engineers
- Mechanical and Electrical Technicians
- Electricians
- Maintenance Personnel with
- responsibility

Course Methodology

Facilitated by an experienced professional trainer, this training course will be conducted as a highly interactive workshop session. A variety of training methodologies and facilitation techniques will be used before and during the course whenever applicable. These methods are aimed at enhancing individual and group interaction while maximizing learning. Some of these methods are:

- Online Pre-post Test
- Colorful Visual Aids
- Gamification
- Self-Assessment Instruments
- Simulations
- Case Studies
- Videos
- Group Exercises & Discussions
- Role plays
- Indoor & Outdoor games