



Arabian Institute For Training

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# Troubleshooting & Maintenance of Electrical Equipment

## INTRODUCTION

- This Electrical Engineering training seminar on Troubleshooting & Maintenance of Electrical Equipment has been developed to assist Electrical personnel to be able to understand, maintain and troubleshoot common problems and some uncommon problems, within modern and existing Electrical Equipment. The training seminar will also provide delegates with an overview and understanding of a variety of different Electrical Equipment and systems.
- In the 21st Century, Electrical equipment within an Electrical Power system plays an important role in the transmission and distribution of electrical power. The equipment needs to be operated and maintained in a safe manner securing continuity of supply to consumers, whilst at the same time, remaining safe and reliable at all times.
- This Electrical Engineering training course on Troubleshooting & Maintenance of Electrical Equipment will be of extreme benefit to Electrical personnel, who need to maintain their skills and competence and also, for newly qualified Electrical personnel, to achieve the skills required to Troubleshoot and Maintain Electrical Equipment.

This training seminar will focus on and include the following:

- How to carry out the correct maintenance on plant?
- The Correct Application of Fault-finding and Practical Techniques to achieve Fault-finding
- Focus on the Correct Techniques When Maintaining a variety of Electrical Systems
- Earthing Systems and the Need for Correct Maintenance
- Safe Isolation Techniques
- Transformer Maintenance

## OBJECTIVES

- This Electrical Engineering training course on Troubleshooting & Maintenance of Electrical Equipment is designed to increase the awareness of the required diagnostic skills of engineers and maintenance teams on Modern Power systems. The training course will revolve around maintenance, troubleshooting and fault finding techniques used in today's modern systems.

At the end of this training course, you will learn to:

- Elaborate on a variety of Electrical Faults
  - Discuss Electrical Fault Finding Procedures
  - Examine Maintenance and Condition Monitoring
  - Describe the Function of a Transformer
  - Describe the Need for an Efficient Earthing System
  - Interpret Cabling Systems and Fault-finding Techniques
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## **TRAINING METHODOLOGY**

- In this Electrical Engineering training seminar on Troubleshooting & Maintenance of Electrical Equipment, goals of each participant are discussed to ensure their needs are fulfilled, as far as possible. Formal delivery, group work, short videos and case studies are used throughout the week. Questions are encouraged throughout, particularly at the daily wrap up sessions. This provides opportunities for participants to discuss specific issues and, if possible, find appropriate solutions. General discussions are employed to highlight particular points and to illustrate particular conditions.

## **ORGANISATIONAL IMPACT**

This training seminar will allow delegates to interact and gain shared experiences of others along with:

- Understand the Legal requirements for Electrical maintenance
- An Understanding for the need for routine maintenance and a logical approach to fault finding techniques
- Develop New Skills when implementing maintenance techniques
- Analyse Current Competence in Maintenance and Fault-finding and yourself to fill 'gaps' of current knowledge
- Develop Skills and Knowledge to implement condition based maintenance and non-invasive maintenance, which will assist in reducing down-time and shut-down of equipment

## **PERSONAL IMPACT**

On successful completion of this training programme, delegates will be able to understand:

- The need for routine inspection, adequate maintenance of equipment and accurate record keeping
  - Safe Methods of Maintenance Management
  - The Effective Maintenance Activities for best utilisation of Time and Resources
  - Electrical Equipment and Systems Maintenance Requirements
  - The Requirements for a logical process in Fault-finding and Troubleshooting
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## WHO SHOULD ATTEND?

This training programme is suitable to a wide range of professionals but will greatly benefit:

- Electrical Professionals
- Electrical Engineers
- Electrical Supervisors
- Technicians
- Professionals responsible for the operation, maintenance and fault finding techniques
- Personnel who have a work scope which includes limited Electrical maintenance

## Course Outline

### Introduction and Safety

- Pre-course Assessment
- Goals and Discussion
- Types of Fault and Factors affecting Fault Levels
- Maintenance of Electrical Equipment
- Managing Maintenance
- Safety
- Balanced and Unbalanced Faults
- Safe Working Practices and Isolation Procedures

### Maintenance of Electrical Equipment

- Review of
- Safe Working Practices and Isolation Procedure's
- Predictive Maintenance
- Preventative Maintenance
- Reactive Maintenance and Troubleshooting

### Maintenance Engineering

- Review of
  - Electrical Testing for Troubleshooting
  - Transformer Maintenance
  - Generator Maintenance
  - Transformer Components and Troubleshooting
  - Maintenance of Electric Motors
  - Power Electronics and Pulse Width Modulation Invertors
  - AC Machine Components and Problem Solving
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## Troubleshooting, Maintenance and Cable Faults

- Review of
- Synchronous Generators
- Generator Maintenance and Troubleshooting
- Variable Speed Drives and Harmonics
- Cable Fault Locating
- External Influences

## Cabling and Maintainability

- Review of
- Compatibility of Equipment
- SCADA (Supervisory Control and Data Acquisition)
- Compatibility of Electrical Equipment
- Maintainability of Electrical Equipment
- Concepts of Protective System Protection
- Post-course Assessment



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