

## **Electrical Equipments & Control System: Commissioning, Testing & Start-Up Of Electrical Systems**

### **Training Duration and Dates**

**5 days**

### **Training Certificate**

**Define Management Consultants Certificate will be issued to all attendees.**

### **Training Venue & Date**

<b>Electrical Equipments &amp; Control System</b>	<b>5</b>	<b>23-27 May</b>	<b>\$3,300</b>	<b>Abu Dhabi</b>
<b>Electrical Equipments &amp; Control System</b>	<b>5</b>	<b>01-05 August</b>	<b>\$3,300</b>	<b>Dubai</b>

At any 5 Star hotel.

### **Public Training Fees**

**3300\$ per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch**

### **Introduction**

The safe and efficient operation of modern electrical equipment and control systems requires the successful testing, start-up and commissioning of this equipment or system to ensure the correct operation plus accurate troubleshooting and subsequent repair of this equipment or system to ensure continued productivity.

Delegates are encouraged to raise queries both during and at any time after attending the seminar. Delegates are also encouraged to bring with them any issues that they may have to this seminar.

### **Objectives**

Following the attendance at this seminar, participants will return to their respective organizations equipped with new or refreshed skills to ensure that electrical equipment and control systems are tested and commissioned in a fashion that ensures reduced costs and or start-up delays plus identified faults or

problems are repaired and the underlying causes are identified and eliminated to reduce further failures.

**On successful completion of this seminar, participants will have:**

- A better understanding of commissioning procedures
- A better understanding of troubleshooting procedures
- An improved capability in the use of test equipment
- A better understanding of failure modes and failure analysis
- A refreshed awareness of electrical safety concerns

### **Training Methodology**

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 the presenter their specific problems and appropriate solutions. Only minimum note taking is encouraged to ensure maximum delegate attention during the course.

### **Who Should Attend?**

This seminar is intended for Electrical Engineers, Electrical Supervisors and Electrical Technicians engaged in the commissioning, testing, start-up, troubleshooting, maintenance and repair of Electrical Equipment and Control Systems. Because the methods and examples are generic, personnel from all industries will benefit. Participants need no specific requirements other than good understanding of electricity and magnetism and some relevant experience

### **Daily Outline**

#### **Safety Requirements**

- **Roles and responsibilities**
- **Legislation, standards and codes**
- **Safety standards**
- **Emergency procedures**

#### **The Technology of Electrical Equipment**

- **Transformers**
- **Power supplies (UPS)**
- **Batteries**
- **Generators**
- **Switchgear**
- **Motor control centers (MCC)**
- **Variable frequency/speed drives (VFD/VSD)**
- **Programmable logic controllers (PLC) & distributed control systems (DCS)**
- **Power monitoring**
- **Control relays/timers/switches**
- **Motor/feeder protective devices**
- **Motors (AC & DC)**

### **Commissioning and Testing of Electrical Equipment**

- **Methods**
- **Terminology**
- **Principles**
- **Techniques**

### **Troubleshooting of Electrical Equipment**

- **Methods**
- **Terminology**
- **Principles**
- **Techniques**
- **Case studies/examples**
- **Single line drawings**

### **The Use of Test Equipment**

- **Digital voltmeter (DVM)**
- **Oscilloscopes**
- **Megger**
- **Frequency meter**
- **Temperature probes/pyrometers**
- **Ammeters**

- kWh meters
- Load banks
- Cable fault locators

### **The Interpretation and Use of Drawings**

- Single-line electrical drawings
- Control schematics
- Wiring lists

### **The Development of a Job Plan**

- Identification of the troubleshooting step-by-step sequence
- Procedure preparation
- Documentation
- Follow-up
- Safety considerations and training

### **The Identification and Repair of Problems/Failures**

- Common mode failures
- Phase imbalance
- Contact pitting/arcng
- Electronic component failure
- Fusing
- Motor windings/bearings/brushes
- Battery cells
- Inverters/rectifiers
- Bushings
- Sealing end
- Switches
- Control circuits
- Earth faults

**Case Studies, Discussions, Last Day Review & Assessments will be carried out.**

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