شركة ميرك العربية السعودية
MEIRC Saudi Arabia

# Electrical Maintenance

**Duration 5 Days**

**Introduction**

This course covers all subjects related to electrical maintenance such as electrical preventive maintenance (EPM) program, electrical drawings and schematics, electrical safety techniques, cables, substations and switchgear, medium voltage switchgear, transformers, motor protection, control and maintenance, power quality, MV and HV testing of electrical equipment, safe operation and maintenance of electrical equipment, earthing and earth fault protection, supervisory control and data acquisition (SCADA), circuit breakers

**Who Should Attend**

Engineers, Technicians and any one need to learn about electrical maintenance

**Course Objectives**

- Understanding electrical preventive maintenance
- Reading electrical drawings and schematics
- Safe operation and maintenance of electrical equipment

**Course Outlines:**

**ELECTRICAL PREVENTIVE MAINTENANCE (EPM) PROGRAM**

- Energy conservation
- Planning an EPM program
- Personal safety
- Equipment loss
- Production economics
- Main parts of an EPM program
- Programmed inspections
- Recordkeeping
- Training for safety and skills

**ELECTRICAL DRAWINGS AND SCHEMATICS**

- Single line, 3 line and schematic diagrams
- Logic and ladder diagrams
- Cabling and wiring diagrams
- Electrical documentation

**ELECTRICAL SAFETY TECHNIQUES**

- Principles and basic theory
- Static electricity and protection
- Electrical arcing and heating
- Inspection of electrical systems

**CABLES**

- Types, construction, selection and installation
- Insulation materials for LV and HV cables
- Failure of cables and fault detection
- Visual inspection and cable testing

**SUBSTATIONS AND SWITCHGEAR**

- Historic perspective
- Rating and specification
- Components
- Safety policies
- Gas-insulated substations and equipment
- Maintenance, repair and asset management

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**MEDIUM VOLTAGE SWITCHGEAR**
- Switchgear options
- Outdoor and indoor MV switchgear
- Panel configurations and auxiliary devices
- MV switchgear ratings

**TRANSFORMERS**
- Theory, construction and cooling
- Voltage control and installation
- Power and distribution transformers
- Installation of large power transformers
- Fire protection measures and Troubleshooting

**MOTOR PROTECTION, CONTROL AND MAINTENANCE**
- AC and DC electric motors
- 3 - phase AC induction motors
- Motor control and protection
- Installation and fault finding
- Failure analysis and testing
- Maintenance and cleaning
- New technologies and developments

**POWER QUALITY**
- Surge and transient protection
- Earthing and noise control
- Harmonic sources
- Capacitive/inductive relationships
- Harmonic site analysis procedures
- Power conditioning
- Installation guidelines

**UNINTERRUPTED POWER SUPPLY (UPS)**
- Continuity of power and UPS systems
- Rectifiers and inverters
- Static UPS systems
- Testing and periodic inspection

**MV AND HV TESTING OF ELECTRICAL EQUIPMENT**
- Insulation, high potential and oil tests
- Transformers
- CT and VT testing
- Ducter and field tests

**SAFE OPERATION AND MAINTENANCE OF ELECTRICAL EQUIPMENT**
- Key safety factors
- Isolation, visual checks and earthing
- Monitoring hot spots
- Emergency first aid training

**EARTHING AND EARTH FAULT PROTECTION**
- Faults, types and effects
- Causes of inadequate earthing
- Inspection, testing and monitoring
- Maintenance, fault finding and troubleshooting

Personal protective equipment

**SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)**
- Components
- Monitoring, testing and maintenance
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**CIRCUIT BREAKERS**

- Operating principles
- Types: air, oil, minimum oil, vacuum, air blast, SF6, moulded case circuit breakers
- Ratings, inspection and cleaning