MeTec
EMPWER YOUR TECHNICAL SKILLS

ELECTRIC DISTRIBUTION SYSTEMS (OPERATION, TESTING AND PROTECTION) TECHNIQUES

OUR ACCREDITATION & PARTNERS

INSTITUTE OF SUPPLY CHAIN MANAGEMENT MENA
BITA AMERICA
ASQ The Global Voice of Quality
ISO 9001:2015 COMPANY
SELFMANAGEMENT GROUP

ELECTRIC DISTRIBUTION SYSTEMS (OPERATION, TESTING AND PROTECTION) TECHNIQUES

OVERALL DESCRIPTION:

This intensive course provides a comprehensive, hands-on approach to the critical aspects of operating, testing, and protecting modern electric distribution systems. In an era where grid reliability and safety are paramount, this program is designed to equip participants with the essential knowledge and practical techniques needed to manage distribution networks with confidence. Through a blend of foundational theory and practical application, attendees will master the intricacies of key equipment, understand best practices for maintenance and troubleshooting, and learn to apply protection schemes that ensure system integrity and personnel safety.

Course Objectives:

Upon completion of this course, participants will have the knowledge and skills to:

- Articulate the fundamental principles and components of an electric distribution network.
- Efficiently operate, monitor, and troubleshoot primary distribution equipment, including transformers, switchgear, and circuit breakers.
- Apply industry-standard testing and diagnostic techniques to assess equipment health and predict potential failures.
- Analyze and coordinate various protection schemes to ensure system reliability and swift fault isolation.
- Implement robust safety protocols and best practices for all maintenance and operational activities within the distribution system.

Course Outline:

Fundamentals of Distribution Systems

- Introduction to distribution network topologies and configurations.
- Key components: overhead lines, underground cables, insulators, and poles.
- Safety standards and regulations (OSHA, NFPA 70E, etc.).

ELECTRIC DISTRIBUTION SYSTEMS (OPERATION, TESTING AND PROTECTION) TECHNIQUES

Course Outline:

Equipment Operation and Maintenance

- Detailed review of power transformers: operational checks, tap changer functionality, and basic fault analysis.
- Switchgear and circuit breakers: types, operation, and maintenance schedules.
- Capacitors and voltage regulators: control, function, and troubleshooting.
- Introduction to SCADA systems for network control and monitoring.

Testing, Diagnostics, and Troubleshooting

- Insulation resistance testing (Megger testing) of cables and transformers.
- Circuit breaker functional testing and timing analysis.
- Transformer oil sampling and analysis techniques.
- Common fault identification and systematic troubleshooting procedures.

System Protection

- Principles of relaying and overcurrent protection.
- Protective relay settings and coordination studies.
- Surge and lightning protection: types of surge arresters and their application.
- Fuse selection and coordination for low-voltage systems.

Practical Applications and Case Studies

- Review of real-world operational challenges and maintenance scenarios.
- Group exercises in protection coordination and fault location.
- Development of a comprehensive preventive maintenance plan.

WHO SHOULD ATTEND?

This course is specifically designed for a broad range of technical professionals, including:

- Electrical Engineers and Technologists
- Maintenance and Operations Supervisors
- Senior Electrical Technicians
- Field Service and Commissioning Personnel
- Anyone responsible for the safe and reliable operation of electrical distribution networks.

Course Methodology:

We utilize a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This training course will be conducted as a highly interactive workshop session. A variety of training methodologies will be used Before and during the course whenever applicable. Some of these methods are gamification, online pre-post test, role plays, self-assessment instruments, group exercises & case studies.