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System Protection and Maintenance of Power Generation Assets

COURSE OVERVIEW

This course provides a comprehensive understanding of the protection principles, maintenance strategies, and operational reliability of modern power generation systems. Participants will also gain a detailed understanding of maintenance engineering practices, including preventive, predictive, and condition-based maintenance for key generation components such as turbines, alternators, transformers, switchgears, and control systems. Through a combination of theoretical insights and practical case studies, the curriculum equips delegates with the skills to design, operate, and manage protective systems, optimize maintenance programs, and ensure asset integrity across the plant lifecycle.

WHO SHOULD ATTEND?

This course is designed for power plant engineers, maintenance managers, operations supervisors, electrical and mechanical engineers, protection engineers, control system specialists seeking to strengthen their understanding of system protection and maintenance methodologies. It is equally valuable for plant maintenance planners, field technicians, power plant reliability, asset management, safety compliance, utility professionals, project engineers, regulatory officers, energy auditors, reliability analysts and consultants responsible for implementing maintenance programs and predictive diagnostics.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Understand the principles and objectives of system protection in power generation systems.
- Identify and analyze different fault types and their impacts on generation assets.
- Design and coordinate protective relaying schemes for generators, transformers, and auxiliary systems.
- Apply preventive, predictive, and condition-based maintenance strategies to power plant assets.
- Utilize modern diagnostic and testing tools for fault detection and performance monitoring.
- Evaluate system protection settings using relay coordination and fault simulation software.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- The core principles of power system protection and how they safeguard generation assets from electrical faults and instability.
- Protection schemes for key power plant components, including generators, transformers, and busbars.
- Fault analysis techniques, protection coordination, and relay grading for stable plant operation.
- Maintenance methodologies (preventive, predictive, and reliability-centered) tailored to generation equipment.
- Integration of IoT sensors, SCADA systems, and AI-driven analytics for predictive maintenance and asset optimization.

All our courses are dual-certificate courses. At the end of the training, the delegates will receive two certificates.
1. A GTC end-of-course certificate.
2. Continuing Professional Development (CPD) Certificate of completion with earned credits awarded.