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Power System Stability, Protection & Control

COURSE OVERVIEW

This course gives you a clear and practical understanding of how modern power systems are kept stable, protected, and well-controlled. The sessions cover key topics like protection strategies, control systems, relay coordination, fault analysis, and modern automation tools used in today's grids. Delegates will learn what causes instability, how power systems behave under different conditions, and the best ways to improve their reliability and resilience. Through real-world examples, simulations, and case studies, you'll gain hands-on experience in identifying problems, designing strong protection systems, and applying control strategies that keep electrical networks safe, efficient, and stable.

WHO SHOULD ATTEND?

This course is designed for electrical engineers, power system operators, utility professionals, grid planners, protection engineers, maintenance personnel, and consultants involved in power generation, transmission, and distribution. It is equally valuable for renewable energy integration specialists, project managers, and technical trainers seeking to enhance their knowledge of modern power system stability, control, and protection principles.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Analyze system disturbances and their effects on overall network performance and reliability.
- Identify the causes of instability and develop strategies to enhance dynamic system behavior.
- Apply principles of power system protection including overcurrent, distance, and differential protection.
- Perform relay coordination and settings for various system configurations.
- Evaluate system response using real-time simulation and analytical tools.
- Design effective control schemes for voltage and frequency regulation.
- Integrate renewable energy sources while maintaining system protection and stability.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- The importance of stability in modern interconnected power systems.
- The dynamics of generators, loads, and network components under transient conditions.
- Techniques for analyzing and improving small-signal and transient stability.
- The architecture and functioning of protective relays and circuit breakers.
- Coordination principles between different protection zones and equipment.
- The role of Supervisory Control and Data Acquisition (SCADA) and Energy Management Systems (EMS).
- Advanced system automation, monitoring, and control technologies ensuring grid security and resilience.

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.