MERCURY

Excitation and Protection Systems of the Power Generator (Multilin G60)

8 – 12 February 2027
Madrid (Spain)



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Ref: 16041_1003890 **Date:** 8 – 12 February 2027 **Location:** Madrid (Spain) **Fees:** 6200 Euro

Introduction:

The Excitation and Protection Systems of the Power Generator Multilin G60 course provides a specialized and in-depth exploration of excitation control and advanced protection mechanisms for synchronous generators. As modern power generation increasingly relies on precision and digital relay technology, professionals must master both theoretical principles and practical applications of excitation systems and protection relays.

This Excitation and Protection Systems of the Power Generator Multilin G60 training course focuses extensively on the Multilin G60 relay, widely recognized as a robust solution for generator protection and automation. Participants will gain hands-on knowledge of configuring G60 parameters, interpreting event records, and integrating the relay into SCADA environments.

The Excitation and Protection Systems of the Power Generator Multilin G60 training course emphasizes protection coordination, stability control, and real-world troubleshooting techniques. Learners will also explore critical features such as loss of excitation protection, overexcitation protection, and field ground fault protection to ensure reliable generator operation.

Through structured units and practical exercises, this Excitation and Protection Systems of the Power Generator Multilin G60 program bridges the gap between conceptual knowledge and field application. It equips professionals to ensure system resilience, reliability, and compliance in today's dynamic power networks. Participants will have strengthened their technical expertise, safety practices, and operational decision-making.

Targeted Groups:

This Excitation and Protection Systems of the Power Generator Multilin G60 training targets professionals seeking specialized knowledge and skills:

- Electrical engineers in power generation and transmission.
- Control and instrumentation engineers working on generator protection.
- Maintenance technicians are responsible for power plant operations.
- SCADA and automation specialists in utility environments.
- Energy sector consultants dealing with digital relay systems.
- Technical supervisors managing large synchronous generator units.
- Project engineers handling the commissioning of substations.
- Professionals working in digital relay testing and diagnostics.
- Utility engineers transitioning to modern protection systems.
- Trainers and educators are updating the generator protection course content.

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Course Objectives:

Participants will achieve the following objectives by completing the Excitation and Protection Systems of the Power Generator Multilin G60 course:

- Understand excitation system principles and their role in generator stability.
- Identify the main functions of the Multilin G60 protection relay.
- Analyze various protection modes and apply G60 trip logic training.
- Configure relay settings using G60 software tools with precision.
- Interpret G60 event records to support fault investigations.
- Apply excitation strategies to parallel and isolated systems.
- Evaluate fault scenarios using diagnostic and waveform tools.
- Implement SCADA integration with G60 for advanced monitoring.
- Apply IEC 61850 communications training for system interoperability.
- Perform testing and validation of generator protection systems.
- Compare excitation system types for different operational conditions.
- Develop preventive maintenance frameworks using relay diagnostics.
- Adapt settings to changing load and stability profiles.
- Utilize firmware and digital upgrades for enhanced system performance.
- Strengthen operational safety and reliability in generator protection.

Targeted Competencies:

Participants will gain the following competencies during the Excitation and Protection Systems of the Power Generator Multilin G60 program:

- Expertise in generator excitation training and G60 relay applications.
- Proficiency in Multilin G60 protection system training.
- Competence in applying G60 generator protection training across scenarios.
- Ability to configure and manage relay trip logic effectively.
- Skills to interpret real-time and stored fault data for quick response.
- Capacity to integrate G60 relays with SCADA and digital automation.
- Familiarity with G60 loss-of-excitation protection training techniques.
- Knowledge of G60 stator differential and ground fault protection.
- Strength in planning preventive maintenance and relay testing.
- Confidence in troubleshooting excitation and protection systems, Multilin G60.

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Course Content:

Unit 1: Fundamentals of Generator Excitation Systems:

- Introduction to excitation and its role in synchronous generator operation.
- Impact of excitation on generator stability and reliability.
- Types of excitation systems: static, brushless, and rotating exciters.
- AVR functionality and its impact on power system stability.
- Voltage regulation and control of reactive power flows.
- Dynamic response of excitation during faults and disturbances.
- Generator synchronization procedures with excitation control.
- Comparative analysis of excitation methods for power plants.
- Common challenges in excitation systems and mitigation practices.
- Practical applications of power generator excitation training G60.

Unit 2: Generator Protection Concepts and Applications:

- Fundamentals of generator protection schemes in power plants.
- Key elements of protection: overcurrent, differential, and ground fault.
- Importance of G60 overexcitation protection training.
- Principles of stator differential and field ground fault protection.
- Protection of rotor and stator circuits in large synchronous generators.
- Startup, shutdown, and abnormal operation protection requirements.
- Relay coordination to prevent nuisance tripping.
- Case studies of common generator protection failures.
- Overview of safety standards in protection system design.
- Integration of digital relays for modernized generator protection.

Unit 3: Multilin G60 Relay Protection and Configuration:

- Overview of Multilin G60 relay protection training.
- Functional design, modular architecture, and hardware overview.
- Inputs, outputs, and communication interfaces in G60 relays.
- Navigation of HMI and keypad operations for field use.
- EnerVista software suite for configuring Multilin G60 relay training.
- Relay programming for protection modes training.
- Setting groups for flexible operational adjustments.
- Coordination of relay logic in different load conditions.
- Event recording and waveform analysis tools.
- Applications in interpreting G60 event records training.

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Unit 4: Integration, Monitoring, and Advanced Diagnostics:

- SCADA connectivity in G60 SCADA integration training.
- Use of Modbus, DNP3, and G60 IEC 61850 communications training.
- Time synchronization protocols and GPS integration.
- Event capture, waveform storage, and diagnostic tools.
- Remote monitoring and G60 system automation training.
- Cybersecurity requirements in digital protection relays.
- Alarm management and fault escalation protocols.
- Firmware management and advanced update strategies.
- Case studies in event interpretation and failure response.
- Application of diagnostics in G60 protection modes training.

Unit 5: Practical Application, Testing, and Troubleshooting:

- Relay test kit operations and validation practices.
- Fault injection and logic verification methods.
- Testing excitation under grid disturbances.
- Root cause analysis of G60 trip logic training misoperations.
- Documentation of relay configurations and test results.
- Maintenance scheduling for excitation and protection systems.
- Operator skill building for relay interface navigation.
- Troubleshooting common failures in Multilin G60 relay protection training.
- Real-world case studies in power plant environments.
- Practical exercises in G60 field ground fault protection training.

Final Insights & Key Takeaways:

The Excitation and Protection Systems of the Power Generator Multilin G60 course provides a robust foundation in generator excitation and advanced protection systems. It equips professionals with actionable skills for configuring, operating, and troubleshooting the Multilin G60 relay. The program emphasizes safety, reliability, and real-world application in power plant environments. Participants will leave with the expertise to ensure stable generator operations and optimized protection strategies. This training serves as a vital step for advancing careers in modern power system engineering.