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**Course Name**

# Generator Operation and Protection

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**Sector Name**

Electrical Engineering

**Document Type**

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## Generator Operation and Protection

### Course Introduction

The course is intended to provide electric engineers with collective and recent knowledge about generator exciters, including ordering specifications, operation, analysis, maintenance, testing, and protection.

A generator is subjected to electrical stresses imposed on the insulation of the machine, mechanical forces acting on the various parts of the machine, and temperature rises. These are the main factors that make protection necessary for the generator or alternator. Even when properly used, a machine in its perfect running condition not only maintains its specified rated performance for many years, but it also repeatedly withstands a certain excess of overload. Hence, preventive measures must be taken against overloads and abnormal conditions of the machine so that it can serve safely. Despite sound, efficient design, construction, operation, and preventive means of protection, the risk of that fault cannot be completely eliminated from any machine.

The devices used in generator protection ensure that the fault, made dead as quickly as possible. It is imperative to install a protective system to protect the expensive elements of the generator from different types of faults that are likely to occur sooner or later.

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## Generator Operation and Protection

### Target Audience

- ✓ Electrical Controls Engineer
- ✓ Electrical Design Engineer
- ✓ Electrical Engineer
- ✓ Electrical Project Engineer

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## Generator Operation and Protection

### Learning Objectives

- ✓ Learn and understand generator operations
- ✓ Gain knowledge on ordering specifications
- ✓ Learn skills in generator analysis
- ✓ Gain knowledge on generator maintenance
- ✓ Gain new skills in generator testing and protection
- ✓ Experience both theoretical and practical aspects, and will be enhanced with computer software in appropriate sections

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## Generator Operation and Protection

### Course Outline

#### ✓ DAY 01

##### **Module (01) Generator Operation**

- ✓ Correct Phasing
- ✓ Load Capacity
- ✓ Protection
- ✓ Earthing
- ✓ Installation
- ✓ Parallel Operation Synchronizing
- ✓ Documentation

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## Generator Operation and Protection

### Course Outline

#### ✓ Day 02

##### **Module (02) Voltage Control and Voltage Restraint**

- ✓ Design
- ✓ Function and Application
- ✓ Operating Principles
- ✓ Testing and Calibration
- ✓ Restricted Earth Leakage

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## Generator Operation and Protection

### Course Outline

#### ✓ Day 03

##### **Module (03) Frequency Control**

- ✓ Relays Design and Construction
- ✓ Function and Application Operations
- ✓ Testing

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## Generator Operation and Protection

### Course Outline

#### ✓ Day 04

##### **Module (04) Relays & Protection**

- ✓ Differential
- ✓ Reverse Power
- ✓ Negative Sequence
- ✓ Loss of Field
- ✓ Frequency
- ✓ Voltage Control
- ✓ Over Current Control
- ✓ Over Speed
- ✓ Relay Settings

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## Generator Operation and Protection

### Course Outline

#### ✓ Day 05

##### **Module (05) Maintenance**

- ✓ Safety Audits
- ✓ Safe Working Practice
- ✓ Procedures
- ✓ Vibration
- ✓ Diagnostics

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## Generator Operation and Protection

### Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
Jan. 4, 2027	Jan. 8, 2027	5 days	5950.00 \$	USA , Texas
Aug. 10, 2026	Aug. 14, 2026	5 days	4250.00 \$	UAE , Dubai
Jan. 11, 2027	Jan. 15, 2027	5 days	4250.00 \$	UAE , Dubai
May 3, 2027	May 7, 2027	5 days	4250.00 \$	UAE , Dubai

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