TRANSFORMATIONAL
PERFORMANCE SOLUTIONS

Generators and Emergency Power

This development course is available in both virtual and in-person, instructor-led formats, it is a two-day course on generators & emergency power designed for anyone involved with power generation equipment in their plant or facility.

Description

This course can help companies avoid the disastrous consequences of power failure and ensure that facilities continue running even when the electricity doesn't.

Course Outline:

Day One – Topics

Overview

1. Why Generators are Needed
2. Types of Outages
3. Code Requirements
4. Combined Heat and Power (CHP) and Cogeneration

Electrical Fundamentals

1. Calculate Max Current
2. AC vs. DC
3. Real vs. Apparent Power

AC Generators (Alternators

1. Brushless
2. Zigzag
3. Exciter
4. Voltage Regulator

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Alternator Loading

1. Transient Voltages
2. Recovery Time
3. Startup Current
4. Generator Sizing
5. UPS Systems

Generator Grounding

1. Portable vs. Mobile Generators
2. Bonding vs. Grounding
3. Setting up a Grounding System

Protection and Transfer of Electric Power

1. One-Line Diagrams
2. Switchgear
3. Circuit Breakers
4. Transfer Switches
5. Open vs. Closed Transition
6. Load Banks
7. Wet-Stacking

Generator Controls

1. Governors
2. Voltage Regulators
3. PID Loops
4. Load Sharing

Day Two – Topics

Engine Protection

1. System Control and Monitoring
2. Engine Control Unit (ECU)
3. Emergency Stop
4. SCADA System

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Troubleshooting and Maintaining Generator Electrical Components

1. Maintaining Batteries
2. Maintaining Automatic Transfer Switch
3. Governor and Exciter Troubleshooting
4. Checking Diodes
5. Electrical Tests Using the Megohmmeter

Generators – Mechanical

1. Prime Movers
2. Types of Internal Combustion Engines
3. Cooling System
4. Lubrication System
5. Overspeed System
6. Fuel Storage Issues
7. Sound Attenuation
8. Developing a Generator Service Schedule

UPS Systems: Components, Problems, Maintenance

1. Components
2. Problems
3. Maintenance

The Future of Power Generation

1. Renewable Energy

Fuel Cells

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