TECHNICAL
EDUCATION
ACADEMY

School of Engineering

COURSE PROGRAMME

000662

VEND006 - Power Generation with Caterpillar and FG Wilson Generators

In today's ever-evolving energy landscape, the role of reliable and efficient power generation systems is crucial for both businesses and communities.



Learn from the Best in the Business!

Course overview

Advanced level

Why take this course

In today's ever-evolving energy landscape, the role of reliable and efficient power generation systems is crucial for both businesses and communities. That's where our 5-day Advanced Training Program on Power Generation with Caterpillar and FG Wilson Generators comes into play. Designed for a diverse audience, ranging from mechanical and electrical engineers to operations managers and field service technicians, this intensive course offers an in-depth exploration into the technical and operational aspects of Caterpillar and FG Wilson generators, covering models from 350 to 1200KVA.

The course is structured into comprehensive modules that span a wide array of topics. These include understanding advanced power generation technologies, diving deep into engine systems and components, and mastering the art of sensor management and data acquisition. Participants will gain hands-on experience in engine adjustments, software diagnostics, and advanced testing procedures. Beyond the technical, the program also covers Original Equipment Manufacturer (OEM) maintenance processes and industry best practices, enabling attendees to optimize performance and longevity of these complex power generation systems.

As a culmination of this rigorous training, attendees will not only emerge with a profound understanding of the state-of-the-art in power generation but will also earn a certificate of completion, serving as a testament to their advanced skills and knowledge. In a sector where precision and reliability are paramount, this training program equips professionals with the competencies they need to excel.

Who it is for and how it helps

This advanced-level training program is designed for a range of professionals and skilled individuals who are involved in the setup, operation, maintenance, and troubleshooting of power generation systems, specifically those using Caterpillar and FG Wilson generators ranging from 350 to 1200KVA.

Specific Roles Might Include:

• Mechanical Engineers: Professionals who are responsible for the mechanical aspects of generator sets, including cooling, fuel systems, and air induction.

• Electrical Engineers: Those focusing on the electrical aspects of power generation, including control systems, sensor management, and alternators.

• Technicians: Individuals responsible for the hands-on tasks such as adjustments, testing, and troubleshooting of generator systems.

• Operations Managers: Professionals who oversee the overall running of power generation systems and would benefit from an in-depth understanding of technical specifics and best practices.

• Field Service Engineers: Those who are often on-site and need to understand both the theory and practical elements of power generators to perform effective troubleshooting and maintenance.

Course overview — continued

• Maintenance Supervisors: Individuals who are responsible for the regular maintenance and servicing of the generators.

• Energy Consultants: Professionals advising businesses or governments on energy solutions, including backup and emergency power generation.

• OEM Representatives: People who work directly for Original Equipment Manufacturers like Caterpillar or FG Wilson and who may benefit from deep technical knowledge for client support.

• System Integrators: Professionals who are involved in integrating these generators into broader systems and infrastructures.

• Quality Control Inspectors: Professionals responsible for ensuring all components and systems meet quality and safety standards.

• Procurement Specialists: Those involved in the acquisition of generators and who need to understand technical specifications and maintenance requirements.

What you will learn

- Understand Advanced Concepts in Power Generation
- Interpret Technical Specifications of Caterpillar and FG Wilson Generators
- Identify Engine Systems and Components
- Distinguish Sub-Components and Operating Modes
- Perform Engine Adjustments Related to Valve Lash, Fuel, and Timing
- Manage Sensors and Data Acquisition
- Utilize Manufacturer Software for Diagnostics and Adjustments
- Master Alternator Systems including AVR, Exciter, Rectifier, and Main Alternator
- Understand and Apply Power Regulation and AVR Functions
- Execute Advanced Testing Protocols for Engine and Alternator Systems
- Troubleshoot Mechanical and Electrical Issues Effectively
- Implement OEM Maintenance Processes and Recommendations
- Apply Condition Monitoring Techniques for Predictive Maintenance
- Integrate Industry Best Practices in Maintenance and Operations
- Communicate Effectively Across Different Roles in the Generator Lifecycle

Curriculum

Modules 01–08

01 Introduction to Advanced Power Generation

- Importance of Power Generation
- The Role of Generators

02 Caterpillar, FG Wilson Technical and Technology Specifications

- Generator Models (350 to 1200KVA)
- Technical Specifications and Key Features

03 Advanced Engine Systems Description

- Air Induction, Exhaust, Fuel Management
- Cooling System, Electrical and Control Systems

04 Sub-Components and Operating Mode

- Detailed Description of Sub-Components
- Operating Modes and Importance

05 Engine Adjustment, Valve Lash, Fuel, and Timing

- Procedures for Engine Adjustment
- Valve Lash, Fuel, and Timing Mechanisms

06 Sensor Management and Data Acquisition

- Importance of Sensors
- Data Acquisition Techniques

07 Introduction to Manufacturer Software Diagnosis

- Manufacturer-Specific Software Tools
- Adjustment Features and Benefits

08 Alternator Advanced Description

- Function and Operation

Curriculum

Modules 08–13 · Module 08 — continued

- AVR, Exciter, Rectifier, Main Alternator

09 Power Regulation and AVR Function

- Power Regulation Mechanisms
- Understanding AVR Functions

10 OEM Maintenance Processes and Recommendations

- Scheduled Maintenance
- Best Practices and OEM Guidelines

11 Advanced Testing, Measurements, and Adjusting

- Testing Procedures and Protocols
- Verification Methods

12 Condition Monitoring and Sensor Management

- Understanding Condition Monitoring
- Sensor Management Techniques

13 Final Maintenance Recommendations and Best Practices

- Long-Term Maintenance Planning
- Best Practices Summary

Pre-course requirements

- Given the advanced nature of the training, attendees are expected to have:
  - A basic understanding of mechanical and electrical engineering principles.
  - Familiarity with power generation systems.
  - Some experience with industrial machinery, preferably generators.

Participation and contacts

Joining the programme

Contact the Academy and quote course code 000662 to confirm dates, delivery format, prices and enrolment terms.

Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

Preparing for the programme

Read the pre-course requirements in this programme before enrolling.

Discuss your training needs

mail@tecedu.org
www.tecedu.academy

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