GENERATOR TRAINING COURSES

Power Electrics’ headquarters in Bristol is Europe’s only accredited FG Wilson training centre. Available facilities now include a dedicated test cell and classroom, enabling you to become familiar with the products, develop your understanding of best practice, familiarise yourself with generator technology and improve your ability to deal with compliance issues.

These training facilities have been developed as a result of the company’s long term view and commitment to providing assistance throughout the lifecycle your generator requirements.

The training team offers a range of courses that are tailored to develop both theoretical and practical skills, with content designed to meet your requirements. There are three levels of technical training; Foundation, Intermediate and Expert.

Suitable for new staff, generating set operators, basic technicians, counter staff, management and administrators.

Suitable for personnel with medium level experience involved with installation, commissioning, service and repair.

Suitable for personnel with a high level of knowledge involved with complex installation, commissioning, service and repair.
TRAINING FACILITIES

The 7 acre site also includes a PDI Centre with fully equipped service bays, test bays with loadbanks and generator parts storage, as well as fabrication and painting facilities.

Facilities include multiple classrooms and test cells, enabling you to familiarise yourself with products, develop best practice and deal with compliance issues.

Expert courses are delivered at the FG Wilson training centre in Belfast, Northern Ireland.

LOCATION

Power Electrics
St Ivel Way
Warmley
Bristol
BS30 8TY

CAR (FROM M5/M4)

From the M32 take Junction 1 for the A4174 and head towards Kingswood. Continue for 5.5 miles around the A4174 (ring road) until you reach the roundabout for Warmley and take the High Street for 0.2 miles until turning right onto Tower Road North. Continue along Tower Road North for 0.4 miles until turning left onto St Ivel Way, Power Electrics is located at the end of St Ivel Way.

RAIL

The closest station to Power Electrics is Temple Meads Train station and is located 7 miles from the South West Headquarters in St Ivel Way. Bristol Parkway station is located 8 miles from Power Electrics.

FLY

The closest airport is Bristol International, located 14 miles from the Bristol Headquarters.
BOOKING INFORMATION

Telephone: 0370 850 0858

Email: training@powerelectrics.com

Please get in touch if you need more information or require a bespoke training course.

Cancellation Policy

Once you have secured your booking the following are the terms and conditions of the cancellation policy:

1. Cancelled booking 8 weeks prior to date of course: 50% of training cost will be charged.

2. Course cancelled 4 weeks prior to date of course: 100% of training cost will be charged.

Dress Code
Delegates should wear appropriate clothing and will be expected to wear personal protective equipment.
**ALTERNATORS AND AVRs**

Duration | Cost
--- | ---
1 Day | £100 per person
Min. 10 delegates

Course Overview
This course aims to give participants an understanding of how alternators and AVRs work, explain the process behind excitation and provide a discussion of components and terms used when describing alternator and AVR systems. Visual aids including show and tell with alternator and AVR parts are used alongside animation to help reinforce knowledge.

Objective
To gain a technical base of knowledge allowing a greater understanding of how alternators and AVRs are selected or specified for customer application.

Suitability
Suitable for all staff working with or needing to increase their awareness of alternator and AVR products.

Topics
- **Introduction to alternator technical data sheets**
  Explanation of alternator model designations.
- **Alternator physical and operating data**
  Including: Insulated class, winding pitch and connection, IP Ratings and Telephone Interference Factor (TIF) & Total Harmonic Factor (THF).
- **How alternator and AVRs work**
  Including a discussion of: magnetic fields, 2 and 4 pole alternators, frequency and Stator and Rotor
- **AVR Features**
  Including: Single and Three Phase sensing, LAM and Synchronisation.
- **Alternator excitation system and AVR models**
- **Alternator pricebook options**
- **Configuration of voltage option**
- **Alternator pricebook options**

**GENERATING SET FAMILIARISATION AND COMPONENT IDENTIFICATION**

Duration | Cost
--- | ---
1 Day | £100 per person
Min. 10 delegates

Course Overview
An introduction to diesel generating sets, this course provides an understanding of basic electrical circuitry and controls and has been designed to provide people new to the Power Generation business with an overview of how generators are designed and how they work.

Objective
Focusing on familiarisation of the generator range. Delegates will learn to identify and understand the function of the key components of the generating set. This will be structured into specific areas including the Engine, Alternator, Control System, Base Frame and Enclosure.

Suitability
This course is suitable for new recruits, generating set operators and semi-skilled technicians. It will also be a good starting point for personnel who are required to operate, maintain and make minor adjustments to a generating set, but are not expected to have the breadth of knowledge required to find and fix major faults.

Topics
- **Engine**
  Description and explanation of a stroke combustion cycle. Fuel systems in use with Perkins engine range.
- **Control System**
  Explanation of basic analogue and digital control system functions.
- **Base Frame/Enclosure**
  Overview and explanation of different designs.
- **Alternator**
  Understanding basic electrical AC and DC power and electrical terminology.
- **Cooling Package**
  Explanation of different cooling package designs and their functions.
### EVENT TECHNICIAN GENERATOR TRAINING

<table>
<thead>
<tr>
<th>Duration</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Day</td>
<td>£150 per person</td>
</tr>
</tbody>
</table>

**Course Overview**
This course is designed for anyone in the events industry who is involved with generators on site to give an overview of safe generator operation and the best ways to avoid faults.

**Objective**
Delegates will learn to identify and understand the key components of the generating set. The course will be structured into specific areas including: safe operation on site, AMF, Sync pairing of generating sets, panel integration and fault recognition. The course aim is that delegates will leave with a higher knowledge of generators used for temporary power in the event markets and the ability to identify faults quicker and be able to carry out first level repairs.

**Suitability**
Anyone involved in the event industry who operates or comes into contact with generators.

**Topics**
- **Safe Operation**
  Generator Health and Safety.
- **Generator Sync Set Up**
  Communication and Power up.
- **Fault Recognition**
  Recognising generator faults and knowing what to do when problems occur.
- **AMF**
  Connecting, Installation and Commissioning.
- **Sync Pair Integration**
  Connecting, checks and panel integration.
- **TRB Boxes - Basic Fault Diagnosis**
  What a breaker does and the ways they can trip.

### INTRODUCTION TO GENERATING SETS AND BASIC OPERATION

<table>
<thead>
<tr>
<th>Duration</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Days</td>
<td>£200 per person</td>
</tr>
</tbody>
</table>

**Course Overview**
A more detailed introduction to Diesel generating sets that provides an understanding basic electrical circuitry and alternator principles. The course is ideal for learners wishing to grow their knowledge enabling them to advance to the Intermediate courses.

**Objective**
To focus on familiarisation of the generator range. Delegates will learn to identify and understand the functions of the key components of the generating set. This will be structured into specific areas - the Engine, Alternator, Control System and Cooling Package. The course will also be a good refresher to personnel who have not attended a course for some time.

**Suitability**
Generating set operators, semi-skilled technicians or personnel with limited electrical knowledge, who will be required to operate, maintain and make minor adjustments to a generating set. Persons wishing to attend this course will need to have an understanding of diesel engines and a basic understanding of electrics.

**Topics**
- **Engine**
  Identification and explanation of the key components. Description of engine fuel systems and governing.
- **Control System**
  Explanation of analogue and digital control panel features.
- **Alternator**
  Explanation of alternator principles and wiring configurations.
- **Cooling Package**
  Explanation of analogue and digital control panel features. Introduction to AC and DC wiring using basic electrical schematics.
CUSTOMISED FG WILSON SET TRAINING

Duration | Cost
---|---
As Required | POA

Course Overview
This course is designed to be flexible to suit your requirements and can be adapted to include the full range of intermediate topics applicable to your needs.

Objective
This course will be based on the topics selected by yourself, providing training focused on installation, commissioning, and fault diagnosis.

Suitability
This course is suitable for all personnel depending on the topics selected.

Topics
**Foundation Courses**
- Generating Sets Familiarisation and Component Identification (p,7)
- Introduction to Generating Sets and Basic Operation (p,9)

**Intermediate Courses**
- Analogue Control Systems (1 Day)
- 6000 Series Control Systems (1 Day)
- PowerWizard Control Systems (1 Day)
- ATI/CTI Transfer Panel (Half Day)
- Alternators (Half Day)
- 400 Series Electronic Engines (1 Day)
- 1100 Series Electronic Engines (1 Day)
- 1300 Series Electronic Engines (1 Day)
- 2x60 Series Electronic Engines (1 Day)
- Alternators (Half Day)
- L-Series Engine Governing (Half Day)
- ProAct Governing (Half Day)
- Heinzmann Pandoras Governing (Half Day)
- LCS Engine Governing (Half Day)
- Perkins 1500 Electronic Engine (1 Day)
- Merelli Alternators (1 Day)

PRODUCT TECHNICAL TRAINING

INTERMEDIATE PANEL

Duration | Cost
---|---
5 Days | £625 per person

Course Overview
An introduction to current and existing FG Wilson generating sets. Ideal for personnel wishing to grow their knowledge.

Objective
This specially designed course will concentrate on the FG Wilson control systems and their key functions, with a particular focus on installation, commissioning, and fault diagnosis. The programme includes both classroom lecture and practical hands-on exercises.

Suitability
Skilled Service Engineers with a minimum of six months relevant experience.

Topics
**Analogue Control**
Explanation of EIM and Magnetic pickup functions. Explanation of 1002T electrical schematics. Control systems IMT applications. Commissioning and adjustment of control systems including EIM and magnetic pickup.

**Alternators**
Excitation types, methods of operation and fault diagnostics. AVR types, functions and adjustments. Output configuration and set-up.

**PowerWizard Control System**

**ATI/CTI Transfer Panel**
Digital controls operation and function. Transfer systems installation and set up.

**6000 or EasYgen Series Control System**
Modes of operation. Explanation of status menus.
### CUSTOMISED GENERATOR SET TRAINING

<table>
<thead>
<tr>
<th>Duration</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>As Required</td>
<td>POA</td>
</tr>
</tbody>
</table>

#### Course Overview
This course is designed to be flexible to suit your requirements and can be adapted to include the full range of intermediate topics applicable to your needs.

#### Objective
This course will be based on the topics selected by the dealer, providing training focused on installation, commissioning, and fault diagnosis.

#### Suitability
This course is suitable for all personnel depending on the topics selected.

#### Topics
**Foundation Courses**  
Generating Sets Familiarisation and Component Identification  
Introduction to Generating Sets and Basic Operation  

**Intermediate Courses**  
- Engines  
- Transfer Panel  
- Alternators  
- Analogue Control Systems  
- Digital Control Systems  
- Engine Governors

### PRODUCT TECHNICAL TRAINING

#### INTERMEDIATE ENGINE

<table>
<thead>
<tr>
<th>Duration</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Days</td>
<td>£500 per person</td>
</tr>
</tbody>
</table>

#### Course Overview
An introduction to Electronically Controlled Engines, building confidence in the technology used in controlling modern diesel engine.

#### Objective
This specially designed course will focus on generating set installation, commissioning and fault diagnosis. Delegates will learn to identify and understand the function of key components of the engines. The programme includes both classroom lecture and practical hands-on exercises.

#### Suitability
Skilled Service Engineers with a minimum of six months relevant experience.

#### Topics
**1100, 1300, 1500, 2x06 Series Electronic Engines**  
- HEUI fuel and oil system function and operation  
- ECM management system  
- Explanation of electrical wiring diagrams  
- Control system interface and methods of operation  
- EST Service Tool operation and functions
**4000 SERIES DIESEL ENGINES**

**Course Overview**
This course is particularly suited to workshop personnel wishing to develop their skills in top end set-up.

**Objective**
To provide a good technical understanding of the 4000 series diesel engine.

**Suitability**
Skilled Service / Field Engineers with a minimum of one year of relevant experience.

**Topics**
- Introduction to the Course
- External features of the engines
- Top end stripdown and rebuild
- Use of special workshop tools
- Fuel system
- Engine Governing

**Duration**
2 Days

**Cost**
POA

---

**4006/8+12 SERIES TRS GAS ENGINES**

**Course Overview**
This course is designed to give a thorough technical understanding of the 4006, 4008 and 4012 series TRS gas engines. Attendees will gain a comprehensive knowledge of the engine systems, checking and adjusting exhaust gas emissions, preventative maintenance procedures and the necessary fault investigation and rectification techniques and procedures.

**Objective**
To provide a good technical understanding of the 4006, 4008 and 4012 series TRS gas engines.

**Suitability**
Skilled Service / Field Engineers with a minimum of one year of relevant experience.

**Topics**
- Effective use of information in the operation and maintenance manual.
- Fault diagnosis and rectification
- Understanding gas engine control systems
- External features of the engines
- Electronic Governor setup and adjustment
- Adjustment and setting of exhaust emissions
- Gas train commissioning

**Duration**
2 Days

**Cost**
POA
**1300 SERIES ELECTRONIC ENGINES**

**Course Overview**
This course builds on the Intermediate course information with added focus on the ability to diagnose and repair electronic engine faults. Use of diagnostic equipment such as the 1300 Edi service tool, is a key part of this course.

**Objective**
To return to your workplace confident in your ability to meet the demands of customers in the area of 1300 series engines. On successful completion of the course, you will also be able to perform systematic fault diagnostics using all equipment necessary to resolve electrical, mechanical and electronic faults.

**Suitability**
Skilled Service / Field Engineers with a minimum of one year of relevant experience.

**Topics**
- Refresh of Intermediate course content
- Sensor operation and functions
- Service and maintenance
- Bleeding the fuel / oil system
- Setting the valve clearances
- Top end stripdown and rebuild
- Various practical fault finding exercises

**2x06 SERIES ELECTRONIC ENGINES**

**Course Overview**
This course will cover generic subjects relating to electronically controlled Perkins engines. The course is a refresh of the Intermediate course with added focus on the ability to diagnose and repair electronic engine faults. Use of diagnostic equipment such as the Electronic Service Tool (EST) is a key element of this course.

**Objective**
To return to your workplace confident in your ability to meet the demands of customers in the area of Electronically Controlled Engines and be able to perform systematic fault diagnostics using all equipment necessary to resolve electrical and electronic faults.

**Suitability**
Skilled Service / Field Engineers with a minimum of one year of relevant experience.

**Topics**
- Refresh of Intermediate course content
- Sensor operation and functions
- Fault finding using EST software
- Diagnostics / reprogramming using EST
- Service and maintenance operations
- Bleeding fuel system procedure
- Setting valve clearances and injector heights
- Top end stripdown and rebuild
**EASYGEN CONTROL SYSTEMS**

**Duration**
Two Days

**Cost**
POA

**Course Overview**
An in-depth understanding of the EasYgen control panel, with the added benefit of hands-on training. Practical experience of synchronising is a key element of this course.

**Objective**
To gain confidence and develop diagnostic skills and understanding on installation, commissioning and synchronising EasYgen control systems.

**Suitability**
Skilled Service / Field Engineers with a minimum of one year of relevant experience.

**Topics**
- Modes of operation
- Explanation of status menus
- Resetting of alarms and shutdowns
- Set-up and programming
- Remote communications
- Full understanding of synchronisation
- Complete installation and commissioning process

**ANALOGUE CONTROL SYSTEMS**

**Duration**
Two Days

**Cost**
POA

**Course Overview**
An in-depth understanding of the 1001, 1002T, 2001, 4001 and 4001E analogue control panels, with the added benefit of hands-on training. Practical experience of setup and troubleshooting is a key element of this course.

**Objective**
To further develop the attendees diagnostic and troubleshooting skills and expand on their ability to adjust and set-up analogue control systems.

**Suitability**
Skilled Service / Field Engineers with a minimum of one year of relevant experience.

**Topics**
- Refresh of Intermediate course content
- Overview of 4001 and 4001E electrical schematics
- Practical training on retrofit options
- Various hands on diagnostic exercises
**POWERWIZARD CONTROL SYSTEMS**

**Duration**
Two Days

**Cost**
POA

**Course Overview**
An in-depth understanding of the PowerWizard control panel, with the added benefit of practical training. Hands-on experience of parameter programming and system troubleshooting is a key element of this course.

**Objective**
To further develop the attendees’ diagnostic skills and expand on their ability to install, commission and set-up PowerWizard control systems.

**Suitability**
Skilled Service / Field Engineers with a minimum of one year of relevant experience.

**Topics**
- Refresh of Intermediate course content
- Control system operation and function
- Explanation of electrical schematics
- Reprogramming using EST
- Wiring and programming of spare inputs and outputs
- Remote communications
- Various practical fault finding exercises

---

**ALTERNATORS AND AVRs**

**Duration**
Two Days

**Cost**
POA

**Course Overview**
An in-depth understanding of the Alternators and AVRs, with the added benefit of practical training. Hands-on experience of output configurations, retrofitting of options and system troubleshooting are key elements in this course.

**Objective**
To further develop the attendees installation and commissioning skills while expanding their ability to troubleshoot Alternators and AVRs.

**Suitability**
Skilled Service / Field Engineers with a minimum of one year of relevant experience.

**Topics**
- Refresh of Intermediate course content
- Technical characteristics
- Electrical diagrams
- PMG retrofit
- AVR and 3 Phase sensing module installation
- Various practical fault finding exercises
ONLINE TRAINING RESOURCES

Refuel your generator knowledge with helpful How To videos, white papers and guides from Power Electrics’ online training resource library.

Go to powerelectrics.com/blog and gain access to a wealth of generator related content.

TRAINING FEEDBACK

“The course met my requirements fully - took the veil of mystery surrounding generators away”

“The pace and delivery of the course were superb. Many thanks to all. The course was very informative and have given me a very good overall view of the subject.”

“I would certainly recommend. Thank you for your help, the staff are friendly, very knowledgeable and experienced.”

“Very impressed by Neil’s knowledge and commitment to the customer. Had a good weeks training course and I certainly feel more confident of the principles of power generation.”
ABOUT POWER ELECTRICS

A proud family company with a dedication to innovation, excellence and customer service, Power Electrics has grown from a small yard in 1963, to operating out of five locations across the country, including a London sales office and the UK’s largest purpose built generator depot, with a fleet of over 1000 generators and 15 HGVs.

Award winning, trusted by customers and accredited by FG Wilson, the Power Electrics team of over 200 employees continues to grow and develop new ways to help you focus on your own objectives, whether you require temporary power, a permanent standby solution, technical support or specific generator parts.

Innovations such as a 24/7 emergency call out service, an in-house generator testing centre and purpose built training facilities will improve your experience from enquiry to specification and purchase to delivery.

Operating an in-house transport fleet provides you with a flexible, cost-effective and reliable delivery service. Tracked using the latest in sophisticated satellite technology, Power Electrics’ fleet of crane equipped lorries are designed to accommodate whatever equipment you require.