



Training Course Descriptions

Gas Engine Technology

Course Length - 5 Days

Prerequisites - None

Required/Suggested Equipment - None/ Casual or work attire acceptable

Description: This course is the foundation for all engines. The information can be applied to virtually all gas engines and is very comprehensive in all areas of engine maintenance, operation and troubleshooting. This course is recommended for anyone who is responsible for the servicing of Waukesha products, and for those who desire a thorough understanding of gas engine theory and technology not easily attained in the field.

Topics Covered:

- Gas engine cooling system installation and maintenance
- Coolant selection, analysis and troubleshooting
- Crankcase and crankshaft deflection checks
- Gas engine combustion
- Basic gas engine emissions
- Detonation and pre-ignition
- Lean burn engine operating theory
- Gaseous fuels
- Gaseous fuel carburetors
- Waukesha Knock Index® program
- Gaseous fuel regulators
- Air/fuel ratio tracking
- Fuel system adjustment concept
- Using exhaust gas analysis to determine air/fuel ratio
- Lubricating oil requirements
- Lubricating oil analysis exercise
- Air intake and exhaust system
- Crankcase breather systems
- Ignition system basics and spark plugs
- CEC ignition system installation

Gas Engine Emissions

Course Length - 3 Days

Prerequisites - GET (Preferred)

Required/Suggested Equipment - Windows-based notebook computer and calculator

No shorts, tank tops or open-toed shoes allowed

Description: The gas engine emissions course covers the information and procedures necessary to conduct pre-compliance emissions testing using a portable emissions analyzer. This course is designed to provide a better understanding of the necessary adjustments necessary to maintain proper emissions levels of gaseous fueled engines. Most of the information in the course is generic in nature and applies to engines from various manufacturers.

Topics Covered:

- Engine emissions basics and pollutants
- Regulations overview
- Gaseous fuels and their effect on engine emissions
- EPA method 19 mass emissions calculation
- TNRCC mass emissions calculation
- CARB-100 mass emissions calculation
- Interpreting engine manufacturers' technical data
- Calculating gas engine fuel consumption
- Catalytic converter basics
- Catalytic converter maintenance
- Air/fuel ratio controller basics
- Portable emissions analyzers
- WPI emissions software
- Estimating engine horsepower
- Conduct hands-on emissions lab

Engine System Manager

Course Length - 3 Days

Prerequisites - GET and VHP preferred

Required/Suggested Equipment - Windows-based notebook computer

No shorts, tank tops or open-toed shoes allowed

Description: The ESM course is designed specifically for technicians who will be responsible to install, program, adjust, and troubleshoot the Engine System Manager (ESM). The ESM course is taught with the understanding that the students understand governing, capacitive discharge ignition systems, and are thoroughly experienced with adjusting fuel systems. In addition, they must know how to troubleshoot electrical systems, and perform basic tasks on a laptop computer using Microsoft Windows®. Usage of the ESP (Electronic Service Program) and E-help is emphasized during this course.

Topics Covered:

- Power supplies
- ESM operating theory
- ESM components
- ESP (Electronic Service Program)
- Air/fuel ratio control
- E-Help (computer-based troubleshooting)
- Customer interface connection
- Packaging
- Installation troubleshooting

Series 4 Operator Technology

Course Length - 2 Days

Prerequisites - GET (preferred)

Required/Suggested Equipment – None

Description: The Series 4 operator technology course is designed for technicians who operate or maintain Waukesha Series 4 VHP engines. The course covers all the areas necessary to perform initial start-up and general preventive maintenance including the one-year maintenance check.

Topics Covered:

- Cooling system
- Lubricating system
- Crankcase breather adjustment
- Auxiliary components
- Fuel system adjustment
- Ignition system
- Alignment
- Valve adjustment

GL Engine Technology

Course Length - 2 Days

Prerequisites - GET (preferred)

Required/Suggested Equipment - None

Description: This one-day course is designed for technicians who need specific training for Waukesha VHP GL gas engines. The course covers the specifics of the GL engine along with the necessary maintenance and adjustments required for optimum performance.

Topics Covered:

- Lean combustion theory
- Features and benefits
- Exhaust gas analysis
- Fuel system

- Pre-chamber fuel controls
- Fuel system adjustment concept
- Troubleshooting

Compressor Operator Technology

Course Length - 2 Days

Prerequisites - None

Required/Suggested Equipment – None

Description: Compressor Operator Technology training is intended for personnel who operate compression equipment on a daily basis. This course covers the basics of how compressors work and what an operator should look for to safely operate the equipment. Most of the content in this course is generic in nature.

Topics Covered:

- Compressor operator safety
- Introduction to gas compressors
- Compressor valves
- Compressor forced lubrication
- The compression process
- Compressor package start-up
- Abnormal operating conditions
- Valve removal and replacement video
- Piston and rod assembly removal and replacement video
- Piston rod packing removal and replacement video

Waukesha Product Training

Course Length - 2 Days

Prerequisites - GET (preferred)

Required/Suggested Equipment - Windows-based notebook computer

Description: This course is specifically for personnel involved with the specifying and application of Waukesha products such as sales staff and engineers. The goal of this training is to provide a better understanding of Waukesha products.

Topics Covered:

- WPI overview
- Waukesha products and features
- Navigating WED Link
- Specification fundamentals
- Power adjustment
- Fuel specification/WKI® program
- Series 4 and engine calc programs
- ESM and CEC highlights
- Lifecycle program
- Emissions/catalytic converters

Power Generation Technology

Course Length - 5 Days

Prerequisites - None

Description: Power Generation Technology training is for anyone with the desire for a better understanding of power generation equipment. This class starts with the basics and includes several hands-on exercises utilizing live power generation equipment.

Topics Covered:

- General safety
- Arc flash protection
- Auxiliary components
- Generator installation and maintenance
- Bi-fuel power systems
- Hands-on training
- Basic electricity review
- Generator theory and components
- Voltage regulators
- Generator controls
- Generator load and power
- Gaseous fuel systems
- Diesel fuel systems
- Automatic transfer switches

VGF Field School

Course Length - 2 Days

Prerequisites - GET (preferred)

Required/Suggested Equipment - None

Description: The VGF field school is a two-day school that covers the operation and maintenance of the VGF family of gas engines. This course is available to be held at the customer location and can include a field session if the engine is available

Topics Covered:

- VGF product overview
- Air intake and exhaust
- Crankcase breather system
- Cooling system
- Fuel system adjustment
- Exhaust gas analysis
- Lubrication system
- Ignition system
- Valve adjustment

VHP Field School

Course Length - 2 Days

Prerequisites - GET (preferred)

Required/Suggested Equipment - None

Description: VHP field training covers the maintenance and adjustments necessary for proper engine performance of classic VHP gas engines. The field school is intended to be conducted at the customer location.

Topics Covered:

- Crankcase deflection and alignment checks
- Linear and torsional vibration
- Fuel system adjustment
- Cooling system maintenance
- Ignition system maintenance
- Lubrication system maintenance

Generac Air Cooled

Course Length - 2 Days

Prerequisites - None

Required/Suggested Equipment - No polyester clothing, shorts, tank tops or open-toed shoes allowed

Description: Generac Air Cooled training is the prerequisite for all other Generac training schools. This two-day course is open to both dealers and non-dealers and is required for anyone attending Generac Commercial 1 or Generac Commercial 2 training classes.

Topics Covered:

- Home standby generators
- Basic electricity
- Generator theory
- Sequence of operation
- Components
- Voltage regulation
- Control panels
- Hands-on troubleshooting
- Engines
- Fuel system
- Transfer switch
- Generator sizing
- Examination

Air Cooled Training 1-Day

Course Length - 1 Day

Prerequisites - None

Required/Suggested Equipment - No polyester clothing, shorts, tank tops or open-toed shoes allowed

Description: Generac Air Cooled pre-day training is a challenge course available to technicians who need to extend their current technician certification. Successful completion of the one-day class will renew the technician's Generac air cooled certification.

Unsuccessful completion of the Air Cooled one-day training requires enrollment and the successful completion of the standard two-day air cooled class to maintain current certification.

Topics Covered:

- 30-minute review
- Hands-on troubleshooting

Generac Commercial 1

Course Length - 3 Days

Prerequisites - Generac Air Cooled

Required/Suggested Equipment - No polyester clothing, shorts, tank tops or open-toed shoes allowed

Description: This two-day class allows a technician who is assigned to an appropriate service dealer to perform warranty repairs on up to 60KW gaseous fueled products utilizing R-control panels, RTS and GTS transfer switches.

Topics Covered:

- Electrical fundamentals
- Generator load and power
- Generator components
- Voltage regulation
- Frequency regulation
- Gaseous fuel systems
- R-control panels
- RTS transfer switches
- Examination

Generac Commercial 2

Course Length - 5 Days

Prerequisites - Generac Commercial 1

Required/Suggested Equipment – Windows-based notebook computer and Generac serial cable part # OF7707

No polyester clothing, shorts, tank tops or open-toed shoes allowed

Description: The Generac Commercial 2 class builds upon the Generac Commercial 1 class and covers the necessary skills to successfully troubleshoot and conduct commissioning of larger Generac products.

Topics Covered:

- Electrical fundamentals
- Generator components
- Voltage regulation
- Frequency regulation
- Gaseous fuel systems
- Generator load and power
- GTS transfer switch
- HTS transfer switch
- PM-DCP intro
- H-100 control panel
- Navigating OIS
- Hands-on lab with H panel and HTS transfer switch
- Genlink DCP configuration and diagnostics
- Governor settings
- Voltage/current calibration
- Remote annunciators

Generac Commercial Update

Course Length - 2 Days

Prerequisites - Generac Commercial 2

Required/Suggested Equipment - Windows-based notebook computer and Generac serial cable part # OF7707

No polyester clothing, shorts, tank tops or open-toed shoes allowed

Description: The Generac Commercial update is a challenge class for technicians wanting to extend their current Generac commercial training certification.

Successful completion of the update class will renew the technician's Generac commercial II certification.

Unsuccessful completion of the Generac Commercial Update training requires enrollment and the successful completion of the standard five-day Generac Commercial II training class to maintain current certification.

Topics Covered:

- Electrical safety
- New product updates
- Hands-on training
- Review of Air-Cooled, Commercial I & II
- Examination

Custom Engine Control

Course Length - 4 Days

Prerequisites - GET (preferred)

Required/Suggested Equipment – Windows-based notebook computer

No shorts, tank tops or open-toed shoes allowed

Description: Custom Engine Control training covers the installation and troubleshooting of the Custom Engine Control family of engine controls.

Topics Covered:

- Electrical basics and power supplies
- Installing and navigating CEC software
- AFM (Air Fuel Module) description and installation
- AFM programming
- DSM (Detonation Sensing Module) installation
- DSM Programming
- CEC Ignition (Optional)
- TCM (Optional)

Coming Soon

- VHP Overhauls
- Hands-on Compressor Training