

# VGF® P48SE

## With **ESM® 2** and **emPact Emission Control System**

1,063 - 1,475 BHP (800 - 1,100 kWb)

### Technical Data

Cylinders	V16
Speed	1,800 rpm
Piston displacement	2,924 cu. in. (48 L)
Compression ratio	8.6:1
Bore & stroke	5.98" x 6.5" (152 x 165 mm)
Jacket water system capacity	58 gal. (219 L)
Lube oil capacity	113 gal. (428 L)
Fuel Pressure Range	1.5 - 5.0 psi (0.1 - 0.34 bar)
Starting system	150 psi max. air/gas 24V DC electric
Emissions	U.S. EPA Mobile and Stationary Certified (optional)

INNIO Group's Waukesha® VGF® P48SE features a 1MWe limited time prime and standby rating (ISO 8528-1) with advanced ESM 2/AFR3 controls offering increased power, faster start time, proven reliability, and lower emissions. The P48SE is well-suited for industrial, commercial, and oilfield applications where continuous or standby power is needed. The wastegate and crankcase breather have been improved for reliability and performance.

The VGF Series engine design makes maintenance procedures easier. The engine design allows easy access to the oil pump, main bearings, and rod bearings – without the need to lower the oil pan or remove the engine from the site. Commonality of parts between VGF models reduces the amount of inventory needed for servicing a fleet. Standard design features, such as independent heads, make maintenance work easier.

Reliability enhancements on the P48SE engine include:

- **Point-to-Point (P2P) harnessing** system featuring modular, technician-friendly construction and robust connectors, designed to improve durability and simplify service.
- **Control Module Cabinet (CMC)**, an IP65 enclosure containing all sensitive electronics including the ESM® 2, ignition module, and power distribution. The CMC provides easier access to

### Dimensions l x w x h inch (mm)

116.7 (2,156) x 64.6 (1,641) x 85 (2,156)

### Weights lb (kg)

14,900 lbs. (6,760 kg)

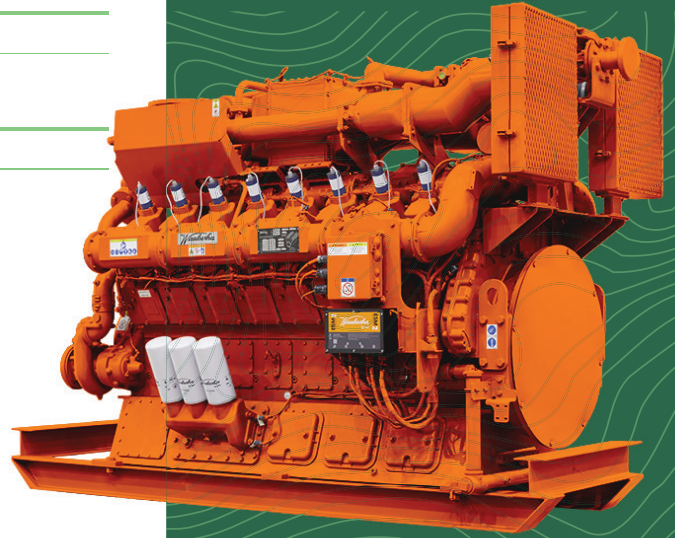
the main harnessing connections, and features a single point grounding strategy, simplifying engine installation and helps enhance protection from environmental elements.

- **Air-Fuel Ratio 3 (AFR3) control**, which automatically adapts to changes in fuel composition and ambient conditions, helping ensure consistent emissions performance and reducing the need for manual adjustments.

### emPact Emission Control

Waukesha's emPact Emission Control System combines an engine, catalyst, and air/fuel ratio control, factory-designed for enhanced interaction and improved performance. It consists of a factory supplied catalyst, pre- and post-catalyst oxygen sensing, and differential temperature and pressure sensors.

The emPact display panel provides real-time engine operating parameters, including faults, alarms, logs, and shutdowns. Waukesha's emPact Emission Control System helps customers meet compliance requirements and obtain emission permits.



### Product Features:

- Advanced ESM 2/AFR3 Controls
- Wide range of ISO duty cycle-power ratings
- Closed crankcase breather
- Spin-on oil filters
- Optional emPact emissions control system (U.S. EPA Mobile and Stationary Certified)



A POWERFUL FUTURE

*Waukesha*

# VGF P48SE

## Performance Data

Jacket Water Temperature 200°F (93°C) Intercooler Water Temperature 130°F (54°C)		Continuous Power		Prime Power		Limited Time Prime Power / Standby Power	
		1,500 RPM 50Hz	1,800 RPM 60 Hz	1,500 RPM 50Hz	1,800 RPM 60 Hz	1,500 RPM 50Hz	1,800 RPM 60 Hz
	Power bhp (kWb)	886 (661)	1063 (793)	1119 (834)	1342 (1001)	1229 (916)	1475 (1100)
	BSFC (LHV) Btu/bhp-hr (kJ/kWh)	7402 (10473)	7872 (11136)	7222 (10218)	7711 (10910)	7133 (10091)	7633 (10799)
	Fuel Consumption Btu/hr x 1000 (kW)	6559 (1922)	7162 (2453)	8079 (2368)	10351 (3034)	8769 (2570)	11261 (3301)
Engine-Out Emissions	NOx g/bhp-hr (g/Nm3 @ 5% O2)	15.2 (6.6)	16.5 (7.2)	12.2 (5.3)	15.1 (6.5)	10.1 (4.4)	13.8 (6.0)
	CO g/bhp-hr (g/Nm3 @ 5% O2)	17.0 (7.3)	15.3 (6.6)	21.4 (9.3)	12.6 (5.5)	23.6 (10.2)	11.3 (4.9)
	NMHC g/bhp-hr (g/Nm3 @ 5% O2)	0.27 (0.08)	0.22 (0.08)	0.25 (0.06)	0.2 (0.07)	0.24 (0.05)	0.19 (0.06)
	THC g/bhp-hr (g/Nm3 @ 5% O2)	1.2 (0.54)	1.2 (0.51)	1.0 (0.42)	1.0 (0.44)	0.8 (0.34)	0.9 (0.38)
Heat Balance	Heat to Jacket Water Btu/hr x 1000 (kW)	1997 (585)	2551 (748)	2324 (681)	3054 (895)	2446 (717)	3265 (957)
	Heat to Auxiliary Water Btu/hr x 1000 (kW)	315 (92)	472 (138)	415 (122)	612 (179)	463 (136)	680 (199)
	Heat to Radiation Btu/hr x 1000 (kW)	198 (58)	218 (64)	202 (59)	225 (66)	204 (60)	229 (67)
	Total Exhaust Heat Btu/hr x 1000 (kW)	1794 (526)	2422 (710)	2292 (672)	3043 (892)	2528 (741)	3331 (976)
Intake/ Exhaust System	Induction Air Flow scfm (Nm3/hr)	1204 (1813)	1537 (2315)	1483 (2233)	1900 (2861)	1610 (2425)	2067 (3113)
	Exhaust Flow lb/hr (kg/hr)	5599 (2540)	7144 (3241)	6896 (3128)	8835 (4008)	7485 (3395)	9612 (4360)
	Exhaust Temperature °F (°C)	1086 (586)	1161 (627)	1107 (597)	1194 (646)	1116 (602)	1209 (654)
Cooling Water Flow	Jacket Water gpm (l/m)	278 (1052)	337 (1276)	278 (1052)	337 (1276)	278 (1052)	337 (1276)
	Auxiliary Water gpm (l/m)	71 (269)	87 (329)	71 (269)	87 (329)	71 (269)	87 (329)

All data according to full load and subject to technical development and modification.

Consult your local Waukesha representative for system application assistance. The manufacturer reserves the right to change or modify without notice, the design or equipment specifications as herein set forth without incurring any obligation either with respect to equipment previously sold or in the process of construction except where otherwise specifically guaranteed by the manufacturer.

In accordance with ISO 8528, the Rating for Emergency Standby Power (ESP) is defined as follows: The maximum power available during a variable electrical power sequence, under the stated operating conditions, for which a generating set is capable of delivering in the event of a utility power outage or under test conditions for up to 200 hours of operation per year with maintenance intervals and procedures being carried out as prescribed by the manufactures. The permissible average power output over 24 hours of operation shall not exceed 70% of the ESP rating.

**Waukesha – an INNIO brand** - INNIO's Waukesha engines are at the forefront of the energy transition, providing reliable and compliant energy solutions for distributed gas compression and power generation applications. The brand's rich and lean-burn engines, ranging from 335 hp to 5,000 hp, set an industry standard for low emissions, high reliability, and fuel flexibility.

Waukesha products are continuously upgraded to help operators stay emission-compliant without sacrificing operational excellence. These upgrades include new and remanufactured engines and parts, as well as conversion and modification kits, all of which are backed by OEM warranty and more than 115 years of engine expertise. Additionally, our Waukesha digital solutions include a collaborative solution with Detection Technologies for gas compression applications and INNIO's myplant platform for power generation applications. Both solutions provide customers with enhanced monitoring and optimization capabilities, resulting in improved performance and reduced downtime.

We connect locally with our customers to enable a rapid response to their service needs, providing enhanced support through our broad network of distributors and solution providers with parts, services, and digital offerings. Waukesha engines are engineered in Waukesha, Wisconsin, U.S., and manufactured in Welland, Ontario, Canada. To learn more about the company's products and services, please visit INNIO's website at [www.waukeshaengine.com](http://www.waukeshaengine.com) or follow Waukesha engines on LinkedIn.

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