



# VHP\* Series Four\* F3524GSI

with **ESM\*2** and **emPact Emission Control System**

560 – 840 BHP (418 – 626 kWb)

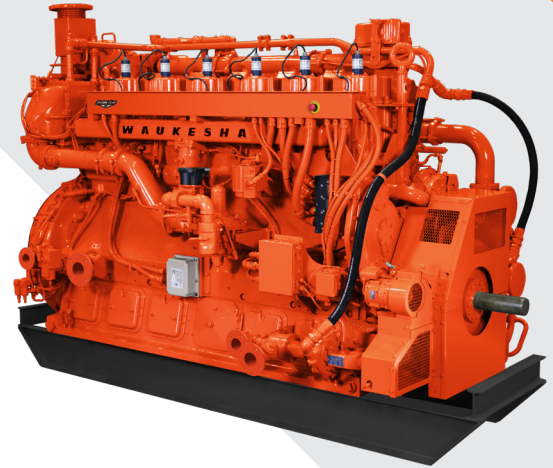


Image is representative of engine model.

INNIO's Waukesha\* Series Four rich-burn engines are the engines of choice for the harshest and most demanding gas compression, power generation and mechanical drive applications. The Series Four engines can reliably produce more power on hot field gases, at high altitudes, and in remote locations, all while delivering low emissions when paired with a 3-way catalyst (NSCR).

ESM\*2 is INNIO's next-generation engine controller, adding functionality and benefits to the proven ESM platform.

The ESM2 customer interface is a 12" full-color touch screen display panel that allows users to see all engine parameters, trend data, view manuals, and walk through troubleshooting steps, eliminating the need for a laptop computer.

ESM2 directly reads exhaust and main bearing temperatures sensors and adds crankcase pressure,

boost pressure, and an oil pressure permissive for starting the engine to the list of sensors available with the previous version of ESM.

Enhanced misfire detection can capture a single misfire event and an enhanced three-dimensional timing map allows for tighter engine control over the entire range of fuels.

Waukesha's emPact Emission Control System combines an engine, catalyst, and air/fuel ratio control, factory-designed for optimal interaction and maximum performance. It consists of a GE-supplied catalyst, pre- and post-catalyst oxygen sensing, and differential temperature and pressure sensors. emPact's closed-loop control system measures the engine exhaust and automatically adjusts the air/fuel ratio to keep the catalyst operating at maximum efficiency, even as speed, load, fuel, and ambient conditions change.

## Technical Data

Cylinders	Inline 6
Piston displacement	3520 cu. in.(58 L)
Compression ratio	8:1
Bore & stroke	9.375" x 8.5" (238 x 216)
Jacket water system capacity	48.5 gal. (184 L)
Lube oil capacity	72 gal. (273 L)
Starting system	125 – 150 psi air/gas 24V electric

Dimensions l x w x h inch (mm)
129.14 (3280) x 85.65 (2175) x 81.34 (2066)

Weights lb (kg)
16,000 (7,257)

\*Indicates a trademark of INNIO

# Performance Data

Intercooler Water Temperature 130°F (54°C)

		1200 RPM	1000 RPM
	Power bhp (kWb)	840 (626)	700 (522)
	BSFC (LHV) Btu/bhp-hr (kJ/kWh)	8035 (11366)	7731 (10935)
	Fuel Consumption Btu/hr x 1000 (kW)	6749 (1976)	5411 (1586)
emPact Catalyst-Out Emissions	NOx g/bhp-hr (mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> )	0.5 (185)	
	CO g/bhp-hr (mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> )	1.0 (370)	
	NMHC g/bhp-hr (mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> )	0.18 (67)	
	THC g/bhp-hr (mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> )	1.68 (626)	
Engine-Out Emissions	NOx g/bhp-hr (mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> )	15.60 (5857)	15.60 (5766)
	CO g/bhp-hr (mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> )	12.80 (4743)	12.30 (4556)
	NMHC g/bhp-hr (mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> )	0.15 (59)	0.16 (60)
	THC g/bhp-hr (mg/Nm <sup>3</sup> @ 5% O <sub>2</sub> )	0.50 (222)	0.60 (227)
Heat Balance	Heat to Jacket Water Btu/hr x 1000 (kW)	2046 (600)	1655 (485)
	Heat to Lube Oil Btu/hr x 1000 (kW)	297 (87)	239 (70)
	Heat to Intercooler Btu/hr x 1000 (kW)	114 (33)	70 (21)
	Heat to Radiation Btu/hr x 1000 (kW)	379 (111)	337 (99)
	Total Exhaust Heat Btu/hr x 1000 (kW)	1905 (558)	1434 (420)
Intake/Exhaust System	Induction Air Flow scfm (Nm <sup>3</sup> /hr)	1236 (1861)	991 (1492)
	Exhaust Flow lb/hr (kg/hr)	5752 (2608)	4612 (2092)
	Exhaust Temperature °F (°C)	1196 (644)	1128 (609)

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

emPact catalyst-out emissions valid from 100% - 75% load and 1200 rpm to 900 rpm and assume proper engine/catalyst maintenance and manual adjustment as necessary.

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.

INNIO'S global service network provides life cycle support for more than 35,000 reciprocating engines worldwide to help you meet your business challenges and success metrics – anywhere and anytime. Backed by our authorized service providers in more than 150 countries, our service network connects with you locally for rapid response to your service needs.

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