

Cat® G3520H

50 Hz Continuous Gas Generator Sets



Image shown may not reflect actual configuration

Bore – mm (in)	170 (6.7)
Stroke – mm (in)	215 (8.5)
Displacement – L (in ³)	97.5 (5956)
Aspiration	Turbocharged
Fuel System	Electronic Fuel Control Valve
Governor Type	ADEM™ A4 w/IM

	Fuel Type	ekW (kVA)	Compression Ratio	Engine Speed – rpm
Humidity/Fuel Tolerant w/Pumps	Natural Gas	2485 (3106)	11.1	1500
Humidity/Fuel Tolerant w/o Pumps	Natural Gas	2500 (3125)	11.1	1500
High Efficiency w/Pumps	Natural Gas	2485 (3106)	12.1	1500
High Efficiency w/o Pumps	Natural Gas	2500 (3125)	12.1	1500

Note: Hydrogen Capable Retrofit Kit and Pricelist Option Available for Up to 25% H₂ blends by volume on certain configurations.

Standard Features

Cat® Engine

- Robust high speed block design provides prolonged life and lower owning and operating costs
- High power density and efficiency

Generator Set Package

- Top tier electrical efficiency
- Low maintenance and overhaul costs driven by low oil consumption, extended service intervals, and reduced downtime
- Capable of ISO 8528-5 Class G1 transient performance with specified load steps
- Genset reliability verified through torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

Generators

- High-efficiency design
- Designed to match performance and output characteristics of Cat engines

Applications

- Caterpillar generator sets are capable of maximizing power production opportunities in an extensive range of industries
- Generator sets support up to 25% Hydrogen by volume capability, either direct from factory price list or retrofit kit.

EMCP 4 Control Panels

- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirements
- Expansion modules and site specific programming for specific customer requirements

Warranty

- 12 months/unlimited hour warranty for continuous ratings
- Extended service protection is available to provide extended coverage options

Worldwide Product Support

- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

Financing

- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local Cat dealer for availability in your region

Optional Equipment

Engine

Air Cleaner

- Installed
- Shipped loose

Cooling System

- JW & SCAC engine driven pumps
- RH JW outlet flange

Exhaust System

- Elbows
- Expanders
- Flanges
- Flexible fittings

Fuel System

- Gas train pressure sensors
- Gas knockdown regulator
- Natural Gas Supply
- Hydrogen Supply (Up to 25%) *

General

- Barring group

Lubrication

- Lubricating oil (NGEO)
- Oil level regulator
- Positive crankcase ventilation
- Electric prelube
- Extended Life Oil Tank

Mufflers

- Industrial Grade (15 dB)
- Residential Grade (18 dB)
- Critical Grade (25 dB)
- Spark Arresting

Protection System

- Explosion relief valves

Starting/Charging

- Charging alternator - 60 A
- Battery charger - 20 A
- Oversized batteries
- Battery cables / racks
- Air starters

Generators

Output voltage

- 380 V 6300 V
- 400 V 6600 V
- 415 V 6900 V
- 3300 V 10000 V
- 10500 V
- 11000 V

Temperature Rise (over 40 °C ambient)

- 105 °C
- 80 °C

Attachments

- Anti-condensation heater
- Generator RTD module
- Neutral Ground - LV
- Cross-Current CT - HV
- Differential CTs - HV
- Shipped loose CT - HV

Power Termination

Type

- IEC Bus bar - LV
- Circuit breaker - LV

Circuit Breaker Options

- 5000 A
- UL IEC
- 3-pole 4-pole
- Manually operated
- Electrically operated

Trip Unit Options

- LSI LSI-G
- LSI-G-P

Cat Connect

Connectivity

- Ethernet
- Satellite
- Cell

Control System

Controller

- EMCP 4.3
- EMCP 4.4

Attachments

- Discrete I/O module
- Load share module
- Local annunciator module
- Remote annunciator module
- Remote monitoring software

Vibration Isolators

- Rubber
- Spring
- Seismic rated

Certifications

- 2006/42/EC & 2006/95/EC Declaration of Incorporation
- Germany, VDE 4110 Grid Code Compliance
- United Kingdom, G99 Grid Code Compliance
- Belgium, C10/11 MV-1 Grid Code Compliance
- Turkish Ministry Compliance
- Eurasian Conformity (EAC)
- Additional Grid Code Compliance Available

Enclosure

- Weather protective
- Sound attenuated

Attachments

- Cold weather bundle
- DC lighting package
- AC lighting package
- Motorized louvers

Ancillary Equipment

- Automatic transfer switch (ATS)
- Uninterruptible power supply (UPS)
- Paralleling switchgear
- Paralleling controls

*Note: Some options may not be available on all models. Certifications may not be available with all model configurations. Consult factory for availability. * Configured Hydrogen Capable Units may experience rating differences on both Natural Gas and H₂ blends based on site conditions - (Fuel blending Source Provided by Customer)*

50 Hz Humidity/Fuel Tolerant Package Performance – AC and JW Pumps

Performance	Continuous			
	50 Hz		50 Hz	
Frequency	50 Hz		50 Hz	
Genset power rating @ 0.8 power factor – ekW (kVA)	2485	(3106)	2485	(3106)
Engine Speed – rpm	1500		1500	
Compression ratio	11.1		11.1	
NOx Emission Level – mg/Nm ³ (g/bhp-hr) NOx	250	(0.50)	500	(0.96)
Performance number	EM3848-02		EM3846-02	
Fuel Consumption				
100% load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.53	(8086)	8.26	(7832)
75% load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.68	(8231)	8.42	(7981)
50% load with fan – MJ/ekW-hr (Btu/ekW-hr)	9.12	(8647)	8.85	(8394)
Cooling System				
Auxiliary Circuit temperature (maximum inlet) – °C (°F)	54	(130)	54	(130)
Jacket water temperature (maximum outlet) – °C (°F)	99	(210)	99	(210)
Inlet Air				
Combustion air inlet flow rate (0 °C, 101.3 kPa)/(77 °F, 14.7 psia) – Nm ³ /bkW-hr (ft ³ /min)	4.05	(6692)	3.85	(6382)
Altitude Capability				
At 25 °C (77 °F) ambient, above sea level – m (ft)	1000	(3281)	1500	(4921)
Exhaust System				
Exhaust temperature – engine outlet – °C (°F)	399	(750)	400	(752)
Exhaust gas flow (0 °C, 101.3 kPa)/(77 °F, 14.7 psia) – Nm ³ /bkW-hr (ft ³ /min)	4.30	(16265)	4.09	(15504)
Exhaust gas mass flow – kg/bkW-hr (lb/hr)	5.42	(30805)	5.16	(29313)
Heat Rejection				
Heat rejection to jacket water – kW (Btu/min)	664	(37765)	619	(35189)
Heat rejection to exhaust (LHV to 120 °C/248 °F) – kW (Btu/min)	1205	(68520)	1152	(65488)
Heat rejection to auxiliary circuit – kW (Btu/min)	344	(19582)	273	(15533)
Heat rejection to atmosphere from engine and generator – kW (Btu/min)	188	(10692)	183	(10386)
Heat rejection to jacket water circuit (JW+OC+AC1) – kW (Btu/min)	1366	(77694)	1353	(76933)

50 Hz High Efficiency Package Performance – AC and JW Pumps

Performance	Continuous			
	50 Hz		50 Hz	
Frequency	50 Hz		50 Hz	
Genset power rating @ 0.8 power factor – ekW (kVA)	2485	(3106)	2485	(3106)
Engine Speed – rpm	1500		1500	
Compression ratio	12.1		12.1	
NOx Emission Level – mg/Nm ³ (g/bhp-hr) NOx	250	(0.49)	500	(0.94)
Performance number	EM2163-02		EM2161-01	
Fuel Consumption				
100% load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.34	(7909)	8.07	(7647)
75% load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.46	(8019)	8.19	(7768)
50% load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.80	(8341)	8.52	(8083)
Cooling System				
Auxiliary Circuit temperature (maximum inlet) – °C (°F)	48	(118)	48	(118)
Jacket water temperature (maximum outlet) – °C (°F)	99	(210)	99	(210)
Inlet Air				
Combustion air inlet flow rate (0 °C, 101.3 kPa)/(77 °F, 14.7 psia) – Nm ³ /bKW-hr (ft ³ /min)	4.01	(6638)	3.81	(6312)
Altitude Capability				
At 25 °C (77 °F) ambient, above sea level – m (ft)	900	(2953)	750	(2461)
Exhaust System				
Exhaust temperature – engine outlet – °C (°F)	391	(735)	393	(740)
Exhaust gas flow (0 °C, 101.3 kPa)/(77 °F, 14.7 psia) – Nm ³ /bKW-hr (ft ³ /min)	4.25	(15872)	4.04	(15168)
Exhaust gas mass flow – kg/bkW-hr (lb/hr)	5.36	(30457)	5.10	(28981)
Heat Rejection				
Heat rejection to jacket water – kW (Btu/min)	650	(36965)	594	(33769)
Heat rejection to exhaust (LHV to 120 °C/248 °F) – kW (Btu/min)	1117	(63495)	1094	(62229)
Heat rejection to auxiliary circuit – kW (Btu/min)	325	(18493)	285	(16181)
Heat rejection to atmosphere from engine and generator – kW (Btu/min)	203	(11562)	169	(9598)
Heat rejection to jacket water circuit (JW+OC+AC1) – kW (Btu/min)	1313	(74697)	1110	(72018)

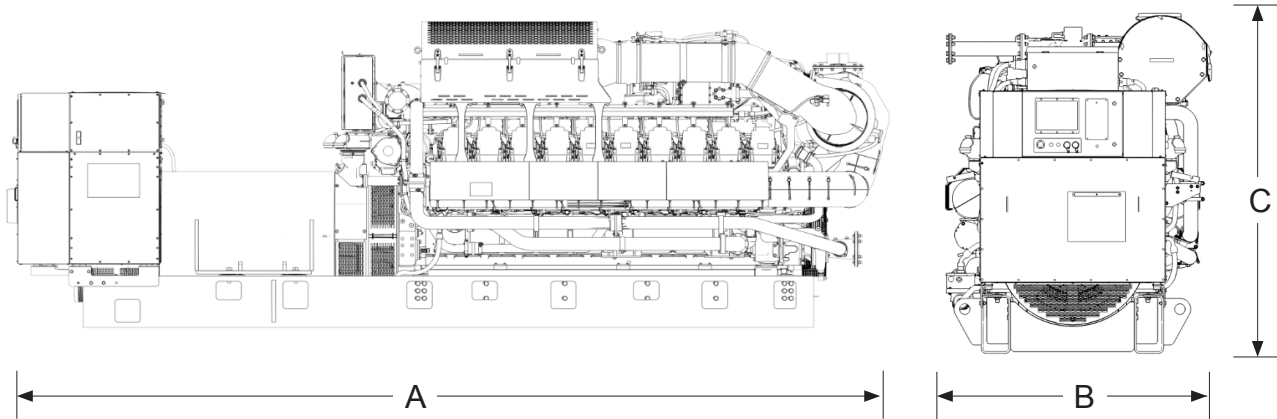
50 Hz Humidity/Fuel Tolerant Package Performance – No Pumps

Performance	Continuous			
	50 Hz		50 Hz	
Frequency	50 Hz		50 Hz	
Genset power rating @ 0.8 power factor – kW (kVA)	2500	(3125)	2500	(3125)
Engine Speed – rpm	1500		1500	
Compression ratio	11.1		11.1	
NOx Emission Level – mg/Nm ³ (g/bhp-hr) NOx	250	(0.50)	500	(0.96)
Performance number	EM3847-02		EM3845-02	
Fuel Consumption				
100% load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.48	(8037)	8.21	(7785)
75% load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.62	(8169)	8.35	(7921)
50% load with fan – MJ/ekW-hr (Btu/ekW-hr)	9.02	(8551)	8.75	(8301)
Cooling System				
Auxiliary Circuit temperature (maximum inlet) – °C (°F)	54	(130)	54	(130)
Jacket water temperature (maximum outlet) – °C (°F)	99	(210)	99	(210)
Inlet Air				
Combustion air inlet flow rate (0 °C, 101.3 kPa)/(77 °F, 14.7 psia) – Nm ³ /bkW-hr (ft ³ /min)	4.03	(6711)	3.83	(6382)
Altitude Capability				
At 25 °C (77 °F) ambient, above sea level – m (ft)	1000	(3281)	1500	(4921)
Exhaust System				
Exhaust temperature – engine outlet – °C (°F)	399	(750)	400	(752)
Exhaust gas flow (0 °C, 101.3 kPa)/(77 °F, 14.7 psia) – Nm ³ /bkW-hr (ft ³ /min)	4.27	(16265)	4.07	(15505)
Exhaust gas mass flow – kg/bkW-hr (lb/hr)	5.39	(30806)	5.13	(29315)
Heat Rejection				
Heat rejection to jacket water – kW (Btu/min)	664	(37766)	619	(35190)
Heat rejection to exhaust (LHV to 120 °C/248 °F) – kW (Btu/min)	1205	(68521)	1152	(65489)
Heat rejection to auxiliary circuit – kW (Btu/min)	344	(19583)	273	(15533)
Heat rejection to atmosphere from engine and generator – kW (Btu/min)	188	(10703)	183	(10397)
Heat rejection to jacket water circuit (JW+OC+AC1) – kW (Btu/min)	1366	(77697)	1353	(76937)

50 Hz High Efficiency Package Performance – No Pumps

Performance	Continuous			
	50 Hz		50 Hz	
Frequency	50 Hz		50 Hz	
Genset power rating @ 0.8 power factor – ekW (kVA)	2500	(3125)	2500	(3125)
Engine Speed – rpm	1500		1500	
Compression ratio	12.1		12.1	
NOx Emission Level – mg/Nm ³ (g/bhp-hr) NOx	250	(0.48)	500	(0.94)
Performance number	EM2162-01		EM2160-01	
Fuel Consumption				
100% load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.29	(7863)	8.02	(7603)
75% load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.39	(7958)	8.13	(7709)
50% load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.70	(8247)	8.43	(7992)
Cooling System				
Auxiliary Circuit temperature (maximum inlet) – °C (°F)	48	(118)	48	(118)
Jacket water temperature (maximum outlet) – °C (°F)	99	(210)	99	(210)
Inlet Air				
Combustion air inlet flow rate (0 °C, 101.3 kPa)/(77 °F, 14.7 psia) – Nm ³ /bkW-hr (ft ³ /min)	3.98	(6638)	3.79	(6313)
Altitude Capability				
At 25 °C (77 °F) ambient, above sea level – m (ft)	900	(2953)	750	(2461)
Exhaust System				
Exhaust temperature – engine outlet – °C (°F)	391	(735)	394	(741)
Exhaust gas flow (0 °C, 101.3 kPa)/(77 °F, 14.7 psia) – Nm ³ /bkW-hr (ft ³ /min)	4.22	(15872)	4.02	(15188)
Exhaust gas mass flow – kg/bkW-hr (lb/hr)	5.33	(30458)	5.07	(28982)
Heat Rejection				
Heat rejection to jacket water – kW (Btu/min)	650	(36965)	594	(33770)
Heat rejection to exhaust (LHV to 120 °C/248 °F) – kW (Btu/min)	1117	(63497)	1094	(62228)
Heat rejection to auxiliary circuit – kW (Btu/min)	325	(18494)	285	(16182)
Heat rejection to atmosphere from engine and generator – kW (Btu/min)	204	(11593)	169	(9629)
Heat rejection to jacket water circuit (JW+OC+AC1) – kW (Btu/min)	1313	(74700)	1266	(72022)

Weights and Dimensions



Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Dry Weight kg (lb)
6940 (273)	2173 (86)	2473 (97)	24 800 (54,675)

Note: For reference only. Do not use for installation design. Contact your local Cat dealer for precise weights and dimensions.

Ratings Definitions

Continuous Power Rating

Output available with non-varying load for an unlimited time. Average power output is 70-100% of the continuous power rating. Typical peak demand is 100% of continuous rated kW for 100% of operating hours.

Applicable Codes and Standards

AS 1359, CSA C22.2 No. 100-04, UL 142, UL 489, UL 869, UL 2200, NFPA37, NFPA70, NFPA99, NFPA110, IBC, IEC 60034-1, ISO 3046, ISO 8528, NEMA MG1-22, NEMA MG1-33, 2014/35/EU, 2006/42/EC, 2014/30/EU.

Note: Codes may not be available in all model configurations. Please consult your local Cat dealer for availability.

Fuel Rates

- For transient response, ambient, and altitude capabilities consult your local Cat dealer.
- Fuel pressure range specified is to the engine fuel control valve. Additional fuel train components may be required and should be considered in pressure and flow calculations.
- For a complete reference of definitions and conditions see the following data sheets

a. 50 Hz 2485 kW Continuous / Standard (w/Pumps)

EM3846-02 (500 mg/Nm³ NOx) - Humidity/Fuel Tolerant
 EM3848-02 (250 mg/Nm³ NOx) - Humidity/Fuel Tolerant
 EM2161-01 (500 mg/Nm³ NOx) - High Efficiency
 EM2163-02 (250 mg/Nm³ NOx) - High Efficiency
 EM2165-01 (500 mg/Nm³ NOx) - High Response
 EM2167-01 (250 mg/Nm³ NOx) - High Response
 EM2169-01 (500 mg/Nm³ NOx) - High Altitude/Ambient
 EM2171-01 (250 mg/Nm³ NOx) - High Altitude/Ambient

b. 50 Hz 2500 kW Continuous / Standard (w/o Pumps)

EM3845-02 (500 mg/Nm³ NOx) - Humidity/Fuel Tolerant
 EM3847-02 (250 mg/Nm³ NOx) - Humidity/Fuel Tolerant
 EM2160-01 (500 mg/Nm³ NOx) - High Efficiency
 EM2162-01 (250 mg/Nm³ NOx) - High Efficiency
 EM2164-01 (500 mg/Nm³ NOx) - High Response
 EM2166-01 (250 mg/Nm³ NOx) - High Response
 EM2168-01 (500 mg/Nm³ NOx) - High Altitude/Ambient
 EM2170-01 (250 mg/Nm³ NOx) - High Altitude/Ambient

Note: Hydrogen Capability Up to 25% H₂ blend by volume is available on certain configurations through price list and performance data available in GERP or upon request.

<http://www.cat.com/powergeneration>

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Materials and specifications are subject to change without notice.

The International System of Units (SI) is used in this publication.