GAS GENERATOR SET

Image shown may not reflect actual package

NATURAL GAS CONTINUOUS

3105 - 3860 ekw

50 Hz 1000 RPM

60 Hz 900 RPM

Caterpillar is leading the power generation marketplace with power solutions engineered to deliver unmatched flexibility, expandability, reliability and cost-effectiveness.

FEATURES

EMISSIONS

- Meets most worldwide emission levels down to 0.5 g/bhp-hr NO_x without without after treatment

FULL RANGE OF ATTACHMENTS

- Wide range of bolt-on system expansion attachments, factory designed and tested.
- Flexible packaging options for easy and cost effective installation.

PROVEN RELIABILITY

- Over 700 x G3616 gensets at 2300MW installed worldwide.
- High availability
- Field proven in a wide range of applications
- Certified torsional vibration analysis available

WORLDWIDE PRODUCT SUPPORT

- Cat® dealers provide extensive post sales support including maintenance and repair agreements
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- The Cat® S•O•S SM program cost effectively detects internal engine component conditions, even the presence of unwanted fluids and combustion by-products

Cat® G3616 GAS ENGINE

- Robust design provides prolonged life and lower owning and operating costs
- High energy ignition systems for consistent firing
- Highly efficient enriched prechamber design for complete combustion
- Electronic controls to optimize performance

CAT ELECTRONIC CONTROL SYSTEM

- Combustion event monitoring to protect your investment
- User friendly and easy to navigate
- Digital monitoring, metering and protection
- Remote control and monitoring options

CUSTOMIZED OPTIONS AVAILABLE

- Customer service training
- Factory installation audit
- Factory commissioning
- Custom engine & generator configurations
- Custom factory testing
- Custom engine software

FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	Installed turbo air inlet adapters	Air cleaners (shipped loose)
Control Panel	Engine mounted instrument panel	ADVISOR electronic display panel
Cooling	Engine driven jacket water pumps Package mounted aftercooler	Engine driven aftercooler pumps Package mounted heat exchangers Up to four separate cooling circuits for JW, AC1, AC2, OC circuits Local or remote expansion tank
Exhaust	Dual 355 mm (14 in) diameter vertical exhaust outlet	
Fuel	High pressure fuel system	Ferrous and anti-corrosion fuel system Gas pressure regulator for supply pressure up to 1034 kPa (150 psi) 1 micron fuel filter
Generator	Cat 400 to 13,800 Volt generators	Customer specified generator
Governing	ADEM III with air-fuel ratio and timing control	
Ignition	Electronic ignition with individual cylinder detonation sensing and variable timing	
Lubrication	Engine driven main lubrication pump Simplex oil filter Temperature regulated oil cooler Oil pressure regulation Pre and post-lubrication system Front and rear oil pan drain ports	Air driven prelube pump Lube oil makeup systems Duplex oil filter
Mounting	Engine Lifting Eyes Heavy duty I-frame base rails	
Starting / Charging	Air starting system (turbine or vane style)	Pressure reducing valves Engine mounted charging alternator Jacket water heaters (88 to 110 °C)
General	Caterpillar Yellow paint	Customer specified paint Service and barring tools

SPECIFICATIONS

GAS ENGINE

G3616 Lean Burn with Prechamber Combustion	
Allowable Methane Number*	65 - 100
Number of Cylinders	16
Bore --- mm (in)	300 (11.81)
Stroke --- mm (in)	300 (11.81)
Displacement --- L (cu in)	331 (20,700)
Compression Ratio	10.5:1
Aspiration	Turbocharged Separate Circuit Aftercooled
Engine Fuel Inlet Pressure	310 kPa (45 psi)
Governor Type	Electronic (ADEM III)

CONTROL SYSTEM PROTECTIONS

Low system voltage
High engine coolant temperature
Low jacket water pressure
High jacket water inlet pressure
Engine overspeed
High engine oil temperature
High engine oil pressure
Low engine oil pressure below 600 rpm
Low engine oil pressure above 600 rpm
High oil filter differential pressure
Low oil filter differential pressure
High engine oil to jacket water temperature differential
High crankcase pressure
High inlet air temperature at low engine load
High inlet air temperature at high engine load
High exhaust port temperature
High exhaust port temperature deviation
High turbo inlet temperature
High turbo outlet temperature
Continuous cylinder misfire
Crankcase explosion relief

*Derate may apply at lower Methane Numbers

TECHNICAL DATA

G3616 Genset	Ref.	DM5011		DM5009		DM5398		DM5397	
Frequency	Hz	50				60			
Emission level (NO_x)	mg/Nm^3 g/bhp-hr	242	0.5	251	0.5	246	0.5	250	0.5
Aftercooler SCAC (Stage 2)	Deg C Deg F	54	130	32	90	54	130	32	90
Package Performance* [1] (w/o pumps/fan)									
Power Rating @ 0.8 pf	ekW Continuous	3425		3860		3105		3480	
Power Rating @ 1.0 pf		3443		3880		3121		3498	
Electric Efficiency (1.0 pf, ISO 3046/1) [2]	%	40.0%		40.5%		40.2%		40.8%	
Mechanical Power	bkW Continuous	3531		3979		3201		3588	
Fuel Consumption [3]									
100% load w/o fan	Nm^3/hr scf/hr	871	32,464	970	36,142	866	29,237	963	32,353
75% load w/o fan	Nm^3/hr scf/hr	675	25,156	747	27,844	667	22,507	744	24,988
50% load w/o fan	Nm^3/hr scf/hr	473	17,632	524	19,543	462	15,597	522	17,535
Altitude Capability [4]									
At 25 Deg C (77 Deg F) ambient, above sea level	m ft	500	1640	500	1640	323	1060	323	1060
Cooling System									
Ambient air temperature	Deg C Deg F	25	77	25	77	25	77	25	77
Jacket water temperature (Maximum outlet)	Deg C Deg F	99	210	94	201	99	210	94	201
Exhaust System									
Combustion air inlet flow rate	Nm^3/min scfm	307.0	11,818	332.0	12,801	293.0	11,294	319.0	12,312
Exhaust stack gas temperature	Deg C Deg F	413	775	402	756	377	711	365	689
Exhaust gas flow rate (Nm^3 @ 0°C, ft^3/min @ stack T)	Nm^3/min ft^3/min	328	29,516	356	31,484	293	26,700	341	28,542
Heat Rejection [5]									
Heat rejection to Jacket Water+Oil Cooler+AC-Stage 1	kW Btu/min	1514	86,109	1660	94,432	1361	77,407	1458	82,924
Heat rejection to AC-Stage 2	kW Btu/min	279	15,855	465	26,468	261	14,860	440	25,002
Heat rejection to exhaust (LHV to 120 Deg C)	kW Btu/min	2198	182,949	2294	104,089	1831	81,083	1896	82,689
Heat rejection to atmosphere from engine	kW Btu/min	290	16,472	323	18,344	261	14,850	289	16,438
Heat rejection to atmosphere from generator*	kW Btu/min	106	6,030	106	6,030	106	6,030	106	6,030
Generator									
Voltages Available	V	4 - 15kV		4 - 15kV		4 - 15kV		4 - 15kV	
Typical Temperature rise	Deg C	105		105		105		105	
Typical motor starting capability @ 30% voltage dip [6]	skVA	6000 - 7500		6000 - 7500		6000 - 7500		6000 - 7500	
Lubrication System									
Standard sump refill with filter change	L Gal	1325	350	1325	350	1325	350	1325	350
Emissions [7]									
NO_x @ 5% O_2 (dry)	mg/Nm^3 g/bhp-hr	242	0.5	251	0.5	246	0.5	250	0.5
CO @ 5% O_2 (dry)	mg/Nm^3 g/bhp-hr	1270	2.6	1320	2.6	1352	2.8	1372	2.8
THC @ 5% O_2 (dry)	mg/Nm^3 g/bhp-hr	3616	7.5	3633	7.2	4562	9.3	4476	9.0
NMHC @ 5% O_2 (dry)	mg/Nm^3 g/bhp-hr	543	1.1	545	1.1	685	1.4	672	1.4
Exhaust O_2 (dry)	%	12.0%		12.0%		12.6%		12.5%	

* Assumed generator efficiency 97% @ 0.8pf, 97.5% @ 1.0pf

TECHNICAL DATA

G3616 Genset	Ref.	DM5102		DM5078	
Frequency	Hz	60			
Emission level (NO_x)	mg/Nm^3 g/bhp-hr	342	0.7	347	0.7
Aftercooler SCAC (Stage 2)	Deg C Deg F	54	130	32	90
Package Performance* [1] (w/o pumps/fan)					
Power Rating @ 0.8 pf	ekW Continuous	3105		3480	
Power Rating @ 1.0 pf		3121		3498	
Electric Efficiency (1.0 pf, ISO 3046/1) [2]	%	40.4%		41.0%	
Mechanical Power	bkW Continuous	3201		3588	
Fuel Consumption [3]					
100% load w/o fan	Nm^3/hr scf/hr	781	29,099	864	32,198
75% load w/o fan	Nm^3/hr scf/hr	601	22,400	668	24,871
50% load w/o fan	Nm^3/hr scf/hr	416	15,525	468	17,452
Altitude Capability [4]					
At 25 Deg C (77 Deg F) ambient, above sea level	m ft	500	1640	500	1640
Cooling System					
Ambient air temperature	Deg C Deg F	25	77	25	77
Jacket water temperature (Maximum outlet)	Deg C Deg F	99	210	94	201
Exhaust System					
Combustion air inlet flow rate	Nm^3/min scfm	285.0	10,977	310.0	11,966
Exhaust stack gas temperature	Deg C Deg F	389	732	375	707
Exhaust gas flow rate (Nm^3 @ 0C, ft^3/min @ stack T)	Nm^3/min ft^3/min	305	26,411	332	28,214
Heat Rejection [5]					
Heat rejection to Jacket Water+Oil Cooler+AC-Stage 1	kW Btu/min	1335	75,930	1437	81,718
Heat rejection to AC-Stage 2	kW Btu/min	257	14,617	429	24,379
Heat rejection to exhaust (LHV to 120 Deg C)	kW Btu/min	1862	83,403	1927	85,090
Heat rejection to atmosphere from engine	kW Btu/min	260	14,780	288	16,360
Heat rejection to atmosphere from generator*	kW Btu/min	96	5,466	96	5,466
Generator					
Voltages Available	V	4 - 15kV		4 - 15kV	
Typical Temperature rise	Deg C	105		105	
Typical motor starting capability @ 30% voltage dip [6]	skVA	6000 - 7500		6000 - 7500	
Lubrication System					
Standard sump refill with filter change	L Gal	1329	351	1329	351
Emissions [7]					
NO_x @ 5% O_2 (dry)	mg/Nm^3 g/bhp-hr	342	0.7	347	0.7
CO @ 5% O_2 (dry)	mg/Nm^3 g/bhp-hr	1220	2.5	1240	2.5
THC @ 5% O_2 (dry)	mg/Nm^3 g/bhp-hr	4314	8.8	4240	8.6
NMHC @ 5% O_2 (dry)	mg/Nm^3 g/bhp-hr	648	1.3	636	1.3
Exhaust O_2 (dry)	%	12.3%		12.2%	

* Assumed generator efficiency 97% @ 0.8pf, 97.5% @ 1.0pf

RATING DEFINITIONS AND CONDITIONS

(1) **Continuous** --- Maximum output available for an unlimited time

Ratings are based on pipeline natural gas having a Low Heat Value (LHV) of 35.6 MJ/Nm^3 (905 Btu/ft^3) and 80 Cat Methane Number. For values in excess of altitude, ambient temperature, inlet / exhaust restriction, or different from the conditions listed, contact your local Cat dealer.

(2) **Efficiency** of standard generator is used. For higher efficiency generators, contact your local Cat dealer.

3) Ratings and fuel consumption are based on ISO3046/1 standard reference conditions of 25 °C (77 °F) of ambient temperature and 100 kPa (29.61 in Hg) of total barometric pressure, 30% relative humidity with 0,+5% fuel tolerance. Fuel conditions in Nm^3/hr at 0°C, 100 kPa. Fuel conditions in scf/hr at 60°F, 1atm.

(4) **Altitude** capability is based on 2.5 kPa (0.7 in Hg) air filter and 3.0 kPa exhaust (0.9 in Hg) restrictions.
(5) **Heat rejection -** Values based on nominal data with fuel tolerance of ±2.5% and 2.5 kPa inlet and 5.0 kPa exhaust restrictions. Jacket and exhaust ± 10% tolerance. Atmosphere ± 50% tolerance. Lube oil ± 20% tolerance. Aftercooler ± 5% tolerance.
(6) Assumed **synchronous driver**.

Data shown is based on steady state engine operating conditions of 25 °C (77 °F), 96.28 kPa (28.43 in Hg) and fuel having a LHV of 35.6 MJ/Nm^3 (905 Btu/ft^3) and 80 Cat Methane Number at 101.60 kPa (30.00 in Hg) absolute and 0 °C (32 °F). Emission data shown is subject to instrumentation, measurement, facility, and engine fuel system adjustment.

(7) Emissions data measurements are consistent with those described in EPA CFR 40 Part 89 Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NO_x.

CONTINUOUS 3105 - 3860 ekW

DIMENSIONS

Typical Package Dimensions		
Length	9322 mm	367 in
Width	2134 mm	84 in
Height	4115 mm	162 in
Approx. Shipping Weight	64,410 kg	142,000 lb

Note: Do not use for installation design. See general dimension drawings for details.

Performance #: DM5009, DM5011, DM5397, DM5398, DM5102, DM5078
Feature Codes: 616GE07, 616GE08
Source: US Sourced
LEHE0326-00 (06-11)