DIESEL GENERATOR SET



Image shown may not reflect actual package

PRIME
5200 ekW 6500 kVA
50 Hz 1000 rpm

Caterpillar is leading the power generation Market place with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

FEATURES

FUEL/EMISSIONS STRATEGY
- Low BSFC

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

SINGLE-SOURCE SUPPLIER
- Fully prototype tested with certified torsional vibration analysis available

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

3616 DIESEL ENGINE
- Reliable, rugged, durable design
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight

CAT® GENERATOR
- Matched to the performance and output characteristics of Cat engines

CAT GENERATOR SET MONITORING SYSTEM (GSM)
- Simple user friendly interface and navigation
- Provides protection, monitoring, and control of the diesel generator set.
- Redundant shutdown protection

FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	• Aftercooler, fresh water, corrosion resistant coated (air side) • Air inlet shutoff • Air Cleaner • Breather, crankcase, top-mounted • Turbocharger, engine oil lubricated	[ ] Soot Filter [ ] Air cleaner Louver Assembly [ ] Vertical Support Bracket [ ] Heavy Duty Air Cleaner [ ] Air Inlet Adapter [ ] Boost Control Valve
Cooling	• Engine coolant water drains • Front Mounted Turbos • Three-bundle oil cooler. • Water Temperature Regulator • Jacket Water Thermostats	[ ] Heat Exchanger for single circuit [ ] Heating Aids [ ] Cooling System Aids [ ] Auxiliary Water Pump [ ] Expansion Tank
Exhaust	• 457 mm (18 in) Cat bolt pattern • Dry, gas tight, exhaust manifold • Includes adapter, flexible exhaust fitting	[ ] Flexible Exhaust Fittings [ ] Weld Flange and Related Hardware
Fuel	• Simplex or Duplex	[ ] Fuel Priming Pump [ ] Duplex Primary Fuel Strainer [ ] Fuel System Connections
Generator	• Custom Generator Per Generator Data Sheet Completed by Dealer	[ ] 3 Phase, six leads, WYE [ ] Class F insulation [ ] Bus bar connections [ ] Winding temperature detectors [ ] Anti-condensation space heaters
Governor	• UG Actuator	[ ] Electronic/ Actuators [ ] Digital Programmers [ ] Battery Backup/Power Supply [ ] 230 UA [ ] 723 Plus [ ] EGB Actuator
Lube	• Centrifugal oil filters with single shutoff • Service side engine mounted on cylinder block inspection covers • Wet oil sump. Includes engine-driven main lubrication pump, installed oil lines, engine-driven oil pump and oil pan. • Oil filler and dipstick • Valve, oil pressure regulating • Valves, crankcase explosion relief	[ ] Oil Pan Drain valve [ ] Lube ANSI adapter (Emergency Connection)
Mounting	• Damper, torsional vibration • Engine and Generator Mounting	[ ] Isolator [ ] Spring type vibration isolator [ ] Vertically Restrained [ ] Non-vertically Restrained
Starting / Charging	• Vane type air starter • Two motors, engine mounted at rear, on left side • Includes air silencer • Line Group for Single Point Custom Connection	[ ] Pressure Reducing Valve [ ] Compressed Air Flex Hose [ ] Turbine Type Air Starters [ ] Redundant Air Starters
General	• Paint, Caterpillar yellow • Pumps, gear driven: fuel, oil, jacket water, aftercooler/oil cooler water	[ ] Custom Paint Colors

SPECIFICATIONS

CAT GENERATOR

Excitation ……Permanent Magnet
Pitch……Optimum
Number of poles……6
Number of bearings ……Two Bearing
Insulation ……Normal Class F or H
IP rating ……..Drip proof IP23
Over speed capability - % of rated……125%
Wave form deviation……...3 %
Voltage regulator…… 3 phase sensing with load adjustable module

CAT DIESEL ENGINE

3616, V-16, 4 stroke, water-cooled diesel

Bore ……280 mm(11.0 in)
Stroke ……300 mm (11.8 in)
Displacement per cylinder……18.5L (1127 in^3)
Total Displacement……296L (18,032 in^3)
Compression ratio……13:1
Aspiration……TA
Fuel system……..Direct Unit Injection

Generator Set Monitoring System (GMS)

Features:

- 10 inch (254 mm) color monitor to display all engine parameters and alarm annunciation
- Annunciation of all engine shutdowns, alarms, and status points
- Start/prelube control switch, fuel control switch and emergency stop buttons
- Speed control switch with automatic changing to ball head control when a governor failure occurs, if ball head control is available. Contacts are available for customer use.
- Selection of local/remote control of engine
- Selection of idle/rated control of engine.
- Equipped for remote communication
- Four 4-20mA outputs (programmable)
- Relay contract signals to the remote monitoring system (summary shutdown, summary alarm, local operation/remote, engine running, PLC failure, fuel control and idle/rated).

TECHNICAL DATA

Open Generator Set - 1000 rpm/50 Hz	NOTES	PRIME DM5540-01
RATING		
Engine Power	(2)	4920 bkW
Generator Power	(2)	4700 ekW
Engine efficiency (ISO 3046/1)	(1)	43.6 %
Engine efficiency (nominal)	(1)	42.3 %
ENGINE DATA		
Fuel Consumption (ISO3046/1)	(1)	192.7 g/bkw-hr
Fuel Consumption (nominal)	(1)	196.5 g/bkw-hr
Fuel Consumption (90% confidence)	(1)	198.7 g/bkw-hr
Air Flow (@ 25°C, 101.3 kPaa)		522.5 m3/min
Air Mass Flow		34971 kg/hr
Compressor Outlet Pressure		266.3 kPa(abs)
Compressor Outlet Temperature		186.5 °C
Inlet manifold Pressure		264.1 kPa(abs)
Inlet Manifold Temperature		59.4 °C
Timing	(10)	16.5 °BTDC
Exhaust Stack Temperature		404.5 °C
Exhaust Gas Flow (@stack temp, 101.3kPa)		1152.5 m3/min
Exhaust Gas Mass Flow		36043 kg/hr
ENERGY BALANCE DATA (nominal)		
Fuel Input Energy (LHV)	(1)	12747 KW
Heat Rej. To jacket water	(4)	1080 KW
Heat Rej. To atmosphere	(5)	255 KW
Heat Rej. To oil cooler	(6)	569 KW
Heat Rej. To EXH. (LHV to 25°C)	(4)	4089 KW
Heat Rej. To EXH. (LHV to 177°C)	(4)	2732 KW
Heat Rej. To aftercooler	(7), (8)	1231 KW
EMISSIONS		
NO_x (as NO)	(9)	13.69 g/bkW-hr
CO	(3)	0.70 g/bkW-hr
THC (molecular weight of 13.018)	(3)	0.91 g/bkW-hr
Particulates	(9)	0.13 g/bkW-hr

CONDITIONS AND DEFINITIONS
ENGINE RATING OBTAINED AND PRESENTED IN ACCORDANCE WITH ISO 3046/1 AND SAE J1995 JAN90 STANDARD REFERENCE CONDITIONS
OF 25°C, 100 KPA, 30% RELATIVE HUMIDITY AND 150M ALTITUDE AT THE STATED AFTERCOOLER WATER TEMPERATURE.
CONSULT ALTITUDE CURVES FOR APPLICATIONS ABOVE MAXIMUM RATED ALTITUDE AND/OR TEMPERATURE.
PERFORMANCE AND FUEL CONSUMPTION ARE BASED ON 35 API, 16°C FUEL HAVING A LOWER HEATING VALUE OF 42.780 KJ/KG USED AT 29°C WITH A DENSITY OF 838.9 G/LITER.

NOTES
1) FUEL CONSUMPTION TOLERANCE. ISO 3046/1 IS 0, + 5% OF FULL LOAD DATA. NOMINAL IS ± 3 % OF FULL LOAD DATA.
2) ENGINE POWER TOLERANCE IS ± 3 % OF FULL LOAD DATA.
3) EMISSION DATA SHOWN ARE NOT TO EXCEED VALUES.
4) HEAT REJECTION TO JACKET AND EXHAUST TOLERANCE IS ± 10% OF FULL LOAD DATA. (heat rate based on treated water)
5) HEAT REJECTION TO ATMOSPHERE TOLERANCE IS ±50% OF FULL LOAD DATA. (heat rate based on treated water)
6) HEAT REJECTION TO LUBE OIL TOLERANCE IS ± 20% OF FULL LOAD DATA. (heat rate based on treated water)
7) HEAT REJECTION TO AFTERCOOLER TOLERANCE IS ± 5% OF FULL LOAD DATA. (heat rate based on treated water)
8) TOTAL AFTERCOOLER HEAT = AFTERCOOLER HEAT x ACHRF (heat rate based on treated water)
9) EMISSION DATA SHOWN ARE DRY AND NOMINAL VALUES.
10) TIMING BASED ON AFM INJECTORS.

RATING DEFINITIONS AND CONDITIONS

Meets or Exceeds International Specifications: · AS1359, CSA, IEC60034-1, ISO3046, ISO8528, NEMA MG 1-22, NEMA MG 1-33, UL508A, 72/23/EEC, 98/37/EC, 2004/108/EC

Prime – Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of the prime rated ekW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year. Prime power in accordance with ISO 3046.

Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions

Fuel Rates are based on fuel oil of 35º API [16º C (60º F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29º C (85º F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.). Additional ratings may be available for specific customer requirements, contact your Caterpillar representative for details. For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat dealer.

PRIME 5200 ekW 6500 kVA

50 Hz 1000 rpm

DIMENSIONS

Package Dimensions		
Length	10261.7 mm	404.00 in
Width	2530.3.1 mm	99.62 in
Height	3977.7 mm	156.60 in
Weight	64,470 kg	141,840 lb

NOTE: For reference only - do not use for installation design. Please contact your local dealer for exact weight and dimensions. (General Dimension Drawing #2476610).

Performance No.: DM5540 01

Feature Code: 616DE04

Sourced: U.S. Sourced

LEHE0355-01 (03-12)

www.Cat-ElectricPower.com

©2012 Caterpillar
All rights reserved.

Materials and specifications are subject to change without notice. The International System of Units (SI) is used in this publication.

CAT, CATERPILLAR, their respective logos, "Caterpillar Yellow," the “Power Edge” trade dress as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.