DIESEL GENERATOR SET

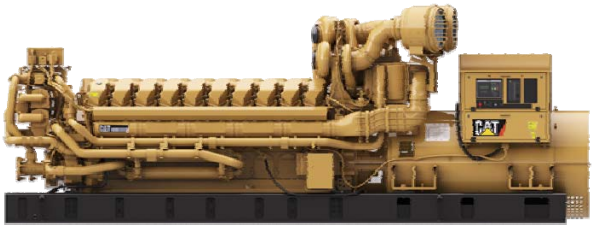

Image shown may not reflect actual package

Mission Critical Standby
4000 ekW 5000 kVA
60 Hz 1800 rpm 12470 Volts

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

FUEL/EMISSIONS STRATEGY
- Low BSFC

DESIGN CRITERIA
- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response.

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 1600 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.

CAT C175-20 DIESEL ENGINE
- Reliable, rugged, durable design
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight

CAT SR5 GENERATOR
- Designed to match performance and output characteristics of Cat diesel engines
- Single point access to accessory connections

CAT EMCP 4 CONTROL PANELS
- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway

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FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	• Air cleaner, 4 x single element canister with service indicator(s) • Plug group for air inlet shut-off	[ ] Air cleaner, 4 x dual element with service indicator(s) [ ] Air inlet adapters
Cooling	• SCAC cooling • Jacket water and AC inlet/outlet flanges	[ ] Remote horizontal SCAC radiator [ ] Remote fuel cooler [ ] Low coolant level sensor (for remote radiators)
Exhaust	• Dry exhaust manifold • Bolted flange (ANSI 8" & DIN 200) with bellow for each turbo (qty 4)	[ ] Engine Exhaust Temperature Module [ ] Mufflers (15 dBA,25 dBA, or 40 dBA) [ ] Dual 20" or single 24" vertical exhaust collector [ ] Weld flanges: ANSI 20" and ANSI 24”
Crankcase Systems	• Open crankcase ventilation	[ ] Crankcase explosion relief valve
Fuel	• Primary fuel filter with water separator • Secondary fuel filters (engine mounted)	
Generator SR5	• 3 phase brushless, salient pole • Space heater kit • IEC platinum stator RTD's • Cat digital voltage regulator (CDVR)	[ ] Oversize generators [ ] Power connection arrangement
Governor	• ADEM™ A4	[ ] Redundant shutdown
Control Panels	• EMCP 4.2 Genset Controller	[ ] Local & remote annunciator modules [ ] Discrete I/O module [ ] Generator temperature monitoring & protection [ ] Remote monitoring [ ] Load share module
Lube	• Lubricating oil • Oil filter, filler and dipstick • Oil drain line with valves • Fumes disposal • Gear type lube oil pump • Integral lube oil cooler • Electric prelube pumps	
Mounting	• Rails-engine / generator • Rubber anti-vibration mounts (shipped loose)	[ ] Spring type linear vibration isolators [ ] IBC vibration isolators
Starting / Charging	• Dual 24 volt electric starting motors • Batteries with rack and cables • Battery disconnect switch	[ ] Oversized battery set [ ] 75 amp charging alternator [ ] Battery chargers (20,35 or 50 Amp) [ ] Jacket water heater [ ] Redundant Electric Starter
General	• RH service (Except LH Service Oil Filter) • Paint - Caterpillar Yellow with high gloss black rails • SAE standard rotation • Flywheel and flywheel housing - SAE No. 00	[ ] Barring group- manual or air powered [ ] Factory test reports

SPECIFICATIONS

CAT GENERATOR

Frame ……..…….. 3055
Excitation ……PM
Pitch……0.6667
Number of poles……4
Number of bearings …….……2
Number of Leads……6
Insulation …….Class F
IP rating ……..Drip proof IP23
Over speed capability - % of rated……125%
Wave form deviation……...3 %
Voltage regulator……. ……3 phase sensing with selectable V/Hz regulation
Telephone Influence Factor …….Less than 50
Harmonic Distortion ……..Less than 5%

CAT DIESEL ENGINE

C175-20 SCAC, V-20, 4 stroke, water-cooled diesel

Bore ……175.00 mm (6.89 in)
Stroke ……..220.00 mm (8.66in)
Displacement ……105.8 L (6456.31 in^3)
Compression ratio…….……15.3:1
Aspiration…….……TA
Fuel system……Common Rail
Governor Type…….ADEM™ A4

CAT EMCP 4 CONTROL PANELS

EMCP 4 controls including:
- Run / Auto / Stop Control
- Speed Adjust
- Voltage Adjust
- Engine Cycle Crank
- Emergency stop pushbutton

EMCP 4.2 controller features:
- 24-volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions
- True RMS AC metering, 3-phase, ±1% accuracy.

Digital indication for:
- RPM
- DC volts
- Operating hours
- Oil pressure (psi, kPa or bar)
- Coolant temperature
- Volts (L-L & L-N), frequency (Hz)
- Amps (per phase & average)
- Power Factor (per phase & average)
- kW (per phase, average & percent)
- kVA (per phase, average & percent)
- kVAr (per phase, average & percent)
- kW-hr (total)
- kVAr-hr (total)

Warning/shutdown with common LED indication of shutdowns for:
- Low oil pressure
- High coolant temperature
- Overspeed
- Emergency stop
- Failure to start (overcrank)
- Low coolant temperature
- Low coolant level

Programmable protective relaying functions:
- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under Frequency (81 o/u)
- Reverse Power (kW) (32)
- Reverse Reactive Power (kVAr) (32RV)
- Overcurrent (50/51)

Communications
- Customer data link (Modbus RTU)
- Accessory module data link
- Serial annunciator module data link
- 6 programmable digital inputs
- 6 programmable relay outputs (Form A)
- 2 programmable relay outputs (Form C)
- 2 programmable digital outputs

Mission Critical Standby 4000 ekW 5000 kVA

60 Hz 1800 rpm 12470 Volts

Technical Data

Open Generator Set - 1800 rpm/60 Hz/12 470 Volts		
Low BSFC		
Generator Set Package Performance		
Genset Power rating @ 0.8 pf	5000 kVA	
Genset Power Rating without fan	4000 ekW	
Fuel Consumption		
100% Load with fan	1038.5 L/hr	274.4 Gal/hr
75% Load with fan	739.2 L/hr	195.3 Gal/hr
50% Load with fan	746.0 L/hr	197.1 Gal/hr
Inlet Air		
Combustion air inlet flow rate	338.3 m^3/min	11946.4 cfm
Exhaust System		
Exhaust stack gas temperature (engine out)	479.1 °C	894.4 °F
Exhaust gas flow rate	870.0 m^3/min	30721 cfm
Exhaust system backpressure (maximum allowable)	6.7 kPA	26.9 in
Heat Rejection		
Heat rejection to cooolant (total)	2124 kW	120753 Btu/min
Heat rejection to exhaust (total)	3957 kW	224969 Btu/min
Heat rejection to aftercooler	438 kW	24882 Btu/min
Heat rejection to atmosphere from engine	304 kW	17307 Btu/min
Heat rejection to atmosphere from generator	197 kW	11213 Btu/min
Alternator		
Motor starting capabiliy @30% voltage dip	10728 skVA	
Frame	3055	
Temperature Rise	130 °C	234 °F
Lube System		
Sump refil with filter	675 L	178.3 gal
Emissions (Nominal)[2]		
NOx g/hp-hr	5.27 g/hp-hr	
CO g/hp-hr	0.5 g/hp-hr	
HC g/hp-hr	0.18 g/hp-hr	
PM g/hp-hr	0.04 g/hp-hr	

Note: This generator set is not offered with an engine driven radiator. Addition of an engine driven fan will reduce the output below the nameplate rating.

[1] Some packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40 degree C ambient per NEMA MG1-32.

[2] Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle. Emissions values are tailpipe out with aftertreatment installed. Values shown as zero may be greater than zero but were below the detection level of the equipment used at the tie of measurement.

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

Mission Critical Standby - Output available with varying load for the duration of the interruption of the normal source power. Average power output is 85% of the standby power rating. Typical peak demand up to 100% of standby rated ekW for 5% of the operating time. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year. Fuel stop power in accordance with ISO3046. Standby ambients shown indicate ambient temperature at 100% load which results in a coolant top tank temperature just below the shutdown temperature.

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.

DIMENSIONS

Package Dimensions		
Length	6719 mm	267.5 in
Width	2377 mm	93.6 in
Height	2556 mm	100.6 in

NOTE: For reference only - do not use for installation design. Please contact your local dealer for exact weight and dimensions.

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Sourced: U.S. Sourced

EPD0144-A