



Image shown may not reflect actual package

## PRIME 2880 ekW 3600 kVA 50 Hz 1500 RPM 11000 Volts

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

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### 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<sup>®</sup> 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<sup>®</sup> S•O•S<sup>SM</sup> 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

# PRIME 2880 ekW 3600 kVA

50 Hz 1500 RPM 11000 Volts



## FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	<ul style="list-style-type: none"> <li>• Air cleaner, 4 x single element canister with service indicator(s)</li> <li>• Plug group for air inlet shut-off</li> </ul>	<input type="checkbox"/> Air cleaner, 4 x dual element with service indicator(s) <input type="checkbox"/> Air inlet adapters
Cooling	<ul style="list-style-type: none"> <li>• SCAC cooling</li> <li>• Jacket water and AC inlet/outlet flanges</li> </ul>	<input type="checkbox"/> Remote horizontal SCAC radiator <input type="checkbox"/> Remote fuel cooler <input type="checkbox"/> Low coolant level sensor (for remote radiators)
Exhaust	<ul style="list-style-type: none"> <li>• Dry exhaust manifold</li> <li>• Bolted flange (ANSI 8" &amp; DIN 200) with bellow for each turbo (qty 4)</li> </ul>	<input type="checkbox"/> Engine Exhaust Temperature Module <input type="checkbox"/> Mufflers (15 dBA, 25 dBA, or 40 dBA) <input type="checkbox"/> Dual 20" or single 24" vertical exhaust collector <input type="checkbox"/> Weld flanges: ANSI 20" and ANSI 24"
Crankcase Systems	<ul style="list-style-type: none"> <li>• Open crankcase ventilation</li> </ul>	<input type="checkbox"/> Crankcase explosion relief valve
Fuel	<ul style="list-style-type: none"> <li>• Primary fuel filter with water separator</li> <li>• Secondary fuel filters (engine mounted)</li> </ul>	
Generator SR5	<ul style="list-style-type: none"> <li>• 3 phase brushless, salient pole</li> <li>• Space heater kit</li> <li>• IEC platinum stator RTD's</li> <li>• Cat digital voltage regulator (CDVR)</li> </ul>	<input type="checkbox"/> Oversize generators <input type="checkbox"/> Power connection arrangement
Governor	<ul style="list-style-type: none"> <li>• ADEM™ A4</li> </ul>	<input type="checkbox"/> Redundant shutdown
Control Panels	<ul style="list-style-type: none"> <li>• EMCP 4.2 Genset Controller</li> </ul>	<input type="checkbox"/> Local & remote annunciator modules <input type="checkbox"/> Discrete I/O module <input type="checkbox"/> Generator temperature monitoring & protection <input type="checkbox"/> Remote monitoring <input type="checkbox"/> Load share module
Lube	<ul style="list-style-type: none"> <li>• Lubricating oil</li> <li>• Oil filter, filler and dipstick</li> <li>• Oil drain line with valves</li> <li>• Fumes disposal</li> <li>• Gear type lube oil pump</li> <li>• Integral lube oil cooler</li> <li>• Electric prelube pumps</li> </ul>	
Mounting	<ul style="list-style-type: none"> <li>• Rails-engine / generator</li> <li>• Rubber anti-vibration mounts (shipped loose)</li> </ul>	<input type="checkbox"/> Spring type linear vibration isolators <input type="checkbox"/> IBC vibration isolators
Starting / Charging	<ul style="list-style-type: none"> <li>• Dual 24 volt electric starting motors</li> <li>• Batteries with rack and cables</li> <li>• Battery disconnect switch</li> </ul>	<input type="checkbox"/> Oversized battery set <input type="checkbox"/> 75 amp charging alternator <input type="checkbox"/> Battery chargers (20, 35 or 50 Amp) <input type="checkbox"/> Jacket water heater <input type="checkbox"/> Redundant Electric Starter
General	<ul style="list-style-type: none"> <li>• RH service (Except LH Service Oil Filter)</li> <li>• Paint - Caterpillar Yellow with high gloss black rails</li> <li>• SAE standard rotation</li> <li>• Flywheel and flywheel housing - SAE No. 00</li> </ul>	<input type="checkbox"/> Barring group- manual or air powered <input type="checkbox"/> Factory test reports

**SPECIFICATIONS**

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**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 <sup>3</sup> )
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

**Technical Data**

Open Generator Set - 1500 rpm/50 Hz/11 000 Volts	DM8941	
<b>Low BSFC</b>		
<b>Generator Set Package Performance</b>		
Genset Power rating @ 0.8 pf	3600 kVA	
Genset Power Rating without fan	2880 ekW	
<b>Fuel Consumption</b>		
100% Load with fan	709.6 L/hr	187.5 Gal/hr
75% Load with fan	534.4 L/hr	141.2 Gal/hr
50% Load with fan	373.9 L/hr	98.8 Gal/hr
<b>Inlet Air</b>		
Combustion air inlet flow rate	254.0 m <sup>3</sup> /min	8970 cfm
<b>Exhaust System</b>		
Exhaust stack gas temperature (engine out)	416.4 °C	781.6 °F
Exhaust gas flow rate	596.5 m <sup>3</sup> /min	21062 cfm
Exhaust system backpressure (maximum allowable)	6.7 kPA	26.9 in water
<b>Heat Rejection</b>		
Heat rejection to coolant (total)	1399 kW	79553 Btu/min
Heat rejection to exhaust (total)	2531 kW	143886 Btu/min
Heat rejection to aftercooler	309 kW	17542 Btu/min
Heat rejection to atmosphere from engine	235 kW	13342 Btu/min
Heat rejection to atmosphere from generator	158 kW	8993 Btu/min
<b>Alternator</b>		
Motor starting capability @30% voltage dip	10130 skVA	
Frame	3055	
Temperature Rise	105 °C	189 °F
<b>Lube System</b>		
Sump refill with filter	675 L	178.3 gal
<b>Emissions (Nominal)<sup>2</sup></b>		
NOx g/hp-hr	7.9 g/hp-hr	
CO g/hp-hr	0.12 g/hp-hr	
HC g/hp-hr	0.06 g/hp-hr	
PM g/hp-hr	0.02 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.

<sup>1</sup> 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.

<sup>2</sup> 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**

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**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 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 ISO3046. Prime ambients shown indicate ambient temperature at 100% load which results in a coolant top tank temperature just below the alarm 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 35° API [16° C (60° F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29° C (85° 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**

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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.