

## DIESEL GENERATOR SET



Image shown may not reflect actual package

**Standby**  
**3000 ekW 3750 kVA**  
**60 Hz 1800 rpm**  
**12,470 Volts**

Caterpillar® is leading the power generation market place with power solutions engineered to deliver unmatched performance, reliability, durability and cost-effectiveness.

### FEATURES

#### EMISSIONS / FUEL STRATEGY

- EPA Tier 2

#### 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 attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

#### SINGLE SOURCE SUPPLIER

- Fully prototype tested with field validation

#### WORLDWIDE PRODUCT SUPPORT

- Caterpillar® dealers provide extensive post-sale support including maintenance and repair agreements
- Caterpillar dealers have over 1,600 dealer branch stores operating in 200 countries
- CAT SOS<sup>SM</sup> program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

#### CAT C175-16 DIESEL ENGINE

- Reliable and durable
- Four-stroke diesel engine combines superior performance with excellent fuel economy
- Advanced electronic engine control
- Low installation and operating cost

#### CAT SR5 GENERATOR

- Designed to match performance and output characteristics of Caterpillar diesel engines
- Industry leading mechanical and electrical design
- Industry leading motor starting capabilities
- High efficiency

#### CAT EMCP3 CONTROL PANELS

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

## 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>                                                                                    | <ul style="list-style-type: none"> <li>• Air cleaner; 4 x dual element with service indicator(s)</li> <li>• Air inlet adapters</li> </ul>                                                                                                                                   |
| Control Panel       | <ul style="list-style-type: none"> <li>• EMCP 3.1 (set mounted)</li> </ul>                                                                                                                                                                             | <ul style="list-style-type: none"> <li>• EMCP 3.2 or 3.3</li> <li>• Local &amp; remote annunciator modules</li> <li>• Discrete I/O module</li> <li>• Generator temperature monitoring &amp; protection</li> <li>• Remote monitoring</li> <li>• Load share module</li> </ul> |
| Cooling             | <ul style="list-style-type: none"> <li>• SCAC cooling</li> <li>• Jacket water and AC inlet / outlet flanges</li> </ul>                                                                                                                                 | <ul style="list-style-type: none"> <li>• Remote horizontal SCAC radiator</li> <li>• Remote fuel cooler</li> <li>• Low coolant level sensor (for remote radiators)</li> </ul>                                                                                                |
| Exhaust             | <ul style="list-style-type: none"> <li>• Dry exhaust manifold</li> <li>• Bolted flange (ANSI 6" &amp; DIN 150) with bellow for each turbo (qty 4)</li> </ul>                                                                                           | <ul style="list-style-type: none"> <li>• Engine Exhaust Temperature Module</li> <li>• Mufflers (15dBA, 25dBA, or 40dBA)</li> <li>• 20" vertical exhaust collector</li> <li>• Weld flange ANSI 20"</li> </ul>                                                                |
| Fuel                | <ul style="list-style-type: none"> <li>• Primary fuel filter with water separator</li> <li>• Secondary/ tertiary fuel filters (engine mounted)</li> </ul>                                                                                              |                                                                                                                                                                                                                                                                             |
| Generator           | <ul style="list-style-type: none"> <li>• SR5 generator</li> <li>- 3 phase brushless, salient pole</li> <li>- IEC platinum stator RTDs</li> <li>- Cat Digital Voltage Regulator (CDVR)</li> </ul>                                                       | <ul style="list-style-type: none"> <li>• Space heater kit</li> <li>• Oversized generators</li> <li>• Power connection arrangement</li> </ul>                                                                                                                                |
| Governor            | <ul style="list-style-type: none"> <li>• ADEM™ A4</li> </ul>                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>• Redundant shutdown</li> </ul>                                                                                                                                                                                                      |
| Lubrication         | <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> </ul>  | <ul style="list-style-type: none"> <li>• Electric prelube pump</li> </ul>                                                                                                                                                                                                   |
| Mounting            | <ul style="list-style-type: none"> <li>• Rails-engine / generator</li> <li>• Rubber anti-vibration mounts (shipped loose)</li> </ul>                                                                                                                   | <ul style="list-style-type: none"> <li>• Spring type linear vibration isolators</li> <li>• IBC vibration isolators</li> </ul>                                                                                                                                               |
| 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>                                                                               | <ul style="list-style-type: none"> <li>• Oversized battery set</li> <li>• 75 amp charging alternator</li> <li>• Battery chargers (20 amp)</li> <li>• Jacket water heater</li> <li>• Ether starting aid</li> </ul>                                                           |
| Crankcase Systems   | <ul style="list-style-type: none"> <li>• Open crankcase ventilation</li> </ul>                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• Crankcase explosion relief valve</li> </ul>                                                                                                                                                                                        |
| Circuit Breakers    |                                                                                                                                                                                                                                                        | ( No set mounted circuit breakers available on medium or high voltage packages)                                                                                                                                                                                             |
| General             | <ul style="list-style-type: none"> <li>• RH service (Except LH Service Oil Filter)</li> <li>• SAE standard rotation</li> <li>• Paint - Caterpillar yellow with high gloss black rails</li> <li>• Flywheel and flywheel housing - SAE N0. 00</li> </ul> | <ul style="list-style-type: none"> <li>• Barring group- manual or air powered</li> <li>• Factory test reports</li> </ul>                                                                                                                                                    |

**CAT C175 ENGINE**

|                     |             |                         |
|---------------------|-------------|-------------------------|
| Engine              | C175        |                         |
| Number of cylinders | 16          |                         |
| Cycle               | Four stroke |                         |
| Cooling             | Water       |                         |
| Bore                | 175 mm      | 6.89 inches             |
| Stroke              | 220 mm      | 8.66 inches             |
| Displacement        | 84.67 L     | 5166.63 in <sup>3</sup> |
| Compression ratio   | 15.3:1      |                         |
| Aspiration          | TA          |                         |
| Cooling type        | SCAC        |                         |
| Fuel system         | Common Rail |                         |
| Governor type       | ADEM™ A4    |                         |

**CAT SR5 GENERATOR**

|                                                              |              |
|--------------------------------------------------------------|--------------|
| Frame                                                        | 3020         |
| Insulation class (UL1446 recognized)                         | H            |
| Temperature rise @ 40C ambient                               | 130 °C       |
| Winding type                                                 | Form         |
| Winding connection                                           | Star (wye)   |
| Winding pitch                                                | 0.6667       |
| Excitation                                                   | PM           |
| Motor starting capability @30% voltage dip and 0.4 pf (skVA) | 7879 skVA    |
| Number of poles                                              | 4            |
| Number of bearings                                           | 2            |
| Number of leads                                              | 6            |
| Number of phases                                             | 3            |
| IP rating                                                    | IP23         |
| Overspeed capability - % of rated                            | 125%         |
| Wave form deviation                                          | Less than 3% |
| Telephone Influence Factor (TIF)                             | Less than 50 |
| Harmonic distortion                                          | Less than 5% |
| Heat rejection to atmosphere                                 | 184.7 kW     |

**CAT CDVR VOLTAGE REGULATOR**

|                                                 |                     |
|-------------------------------------------------|---------------------|
| Caterpillar Digital Voltage Regulator (CDVR)    |                     |
| Microprocessor based                            |                     |
| VAR/PF control                                  |                     |
| RFI suppression                                 |                     |
| Minimum / maximum excitation limiter            |                     |
| Exciter diode monitor                           |                     |
| Direct 3 phase sensing with selectable volts/Hz |                     |
| Communicates with EMCP3                         |                     |
| Programmable operating characteristics          |                     |
| Compatible with SE, PM and IE excitation        |                     |
| Voltage regulation steady state                 | less than +/- 0.25% |

**CATERPILLAR EMCP 3 CONTROLS**

| Features                                                                                                                                                                                                                                                                                                                                                         | EMCP3.1<br>(Standard) | EMCP 3.2<br>(Optional) | EMCP 3.3<br>(Optional) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|------------------------|
| • 12-24 Volt (nominal) DC control                                                                                                                                                                                                                                                                                                                                | X                     | X                      | X                      |
| • Run/Auto/stop control                                                                                                                                                                                                                                                                                                                                          | X                     | X                      | X                      |
| • Display size (mm)                                                                                                                                                                                                                                                                                                                                              | 24x95                 | 24x95                  | 28x100                 |
| • Display size (pixels)                                                                                                                                                                                                                                                                                                                                          | 33 x132               | 33 x132                | 64x240                 |
| • Display available in any of 26 languages with text translation capability                                                                                                                                                                                                                                                                                      | X                     | X                      | X                      |
| • Temperature operating range -40°C to 70°C (-40°F to 158°F),<br>(display to -20°C/-4°F)                                                                                                                                                                                                                                                                         | X                     | X                      | X                      |
| • Designed for mounting on generator set package (vibration tested to 4.3G sinusoidal and 15G shock)                                                                                                                                                                                                                                                             | X                     | X                      | X                      |
| • 3-phase, true RMS metering                                                                                                                                                                                                                                                                                                                                     | X                     | X                      | X                      |
| • Generator metering accuracy (+/- X%)                                                                                                                                                                                                                                                                                                                           | 2                     | 1                      | 1                      |
| • Metering - L-L volts, L-N Volts, phase Amps, Hz                                                                                                                                                                                                                                                                                                                | X                     | X                      | X                      |
| • Digital indications for RPM, operating hours, oil pressure, coolant temperature and system DC voltage                                                                                                                                                                                                                                                          | X                     | X                      | X                      |
| • Two LED indicators for common warning/shutdown alarms (i.e. low oil pressure, high coolant temperature, low coolant level, over-speed, emergency stop, failure to start due to over crank, etc.)                                                                                                                                                               | X                     | X                      | X                      |
| • Reset all events function                                                                                                                                                                                                                                                                                                                                      | X                     | X                      | X                      |
| • Voltage adjust when CDVR is on J1939 data-link                                                                                                                                                                                                                                                                                                                 | X                     | X                      | X                      |
| • Integrates with ADEM engine governor for engine monitoring, alarms, and control                                                                                                                                                                                                                                                                                | X                     | X                      | X                      |
| • Integrates with Caterpillar Digital Voltage Regulator (CDVR) for alarms and control                                                                                                                                                                                                                                                                            | X                     | X                      | X                      |
| • Compatible with Caterpillar ET service tool for enhanced serviceability including data capturing from event log, data logging, set point programming and troubleshooting                                                                                                                                                                                       | X                     | X                      | X                      |
| • Field re-flashable software ensures the customers get the latest updated software                                                                                                                                                                                                                                                                              | X                     | X                      | X                      |
| • Programmable switch inputs                                                                                                                                                                                                                                                                                                                                     | 4                     | 6                      | 6                      |
| • Programmable relay outputs (2A continuous DC)                                                                                                                                                                                                                                                                                                                  | 4                     | 6                      | 6                      |
| • Integration with programmable annunciator module - local/remote (NFPA 99-110) (optional)                                                                                                                                                                                                                                                                       |                       | Maximum 4              | Maximum 4              |
| • Integration with programmable discrete I/O (DIO) module (optional)                                                                                                                                                                                                                                                                                             |                       | Maximum 4              | Maximum 4              |
| • Programmable discrete outputs                                                                                                                                                                                                                                                                                                                                  |                       | 1                      | 2                      |
| • Additional configurable Input (0-2 kOhm resistive sender)                                                                                                                                                                                                                                                                                                      |                       | 1                      | 1                      |
| • Programmable protective relaying functions - under/over voltage, under/over frequency and phase over-current                                                                                                                                                                                                                                                   |                       | X                      | X                      |
| • Programmable kW level relay                                                                                                                                                                                                                                                                                                                                    |                       | X                      | X                      |
| • Power metering - ekW, kVA, kVAR, kWhr, %kW, PF                                                                                                                                                                                                                                                                                                                 |                       | X                      | X                      |
| • Built in Modbus isolated data link (RS -485 half-duplex) that supports serial communication at data rate up to 57.6 kbaud and functions as a communications gateway to the customer's SCADA system or device, providing all generator set data for remote monitoring, automatically generated monthly reports, trending/graphing, storing events history, etc. |                       | X                      | X                      |
| • Free Modbus RTU / remote monitoring PC software                                                                                                                                                                                                                                                                                                                |                       | X                      | X                      |
| • Engine crank attempt counter                                                                                                                                                                                                                                                                                                                                   |                       | X                      | X                      |
| • Engine successful start counter                                                                                                                                                                                                                                                                                                                                |                       | X                      | X                      |
| • Service maintenance interval (engine hrs & real-time)                                                                                                                                                                                                                                                                                                          |                       | X                      | X                      |
| • Engine oil temperature in °C or °F (optional)                                                                                                                                                                                                                                                                                                                  |                       | X                      | X                      |
| • Real time clock                                                                                                                                                                                                                                                                                                                                                |                       | X                      | X                      |
| • Programmable cycle timer                                                                                                                                                                                                                                                                                                                                       |                       | X                      | X                      |
| • Programmable protective relaying function - reverse power                                                                                                                                                                                                                                                                                                      |                       |                        | X                      |
| • Enhanced engine monitoring - intake/exhaust manifold, SCAC inlet, oil and fuel temperatures; fuel, crankcase and intake manifold pressures; oil, fuel and air filter restrictions; instant and total fuel consumption - where supported by Engine Control Module (ECM)                                                                                         |                       |                        | X                      |
| • Integration with RTD module for generator temperature monitoring (optional)                                                                                                                                                                                                                                                                                    |                       |                        | Maximum 1              |
| • Integration with thermocouple module(s) for generator temperature monitoring (optional)                                                                                                                                                                                                                                                                        |                       |                        | Maximum 2              |

## TECHNICAL DATA

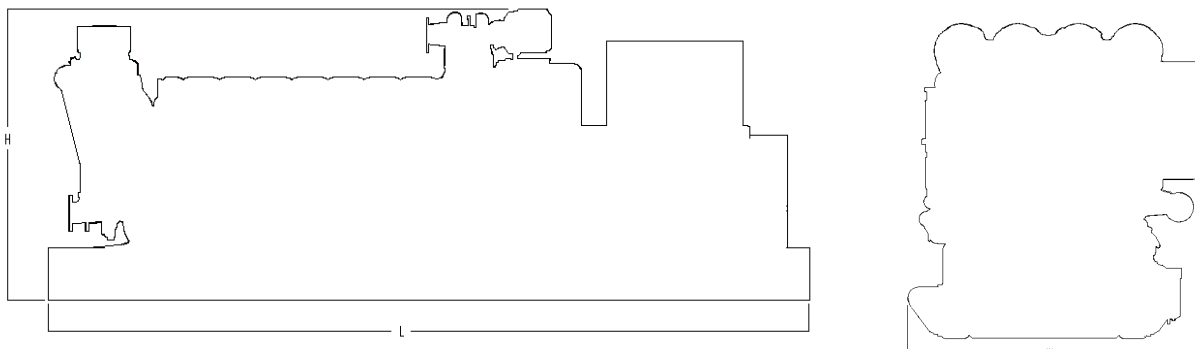
| EPA Tier 2                                   |                      |                       |
|----------------------------------------------|----------------------|-----------------------|
| Generator Set Package Performance            |                      | Units                 |
| Generator set power rating @ 0.8 pf          | 3750 kVA             |                       |
| Generator set power rating with fan *        | 3000 ekW             |                       |
| Generator set rated voltage                  | 12,470 Volts         |                       |
| Generator set rated current @0.8 pf (Amps)   | 173.6 Amps           |                       |
| Air Inlet                                    |                      |                       |
| Combustion air inlet flow rate               | 264.9 m3/min         | 9356 cfm              |
| Cooling System                               |                      |                       |
| Coolant to aftercooler temp max              | 46°C at 30°C ambient | 115°F at 86°F ambient |
| Emissions (Nominal <sup>1</sup> )            |                      |                       |
| NOx+ HC                                      |                      | 5.19 g/bhp-hr         |
| CO                                           |                      | 0.63 g/bhp-hr         |
| HC                                           |                      | 0.1 g/bhp-hr          |
| PM                                           |                      | 0.03 g/bhp-hr         |
| Exhaust System                               |                      |                       |
| Exhaust stack gas temperature                | 473.7°C              | 884.6°F               |
| Exhaust gas flow rate (Wet)                  | 695.6 m3/min         | 24,565.7 cfm          |
| Exhaust system backpressure (max. allowable) | 6.7 kPA              | 26.9 in water         |
| Exhaust flange size (internal diameter)      | 150 mm               | 6 inches              |
| Fuel Consumption                             |                      |                       |
| 100% Load with fan                           | 807.4 L/hr           | 213.3 Gal/hr          |
| 75% Load with fan                            | 616.3 L/hr           | 162.8 Gal/hr          |
| 50% Load with fan                            | 489.1 L/hr           | 129.2 Gal/hr          |
| Heat Rejection                               |                      |                       |
| Heat rejection to coolant (total)            | 1,377.8 kW           | 78,423.0 Btu/min      |
| Heat rejection to exhaust (total)            | 3,107.6 kW           | 176,885.0 Btu/min     |
| Heat rejection to aftercooler (Stage 2)      | 494.2 kW             | 28,128.0 Btu/min      |
| Heat rejection to atmosphere from engine     | 275.8 kW             | 15,698.0 Btu/min      |
| Heat rejection to atmosphere from generator  | 184.7 kW             | 10,513.1 Btu/min      |
| Lube System                                  |                      |                       |
| Sump refill with filter                      | 540 L                | 142.6 Gal             |

\* The generator set package is not offered with an engine driven radiator. The addition of an engine driven fan will not reduce the output below the nameplate rating.

1. 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.

### Package Dimensions and Weights

|                             |           |            |
|-----------------------------|-----------|------------|
| Length                      | 6230.4 mm | 245.29 in  |
| Width                       | 2131.7 mm | 83.92 in   |
| Height                      | 2268.4 mm | 89.31 in   |
| Approx. Package Weight- Dry | 17,730 kg | 43,500 lbs |



### RATING DEFINITIONS AND CONDITIONS

**Ratings** are based on SAE J1995 standard conditions. These ratings also apply at ISO3046 standard conditions.

**Standby** - Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year. Standby power in accordance with ISO8528. 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.

**Additional Ratings** may be available for specific customer requirements. Consult your Caterpillar representative for details.

**Meets or Exceeds International Specifications:** AS1359, CSA, IEC60034, ISO3046, ISO8528, NEMA MG 1-33, UL508A, 98/37/EC

**Fuel Rates** are based on fuel oil of 35° API (16° C or 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.).

**Emissions Data** measurement procedures are consistent with those described in EPA CFR 40 Part 89, subpart D and E, and ISO8178-1 for measuring HC, CO, PM and 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 EPA regulations which use values based on a weighted cycle.

Performance Number: DM8448  
Feature Code: 175DE13  
Generator Arrangement: 262-8258  
U.S Sourced  
December 2008

[www.CAT-ElectricPower.com](http://www.CAT-ElectricPower.com)

© 2008 Caterpillar  
All right 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," and 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.