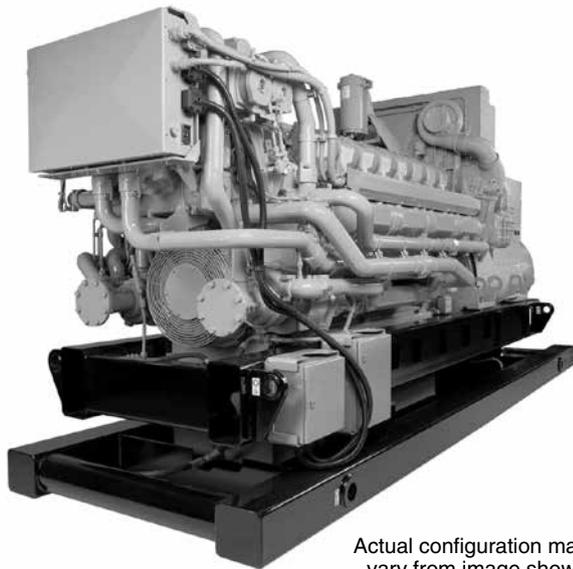




C175-16 Offshore Drilling Generator Set

1833 ekW (2619 kVA)
1930 bkW (2588 bhp)
60 Hz (1200 rpm)



Actual configuration may vary from image shown

CAT® GENERATOR SET SPECIFICATIONS

V-16, 4-Stroke-Cycle-Diesel

Emissions	IMO Tier II/EPA Marine Tier 2
Bore	175 mm (6.89 in)
Stroke	220 mm (8.66 in)
Displacement	85 L (5167 in ³)
Aspiration	Turbocharged/2-stage Aftercooled
Fuel System	Common Rail/EUI™
Engine Control	Dual ADEM™ A4
Generator Set Control	MPD 3.0 (Cat® Alarm and Protection System optional)
Voltage	600V
Oil Change Interval	1000 hours

Note: Power rating does not include radiator fan power.

FEATURES

Product Design

- Industry-leading power density for growing offshore power demands
- IMO Tier II emissions compliant
- High pressure electronic unit injection maximizes fuel efficiency, performance, while maintaining emission standards
- Cat® Alarm and Protection System provides the latest technology in generator set control, protection, and operator interface
- Marine society certifications

Ease of Installation

- Inner-outer base mounting design with vibration isolators for simplified rig integration
- Package design provides single-lift installation to reduce shipyard installation complexity

Custom Packaging

For any petroleum application, trust Caterpillar to meet your project needs with custom factory generator sets and mechanical packages. Cat engines, generators, controls, radiators, and transmissions can be custom designed and matched in collaboration with our local dealers to create unique solutions. Custom packages are globally supported and are covered by a one-year warranty after startup.

Full Range of Attachments

Large variety of factory-installed attachments increases application flexibility and reduces installation time.

Testing

- Every unit is full-load tested to ensure proper package performance
- Full range of factory tests and reports are available including performance, torsional-vibration analysis, fuel consumption, engine, and generator special tests

Unmatched Product Support Offered Through the Worldwide Cat Dealer Network

- More than 2,200 dealer outlets
- Cat factory-trained dealer technicians service every aspect of your Cat product
- Caterpillar parts and labor warranty
- Preventive maintenance agreements available for repair before failure.
- S•O•SSM program matches your oil sample to Caterpillar set standards to determine:
 - Internal engine component condition
 - Presence of unwanted fluids
 - Presence of combustion by-products
 - Site-specific oil change interval

Over 80 Years of Engine Manufacturing Experience

- Ownership of these manufacturing processes enables Caterpillar to produce high quality, dependable products.
- Cast engine blocks, heads, cylinder liners, and flywheel housings
 - Machine critical components
 - Assemble complete engine

Web Site

For all your petroleum power requirements, visit www.catoilandgas.cat.com.

CONFIGURATION

Air Inlet System

Standard

- Dual turbochargers
- Corrosion-resistant aftercooler core
- Air cleaners — single or dual element

Optional

- Air cleaner service indicator

Exhaust System

Standard

- Dry exhaust manifolds with thermo-laminated heat shields
- Dual turbochargers with water-cooled bearings and thermo-laminated heat shields
- Vertical exhaust outlet
- Flange and exhaust expanders
- 358 to 406 mm (14 to 16 in) or
- 358 to 460 mm (14 to 18 in) or
- 358 to 508 mm (14 to 20 in)

Cooling System

Standard

- Separate-circuit-aftercooler (SCAC) and jacket water (JW) circuit cooling system
- Gear-driven centrifugal pumps, one for each circuit
- SCAC electronic thermostat, outlet-controlled with aftercooler inlet temperature sensing
- JW electronic thermostat, outlet-controlled with outlet temperature sensing
- Engine oil cooler in JW circuit

Optional

- 9 kW, 240V, 60 hz jacket water heater
- Custom jacket water heater

Fuel System

Standard

- Cat common rail high-pressure fuel system with electronically controlled unit injectors
- Duplex primary fuel filter with water separator
- Duplex secondary and tertiary fuel filters
- Electric fuel priming pump
- Gear-driven fuel transfer pump
- Gear-driven high-pressure fuel pump
- Double-walled high-pressure fuel lines
- Fuel pressure, temperature, and leak detection sensors

Lubrication System

Standard

- Engine-driven, gear-type oil pump
- Integral lube oil cooler
- Front-mounted oil drain lines and valve
- Oil sampling valve
- Filler and dipstick
- Four-canister simplex oil filter
- Prelube pump — electric, air, or custom
- Fumes disposal with crankcase breathers
- Crankcase explosion relief valves

Engine Control and Protection

Standard

- A4 engine control unit (ECU)
- Dual engine control module (ECU) and sensors provide redundancy

- Software monitors engine parameters and performs alarm, derate, and shutdown functions

- Rigid wiring harness
- Marine Power Display 3.0 (MPD 3.0)

Optional

- Cat Alarm and Protection System
- Communication module PL1000T/E
- Direct-rack control
- Thermocouples
- Metal particle detector
- Spray shielding

Mounting

Standard

- Inner-outer base with vibration isolators

Optional

- Custom I-beam base with vibration isolators

Generator

Standard

- Kato brushless permanent magnet 6P6.6-3200 HR
- 2-bearing, close-coupled arrangement
- 60 Hz, 600V, 0.7 PF
- UL/CSA listed, IP23

Optional

- Custom generator

Flywheel and Coupling

Standard

- Flywheel housing, SAE No. 00
- Flywheel, SAE No. 00
- ABS certified, non-certified, or custom-coupling and coupling mounting
- Free-standing or close-coupled generator set arrangements

Starting System

Standard

- Turbine air starter or
- Dual electric starting motors or
- Air and electric starting motors (redundant)

General

Standard

- Power distribution box — 24V or custom
- 20A battery charger
- Cat yellow paint

Included in close-coupled, two-bearing arrangements

- Offshore oil field sub-base
- Integral spring isolators with limit stop
- Lift provisions on base
- Oil drain extension
- Engine length drip pan with drain
- Torsional dampened driveline couplings

Optional

- TVA report
- Special tests
- Project-specific installation drawings
- P&ID-electrical drawings
- Spare parts kit
- Barring group
- Engine lifting group
- Custom generators and radiators



TECHNICAL DATA

C175-16 Offshore Drilling Generator Set — 1200 rpm

	Units	DM6522
Generator Set Data		
Rated power	ekW	1833
kVA rating	kVA	2619
Rated power factor		0.7
Frequency	Hz	60
Engine Data		
Engine power	bkW (bhp)	1930 (2588)
Engine speed	rpm	1200
Maximum ambient temperature without derate	°C (°F)	50 (122)
BMEP @ rated	kPa (psi)	2280 (331)
BSFC @ 100% load	g/bkW-hr (lb/bhp-hr)	205 (0.34)
BSFC @ 75% load	g/bkW-hr (lb/bhp-hr)	211 (0.35)
BSFC @ 50% load	g/bkW-hr (lb/bhp-hr)	220 (0.36)
BSFC @ 25% load	g/bkW-hr (lb/bhp-hr)	250 (0.41)
Fuel consumption @ rated (nominal)	L/hr (gal/hr)	471.6 (125)
Air flow rate (@25°C, 101.3 kPa)	m ³ /min (ft ³ /min)	173.3 (6120)
Inlet manifold pressure	kPa (psi)	286.8 (41.6)
Inlet manifold temperature	°C (°F)	54 (129)
Aftercooler water temperature	°C (°F)	50 (122)
Jacket water temperature	°C (°F)	99 (210)
Exhaust stack temperature	°C (°F)	417.8 (784)
Exhaust flow rate (@stack temp, 101.3 kPa)	m ³ /min (ft ³ /min)	410.3 (14,490)
Separate circuit afercooler heat rejection @ rated	kW (Btu/min)	193 (10,976)
Separate circuit afercooler water flow @ rated	L/min (gal/min)	1080 (285)
Jacket water heat rejection @ rated	kW (Btu/min)	1010 (57,437)
Jacket water flow @ rated	L/min (gal/min)	2000 (528)
Radiated/convective heat rejection @ rated	kW (Btu/min)	60.9 (3463)
Lube oil system capacity	L (gal)	946 (250)
Engine coolant capacity (JW)	L (gal)	305 (81)
Engine coolant capacity (AC)	L (gal)	42 (11)
Oil change interval	Hours	1000
Emissions (NTE) @ rated		
NOx	g/bkW-hr (g/bhp-hr)	7.82 (5.83)
CO	g/bkW-hr (g/bhp-hr)	0.46 (0.34)
HC	g/bkW-hr (g/bhp-hr)	0.11 (0.08)
PM	g/bkW-hr (g/bhp-hr)	0.03 (0.02)
Generator Data		
Generator model		Kato 6P6.6-3200
Efficiency		95%
Voltage	Volts	600
Design kVA rating	kVA	2619
Insulation class		F
Temperature rise (@ 50°C ambient temp)	°C	90
Max overspeed		125%/60 sec
Excitation		PM
Number of poles		6
Winding		Form wound
Pitch		0.778
Number of leads		6
Number of bearings		2
Ingress protection rating		IP23
Alignment		Close coupled
Space heater	Volts	120/240
Stator RTDs per phase		2
Bearings RTDs		2

INSTRUMENTATION FEATURES

MPD 3.0 and Cat Alarm and Protection System

- 178 mm (7 in) color monitor display all engine parameters and alarm annunciation. The alarms are annunciated with a time and date stamp.
- Annunciation of all engine shutdowns, alarms, and status points
- Start/prelube control switch and emergency stop button
- Selection of local/remote control of engine
- Customer connections at terminal blocks inside panel

Additional Cat Alarm and Protection System

- MCS approved
- 145 mm (5.7 in) color monitor displays all engine parameters and alarm annunciation.
- Equipped for remote communication MODBUS RS485 and MODBUS TCP (Replaces PL1000E)
- Full J1939 broadcast
- Password level access
- Local/remote start-shutdown
- 2 configurable relay outputs
- 213 mm (8.4 in) optional touch-screen remote monitor display
- Optional generator interface

MPD 3.0 and Cat Alarm and Protection System

Switches

- All switches are located in the MPD 3.0 or Cat Alarm and Protection System panel.
- Local throttle
- Cranking motor select
- Manual crank override
- Low idle
- Engine protection override
- Rapid start/stop
- Manual prelube

Additional Cat Alarm and Protection System Switches

- Oil mist detector override

MPD 3.0 and Cat Alarm and Protection System Alarms

- Lubrication system
 - Low engine oil pressure
 - High engine oil temperature
 - High engine oil filter restriction pressure (differential)
- Cooling system
 - High engine coolant temperature
 - Low engine coolant temperature
 - Low coolant level
 - High aftercooler coolant temperature
 - Low engine coolant pressure
 - Low aftercooler coolant pressure
- Exhaust system
 - High exhaust port temperature
 - High exhaust temperature bank to bank (R to L)
 - Exhaust port temperature high deviation
 - Exhaust port temperature low deviation
 - High turbo turbine inlet temperature

- Fuel system

- High fuel filter restriction pressure (differential)
- Leak detection monitor
- High fuel rail temperature
- High fuel temperature (low pressure fuel system)
- Low fuel transfer pressure (low pressure fuel system)
- High fuel pressure (low pressure fuel system)
- High fuel rail pressure deviation from desired (high pressure fuel system)
- Low fuel rail pressure deviation from desired (high pressure fuel system)
- Primary fuel filter restriction monitor
- Primary fuel filter inlet high pressure monitor
- Primary fuel filter inlet low pressure monitor

- Air intake system

- High engine inlet air temperature (past air filter)
- High intake manifold air temperature
- High air inlet differential pressure
- High inlet manifold air pressure

- Miscellaneous

- High crankcase pressure

Additional Cat Alarm and Protection System Alarms

- Engine overspeed

MPD 3.0 and Cat Alarm and Protection System Derates

- Lubrication system
 - High engine oil temperature
- Cooling system
 - High engine coolant temperature
 - Low coolant level
 - High aftercooler coolant temperature
 - Low engine coolant pressure
 - Low aftercooler coolant pressure
- Exhaust system
 - High turbo turbine inlet temperature
- Fuel system
 - High fuel rail temperature
 - High fuel temperature (low pressure fuel system)
 - Low fuel transfer pressure (low pressure fuel system)
 - High fuel pressure (low pressure fuel system)
 - Low fuel rail pressure deviation from desired
- Air intake system
 - High engine inlet air temperature (past air filter)
 - High intake manifold air temperature
 - High air inlet differential pressure
 - High inlet manifold air pressure

**INSTRUMENTATION FEATURES (continued)**

MPD 3.0 and Cat Alarm and Protection System**Shutdowns**

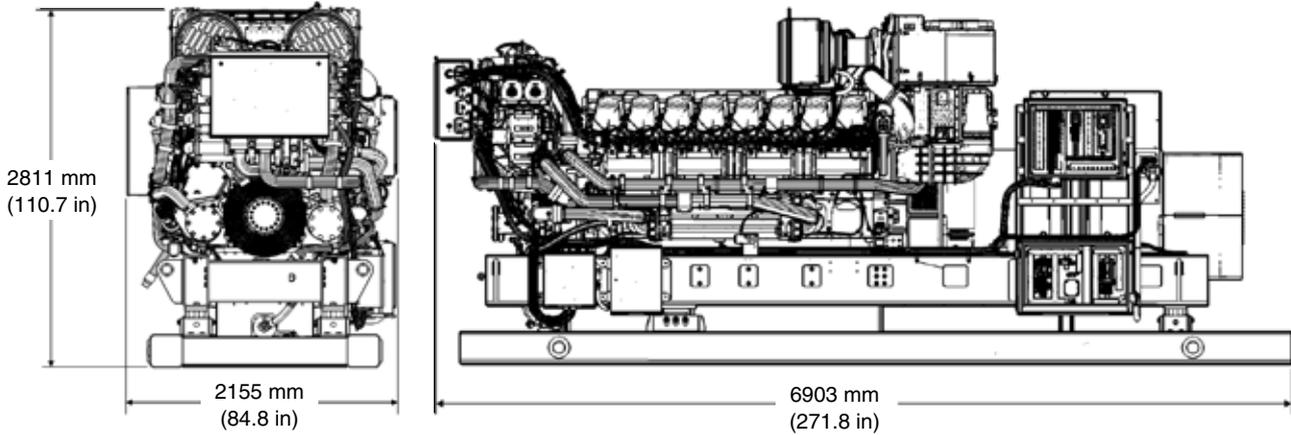
- Lubrication system
 - Low engine oil pressure
 - High engine oil temperature
- Cooling system
 - High engine coolant temperature
 - High aftercooler coolant temperature
 - Low engine coolant pressure
 - Low aftercooler coolant pressure
- Exhaust system
 - High exhaust port temperature
 - Exhaust port temperature high deviation
 - Exhaust port temperature low deviation
 - High turbo turbine inlet temperature
- Fuel system
 - High fuel rail temperature
 - High fuel temperature (low pressure fuel system)
 - Low fuel transfer pressure (low pressure fuel system)
 - High fuel pressure (low pressure fuel system)
- Air
 - High intake manifold air temperature
 - High inlet manifold air pressure
- Miscellaneous
 - Engine overspeed

**Additional Cat Alarm and Protection System
Monitoring and Display Functions**

- Starting air pressure
- High generator rear bearing temperature
- High generator front bearing temperature
- High generator stator A temperature
- High generator stator B temperature
- High generator stator C temperature
- Generator space heater output
- Emergency oil pump start output
- Emergency cooling pump start output
- Summary shutdown output
- Driven equipment electric lube pump output
- Generator air lubrication pump enable output
- Generator frequency, voltage, and current monitoring
- Additional inputs and outputs for factory or customer provided options:
 - Engine coolant tank level input
 - Engine oil contamination input (customer provided sensor)
 - Engine aftercooler tank level input
 - Seawater pressure input
 - Fuel tank level sensor
 - Driven equipment oil level input
 - Emergency sea water pump start output
 - Generator drive end bearing flow switch
 - Generator non-drive end bearing flow switch
 - AC voltage available switch
 - Generator lube oil temp high switch
 - Multiple configurable spare inputs for switches and analog sensors



OFFSHORE DRILLING GENERATOR SET



Module Dimensions		
Length	6903 mm	271.8 in
Width	2155 mm	84.8 in
Height	2811 mm	110.7 in
Module Weight (dry)*	24 312 kg	53,599 lb

Tilt Capability	
Static	15°
Dynamic	22.5°

Note: Values represent maximum tilt capabilities in any direction.

Note: Dimensions are dependent on generator and options. See general dimension drawings for details.

*Weight includes engine, generator, inner and outer bases, and coupling. Weight may vary depending upon individual configuration.

RATING DEFINITIONS AND CONDITIONS

Maximum Continuous Rating (MCR) following reference conditions according to the International Association of Classification Societies (IACS) for main and auxiliary engines. An overload of 10% is permitted for one hour within 12 hours of operation.

Fuel Consumption – 5% tolerance and based on fuel oil of 35° API [16°C (60°F)] gravity having an LHV of 62 780 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). Fuel consumption is shown with all engine-driven oil, fuel, and water pumps.

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