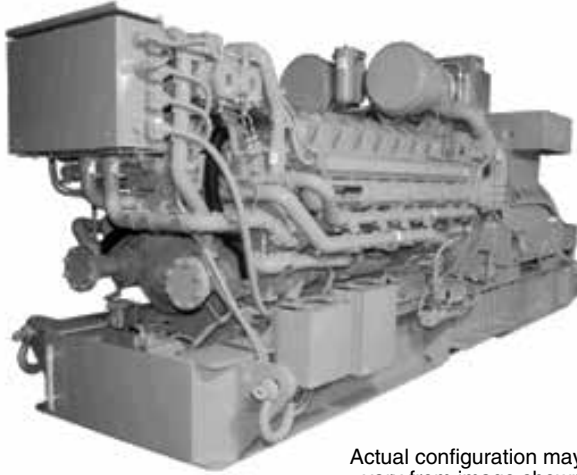




# C175-16 Offshore Generator Set

2300 kW (2875 kVA)  
2418 kW (3243 bhp)  
50 Hz (1500 rpm)

## Preliminary



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 <sup>3</sup> )
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)
Oil Change Interval .....	1000 hours

## 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
- Dual ADEM A4 redundant engine control
- Cat® alarm and protection system provides the latest technology in generator set control, protection, and operator interface
- MCS type approval

### Ease of Installation

- 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•S<sup>SM</sup> 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](http://www.catoilandgas.cat.com).

## Preliminary

### CONFIGURATION

#### Air Inlet System

##### Standard

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

##### Optional

- Air cleaner service indicator
- Air shutoff

#### 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/tertiary fuel filters
- Electric fuel priming pump
- Gear-driven low pressure 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

##### Optional

- Four canister duplex oil filter
- Centrifugal oil filters

#### Engine Control and Protection

##### Standard

- Dual ADEM A4 engine control unit (ECU) for redundancy
- 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
- SOLAS spray shielding
- Oil mist detector

#### Mounting

#### Generator

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

#### 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
- 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



## Preliminary

### INSTRUMENTATION FEATURES

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#### MPD 3.0 and Cat Alarm and Protection System

##### Features

- 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 Features

- 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



Preliminary

TECHNICAL DATA

C175-16 Offshore Generator Set — 1500 rpm

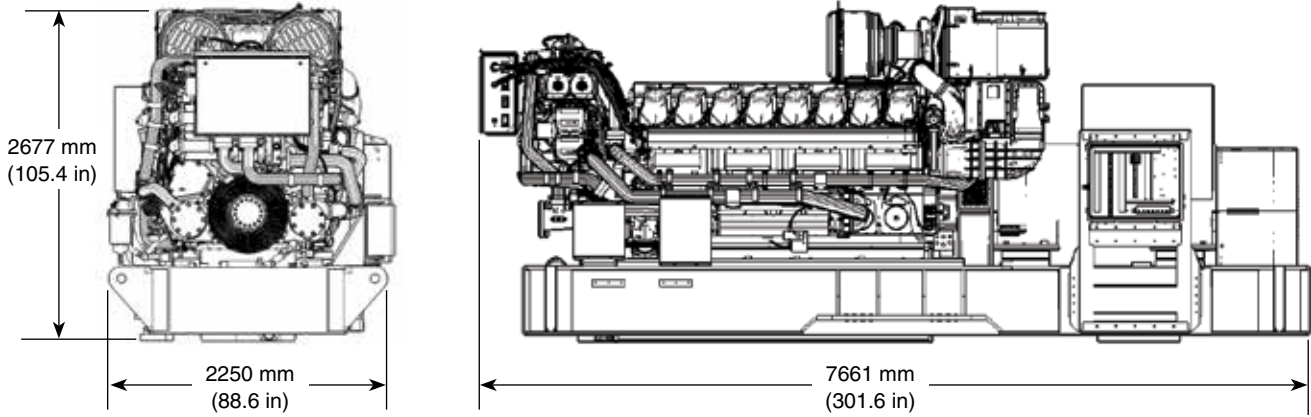
	Units	DM9508
<b>Generator Set Data</b>		
Rated power*	ekW	2300
kVA rating*	kVA	2875
Rated power factor*		0.8
Frequency	Hz	50
<b>Engine Data</b>		
Engine power	bkW (bhp)	2,418 (3243)
Engine speed	rpm	1500
Maximum ambient temperature without derate	°C (°F)	50 (122)
BMEP @ rated	kPa (psi)	2284 (331)
BSFC @ 100% load	g/bkW-hr (lb/bhp-hr)	201.9 (0.332)
BSFC @ 75% load	g/bkW-hr (lb/bhp-hr)	208.3 (0.343)
BSFC @ 50% load	g/bkW-hr (lb/bhp-hr)	210.2 (0.346)
BSFC @ 25% load	g/bkW-hr (lb/bhp-hr)	236.3 (0.389)
Fuel consumption @ rated (nominal)	L/hr (gal/hr)	582 (154)
Air flow rate (@ 25°C, 101.3 kPa)	m³/min (ft³/min)	194 (6850)
Inlet manifold pressure	kPa (psi)	252 (36.5)
Inlet manifold temperature	°C (°F)	50.5 (123)
Aftercooler water temperature	°C (°F)	46 (115)
Jacket water temperature	°C (°F)	99 (210)
Exhaust stack temperature	°C (°F)	475 (888)
Exhaust flow rate (@ stack temp, 101.3 kPa)	m³/min (ft³/min)	518 (18,300)
Separate circuit afercooler heat rejection @ rated	kW (Btu/min)	252 (14,331)
Separate circuit afercooler water flow @ rated	L/min (gal/min)	1080 (285)
Jacket water heat rejection @ rated	kW (Btu/min)	1313 (74,668)
Jacket water flow @ rated	L/min (gal/min)	2000 (528)
Radiated/convective heat rejection @ rated	kW (Btu/min)	209 (11,885)
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

\*Custom generator, rating assumes 95% generator efficiency and 0.8 power factor



Preliminary

OFFSHORE GENERATOR SET



Module Dimensions		
Length	7661 mm	301.6 in
Width	2250 mm	88.6 in
Height	2677 mm	105.4 in
Module Weight (dry)*	29 710 kg	65,500 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, base, 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 52 780 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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