

Cat® XQ570 Rental Generator Set



Standby 500 kW, 625 kVA
Prime 455 kW, 568 kVA
U.S. EPA Tier 4 Final
60 Hz
1800 RPM



Image shown may not reflect actual configuration.

Specifications

Generator	Frequency	Voltage	Standby ekW (kVA)	Prime ekW (kVA)	Phase	Amp (A)
Standard	60 Hz	480/277V	500 (625)	455 (568)	3-phase	684.10
	60 Hz	240/139V	500 (625)	455 (568)	3-phase	1368.20
	60 Hz	208/120V	500 (625)	455 (568)	3-phase	1578.69
Optional	60 Hz	600V	500 (625)	455 (568)	3-phase	547.28
	60 Hz	480V	400 (500)	365 (456)	3-phase	548.78

Cat® C18 ACERT™ Diesel Engine	Metric	Imperial (English)
Configuration	I-6, 4-Stroke-Cycle Water Cooled Diesel	
Bore	145 mm	5.7 in
Stroke	183 mm	7.2 in
Displacement	18.1 L	1106.4 in ³
Aspiration	Turbocharged-Aftercooled	
Compression Ratio	14.5:1	
Engine Speed	1800	
Fuel System	MEUI	
Governor Type	ADEM™ A4	
Fuel	Requires Ultra Low Sulfur Diesel (ULSD)	

Benefits & Features

Fuel/Emissions Strategy

- Meets U.S. EPA Tier 4 Final emission standards and CARB certified for non-road mobile applications at all 60 Hz ratings

Design Criteria

- Meets ISO 8528 transient response
- Canadian Standards Association (CSA) Certified

Single-source Supplier

- Package is factory designed and production tested
- Manufactured in ISO 9001:2000 facility

Cat C18 ACERT Diesel Engine

- Uses ACERT Technology
- Reliable, rugged, durable design
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic ADEM A4 engine control

Cat Clean Emissions Module (CEM)

- Aftertreatment module consists of Caterpillar Regeneration System (CRS), Diesel Oxidation Catalyst (DOC), Diesel Particulate Filter (DPF), and Selective Catalytic Reduction (SCR)

Diesel Exhaust Fluid (DEF) Tank

- 25 gallon DEF tank with on-tank fill and integrated pump, level sensor and heating elements
- Electrically heated DEF lines from DEF tank to CEM

Cat Generator

- Matched to the performance and output characteristics of Cat engines
- Single point access to accessory connections
- UL 1446 Recognized Class H insulation

Cat EMCP 4.4 Control Panel

- Fully featured power metering, protective relaying engine/generator control and monitoring
- Simple user-friendly interface and navigation
- Automatic set-point adjustment integrated with voltage and frequency selection

Cat Integrated Voltage Regulator (Cat IVR)

- Three-phase sensing
- Adjustable volts-per-hertz regulation
- Provides precise control, excellent block loading, and constant voltage in the normal operating range

Sound Attenuated Container

- Provides ease of transportation and protection
- Sound levels are 74 dB(A) or less at 7 meters per SAE J1074 measured at 75% prime load
- Fork lift pockets

Reduced Environmental Impact

- 110% spill containment of onboard engine fluids
- Variable speed cooling fan for reduced fuel consumption and reduced sound at partial loads

Asset Monitoring and Management (Available 3Q2016)

- Product Link™ Generation (PLG) hardware provides two-way communication for remote control and equipment monitoring via cellular network
- Customer-defined, equipment-based, real-time status updates and alerts
- Flexible and customer-configurable user interface
- GPS provides asset location and geo-fencing

Factory-installed Standard Equipment

Engine

- Cat C18 ACERT heavy-duty diesel engine meets Tier 4 Final emission standards

Air Inlet

- Heavy-duty air cleaner with precleaner, two-stage cyclonic paper with dust cup and service indicator
- Turbocharger and air-to-air aftercooler

Cat CEM

- CEM comes with integrated CRS, DOC, DPF, and SCR and is located in separate compartment

DEF System

- 25 gal plastic DEF tank provides capacity to meet or exceed fuel tank runtime @ 75% prime
- DEF tank is equipped with integrated pump, level sensor to display the DEF level in EMCP panel, and electrically heated lines from DEF tank to CEM
- Equipped with low and critically low level alarms with a critically low shutdown

Fuel System

- 700 gal (2650 L) double-wall fuel tank, UL 142 and ULC 601 Listed and complies with Transport Canada requirements, 27-hour runtime @ 75% prime, internal fuel fill
- Fuel cooler
- Switch operated, electric priming pump
- Auxiliary connections for customer-supplied fuel transfer system with 2-way fuel transfer valve
- Primary fuel filters (2) with integral water separator and differential pressure gauge
- Engine-mounted secondary fuel filters

Generator

- Three-phase, random wound, coastal insulation protection, 0.6667 pitch, permanent magnet excited, Class H insulation with Class F temperature rise
- Includes one anti-condensation heater (120V, 250W)
- 12-lead design, with voltage changeover link board (480V)
- 6-lead design, (600V)
- Cat IVR with VAR/PF control

Charging System

- UL Listed and CSA Certified 120V, 20 amp battery charger, shock-mounted and enclosed in dust-proof housing
- Charging alternator; 24V-100A, heavy duty with integral regulator and belt guards
- Solar maintainer for batteries

Lube System

- Pump, integral oil cooler, lube oil, filter, filler and dipstick, and oil sampling valve
- Open crankcase breather with cartridge filter
- Oil drain line with internal brass ball valve routed to connection point accessible from exterior
- 500-hour oil change intervals

Mounting System

- Generator set soft mounted to the heavy duty, fabricated steel base frame
- Steel base frame with tie-down eyes contains integral fuel tank

Starting System

- Single electric starting motor, 24V
- Dual 12V (1400 CCA) maintenance-free batteries with disconnect switch, battery rack, and cables
- UL Listed, 120V single-phase jacket water heater with thermostat and shut-off valves

Factory-installed Standard Equipment *(continued)*

Containerized Module

- 20' ISO standard cube container
- Sound attenuated air intake louvers and two lockable personnel doors with panic release
- Interior walls and ceilings insulated with 100 mm of acoustic paneling
- Floor of container insulated with acoustic glass and covered with galvanized steel
- Side bus bar access door, external access load connection bus bars
- Shore power connection via distribution block connections for jacket water heater, battery charger, space heaters, generator condensate heaters, and internal duplex service receptacle
- Customer convenience panel with multiple receptacles
- External Emergency Stop pushbuttons (2)
- Duplex service receptacle (1), 120V, connected to shore power with automatic switchover to generator power
- Two internal DC lights with one timer
- Corrosion resistant hardware and hinges
- Cat Rental Power decals
- Painted standard Cat power module white
- External drain access to coolant, oil, and DEF fluids
- Auxiliary connections for customer-supplied fuel transfer system
- Fork lift pockets

Shore Power

- One 110V shore power connection for jacket water heater
- One 110V shore power connection for generator space heater, battery charger, and single duplex service receptacle
- Includes controls to de-energize jacket water heaters and generator space heater when the engine is running

Cooling

- Provides 43°C ambient capability
- Vertically mounted radiator with vertical air discharge from the container
- Coolant drain line with internal valve and low-level shutdown switch
- Coolant sight gauge and low-level shutdown switch
- 50/50 Extended Life Coolant

Generator Set Controls and Protection

- EMCP 4.4 generator set mounted controller
- Automatic start/stop with cooldown timer
- Generator features: 32, 32RV, 46, 50/51, 27/59, 81 O/U
- Utility Multi-function Relay (UMR) protective features: 24, 25, 27, 27G, 32, 40, 43, 46, 47, 50, 51, 51N, 59, 59G, 60FL, 67, 79, 81O/U with 4 programmable relay inputs and 5 programmable relay outputs (optional)
- Reverse compatible for interface to legacy power modules
- 2000A electrically operated generator circuit breaker
- Multi-mode operation (island, multi-island and utility parallel (with optional UMR), load sharing (multi-unit only)
- Manual and automatic paralleling capability
- Metering display: voltage, current, frequency, power factor, kW, WHM, kVAR, and synchroscope

Trailer

- Two-axle, air-rid chassis with anti-lock brake system

Quality

- Factory testing of standard generator set and complete power module
- UL, NEMA, ISO, and IEEE standards
- O&M manuals
- CSA Certified
- Full manufacturer's warranty

Technical Data

Cat Generator	
Frame size	LC6134G
Pitch	0.6667
No. of poles	4
Excitation	Static regulated brushless PM excited
Number of bearings	Single bearing, close coupled
Insulation	Class H
Enclosure	Drip proof IP23
Alignment	Pilot shaft
Overspeed capability – % of rated	125% of rated
Voltage regulator	3-phase sensing with volts-per-hertz
Voltage regulation (adjustable to compensate for engine speed droop and line loss)	Less than ± 1/2% voltage gain
Wave form deviation	3%
Telephone Influence Factor (TIF)	Less than 50
Harmonic Distortion (THD)	Less than 5%

Cat Generator Set			
	Units	60 Hz — Standby	60 Hz — Prime
Performance Number		EM1017	EM1112
Power Rating	kW (kVA)	500 (625)	455 (568)
Performance Specification			
Lubricating System			
Oil pan capacity	L (gal)	74 (19.5)	74 (19.5)
Fuel System			
Fuel Consumption — 100% Load	L/hr (gal/hr)	136 (35.9)	126 (33.2)
75% Load	L/hr (gal/hr)	107 (28.3)	99 (26.2)
50% Load	L/hr (gal/hr)	78 (20.5)	72 (19)
Fuel Tank Capacity	L (gal)	2650 (700)	2650 (700)
Running Time — at 75% Load	Hr	24	27
Cooling System			
Ambient capability	°C (°F)	43 (109)	48 (118)
Engine & radiator coolant capacity	L (gal)	100.7 (26.6)	100.7 (26.6)
Engine coolant capacity	L (gal)	26.9 (7.1)	26.9 (7.1)
Air Requirements			
Combustion air flow	m ³ /min (cfm)	35.2 (1243)	34.6 (1223)
Max dirty air cleaner restriction	kPa (in H ₂ O)	6.2 (24.9)	6.2 (24.9)
Exhaust System			
Exhaust flow at rated	m ³ /min (cfm)	90.2 (3185)	86.7 (3063)
Exhaust temp at rated kW – dry exhaust	°C (°F)	490 (914)	472 (882)
Noise Rating (with enclosure)*			
@ 7 meters (23 feet) @ 75% rating	dB(A)	74	74

*Noise level stated at maximum ambient capability. Sound level decreases with ambient temperature due to variable speed fan drive. Contact the factory for sound levels at other ratings and distance.

Dimensions and Weights

XQ570 – Dimensions	Length mm (in)	Width mm (in)	Height mm (in)
Without chassis	6096 (240)	2438 (96)	2591 (102)
With chassis	7182 (282)	2438 (96)	3810 (150)

XQ570 – Weight	Weight— kg (lb)
Generator Set with Lube oil and coolant – no Fuel, no DEF, no Chassis	11,396 (25,125)
Generator Set with Lube oil, full fuel and full DEF – No Chassis	13,969 (30,796)
Air ride chassis with ladder boxes and ladders (Optional)	3,175 (7,000)

Standard Features

EMCP 4.4 Local Control Panel

- Generator-mounted EMCP 4.4 provides power metering, protective relaying, and engine and generator control and monitoring.
- NEMA 12, IP44 dust-proof enclosure
- Convenient service access for Cat service tools (service tools not included)
- Integration with the Cat IVR provides enhanced system monitoring
- Ability to view and reset diagnostics of all controls networked on primary CAN data link eliminates need for separate service tools for troubleshooting.
- True RMS AC metering, 3 phase

EMCP 4.4 Engine Operator Interface

- Controls
 - Run/auto/stop
 - Speed adjust
 - Voltage adjust
- Engine monitoring
 - rpm
 - Operating hours
 - Coolant temperature
 - Emergency stop
 - Cycle crank
 - Cool-down timer
 - DC volts
 - Oil pressure
 - Oil temperature

- Generator monitoring
 - L-L volts, L-N volts, phase amps
 - Average volts, amps, frequency
 - ekW, kVA, kVAR, kW-hr, %kW
 - Power factor (average, phase)
 - kW-hr, kVA-hr (total)
- Shutdowns with common indicating light for
 - Low oil pressure
 - High coolant temp
 - Failure to start (overcrank)
 - Low coolant level
 - Overspeed
 - High oil temp
 - Emergency stop
- Emergency stop pushbutton
- Panel illuminating lights
- Display navigation keys including two shortcut keys for engine parameters or generator parameters
- Fuel level monitoring and control

EMCP 4.4 Generator Protective Relaying

- Generator protective features provided by EMCP 4.4
 - Phase over/under voltage (device 27/59)
 - Over/under frequency (device 81 O/U)
 - Reverse power (device 32/32RV)
 - Current balance (46)
 - Overcurrent (device 50/51) (GCB trip unit)
 - Loss of excitation (device 40) (Cat DVR)
 - Generator phase sequence

Standard Features (continued)

Voltage Regulation and Power Factor Control Circuitry

- Manual raise/lower voltage adjust capability and VAR/ power factor control circuitry for maintaining constant generator power factor while paralleled with the utility. Voltage and power factor adjustments are performed on the generator paralleling control
- Includes RFI suppression, exciter limiter, and exciter diode monitoring

Circuit Breaker

- 2000A fixed type, 3 poles, generator set mounted, electrically operated, insulated case
- Solid state trip unit for overload (time overcurrent) and fault (instantaneous) overcurrent protection
- Includes DC shunt trip coil activated on any monitored engine or electrical fault, 100 KA-interrupting capacity at 480 VAC
- Undervoltage release

Distribution

- Three-phase, plus full rated neutral, bus bars are tin-plated copper with NEMA standard hole pattern for connection of customer load cables and generator cables
- Bus bars are sized for full load capacity of the generator set at 0.8 power factor
- Includes ground bus, tin-plated copper, for connection to the generator frame ground and field ground cable
- Customer convenience panel with multiple output receptacles
 - 1 – 240V, 50A twist lock
 - 1 – 240V, 20A twist lock
 - 2 – 120V, 20A twist lock
 - 2 – 120V, 20A ground fault interrupters
 - 2 – 120V, 15A GFCI protected duplex receptacles
- CTs rated 2000:5

Link Board Assembly (480V Only)

- Link board for 208/240/400/480 wye operation
- Reconnection via movable link board
- Includes switch to determine operation mode

UMR (Optional)

- Basler UMR IPS-100 provides the following utility/inter-tie protection features:
 - Synch check (device 25)
 - Phase undervoltage, 2-stage (device 27)
 - Reverse power (device 32)
 - Negative sequence overvoltage (device 47)
 - Phase time overcurrent (device 51)
 - Neutral overcurrent (device 51N)
 - Phase overvoltage, 2-stage (device 59)
 - Under frequency, 2-stage (device 81U)
 - Over frequency (device 81O)
- Potential transformers 4:1 ratio with primary and secondary fuse protection
- CTs rated 1200:5 wired to shorting terminal strips

Modes of Operation

- Provides for single unit standalone operation, island mode paralleling and load sharing with other power modules, and single unit-to-utility mode paralleling for base load control (with open transition between paralleling modes)
- Island mode paralleling features:
 - Lead unit select control allows single unit to connect to a dead bus or Hard Wired Dead Bus Arbitration (HWDBA) to allow first unit up to voltage and speed to be first unit to connect to a dead bus
 - Auto synchronization (voltage and phase matching)
 - Load sharing (kW) analog signal (like units and legacy compatible)
 - Load sharing (kVAR) analog signal (like units only)
- Utility mode paralleling features:
 - Auto synchronization (voltage and phase matching)
 - Base-load control (programmable set-point or potentiometer adjust)
 - Soft load/unload (programmable, shared set-point)
 - Power factor control (programmable set-point)

Single Unit Standalone and Multi-unit Island Operation

- Utility standby mode (normal)
 - The utility is providing power for the plant loads
 - The PM generator breaker is open
 - The PM is in automatic standby mode to respond to a utility failure
- Emergency mode (emergency)
 - Utility failure
 - a. The customer protective relaying senses a utility abnormal condition
 - b. A run request is sent to the PM generator plant
 - c. The first PM generator to reach rated voltage and frequency is closed to the bus
 - d. In multi-unit island mode, the remaining PM generators are paralleled to the bus as they reach rated voltage and frequency. This function is performed via the lead unit select jumper and interconnect wiring connected between the power modules.
 - e. Plant load is transferred to the power modules, which share load equally via load share lines.

Single Unit Base Load Operation

- Utility mode (normal)
 - The utility is providing power for the plant loads
 - The PM is in auto mode and the generator breaker is open
 - The PM is interconnected to the utility breaker aux contact, lead unit jumper is not installed and load share lines are not connected
 - The paralleling controls automatically detect utility parallel mode when the utility aux contact is closed
- Base load mode
 - Unit receives remote run request and starts
 - Unit reaches rated voltage and frequency
 - UMR performs sync-check to permit generator breaker to close
 - Unit ramps to base-load set point at programmed ramp time
 - Unit continues to run until remote run request is removed or unit is stopped at control panel

Ratings Definitions and Conditions

Meets or Exceeds International Specifications: AS1359, CSA, IEC60034-1, ISO3046, ISO8528, NEMA MG 1-33.

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 kW 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 below the alarm temperature.

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.

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 Cat representative for details. For information regarding low sulfur fuel and biodiesel capability, please consult your Cat dealer.

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