

CM43C Electric Power Generator Set

5 520 - 8 290 kW_e



Cat® Engine Specifications CM43C, 4-Stroke-Cycle-Liquid Fuel

Configuration
6, 7, 8, 9 cylinder

Fuel type
Diesel oil, heavy fuel oil (HFO), crude oil

Genset rating
5 520 - 8 290 kW_e

Genset efficiency
up to 47.8 %

Emissions up to
World bank emission certification
(Stage 2)

FEATURES AND BENEFITS

Reliable Operation

- Intensive cooling of key components including exhaust valve seats, injector cooling integrated into lubricating oil system
- Reliable, proven and high efficient single turbo charging system
- Classification society standards ensure high safety and quality
- Intelligent simplicity ensures a robust engine platform
- Optimized service schedules enable high availability and long durability

Control & Monitoring

- Ultrafast start time and load acceptance
- No engine start limitations
- Continuous power (base and peak load), prime power, stand-by
- Part load with high efficiency
- Monitoring for unattended operation
- Asset intelligence system

Ease Of Installation

- Reduced complexity of standard modular design allows an easy installation
- Low space requirements between the gensets
- Genset is ready for installation
- Generator set designed for direct elastic mounting

Ease Of Operation

- Low fuel and oil consumption
- Low maintenance requirements
- Operator and maintenance training courses available

Intelligent Simplicity

- High reliability, modular design and integral construction reduce the number of components by 40% over conventional designs e.g.:
 - Dry engine block with integrated ducts for lubricating oil and charge air and underslung crankshaft
 - Compact cylinder head design
- Smart maintenance solutions
 - Easily removable cylinder heads, quick removable fluid connections
 - Split connecting rods to allow fast and easy piston removal without disturbing the big end bearing
 - Segmental camshaft design
 - Simplified parts spectrum by using single-pipe exhaust gas
 - Engine block free from cooling water
- State-of-art material ensures long life time

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FEATURES AND BENEFITS

Ease Of Maintenance

- Smart maintenance solutions allow an easy component accessibility
- Large inspection openings afford an easy serviceability to core engine internals
- Core engine components designed for reconditioning and reuse
- Short maintenance intervals enable high availability
- No engine removal necessary for maintenance and overhauls

Fuel

- Liquid: Light fuel oil (LFO), crude oil and heavy fuel oil (HFO) with fuel quality up to 700 cSt/50°C according to CIMAC H55/K55
- Dual: Light fuel oil (LFO), crude oil and heavy fuel oil (HFO) with fuel quality up to 700 cSt/50°C according to CIMAC H55/K55
- Natural gas with methane number > 80 and lower heating value of 28MJ/Nm³
- Gaseous: Natural gas with methane number > 80 and lower heating value of 31.5 MJ/Nm³

Emission

- World bank (WB) emission certification stage 1 and 2
- Technische Anleitung (TA) Luft 2002 (only gas)
- Post-emission treatment systems for lower emission requirements available

Expertise & Experience

- Assistance for planning - delivery - commissioning - operation and service
- Expertise and experience for solutions to maximize benefits, e.g. combine heat and power systems (CHP)

Worldwide Product Support

- With nearly 200 Cat® dealers we are at home around the globe
- Factory-trained technicians, original parts and support are never out of reach
- Long term service agreements offer back-to-back services from preventive maintenance, scheduled maintenance to full operation and maintenance

EQUIPMENT

Fuel System

- Circulation module
- Pre-pressure module
- Separator module
- Engine ventilation module (only dual fuel (DF) and gas)
- Gas valve unit (GVU) (only dual fuel (DF) and gas)
- Ignition fuel oil module (only dual fuel (DF))

Lubricating Oil System

- Combined module: cooling water system and lubricating oil system
- Lubricating oil separator module
- Piping interface module

Cooling Water System

- Combined module: see lubricating oil system
- Cooling water system with radiators
- Piping interface module

Starting System

- Starting air compressor module
- Starting air receiver module

Combustion Air System

- Air filter - pocket
- Air filter - oil bath
- Air filter - pulse

Exhaust System

- Exhaust gas silencer
- Selective catalytic reduction (SCR) system
- Oxidation catalytic (Oxicat) converter system
- Exhaust gas ventilation module (only dual fuel (DF) and gas)

Control & Monitoring System

- Local control panel (LCP)
- Local data panel (LDP) / generator control panel (GCP)
- Motor control center (MCC) module
- Engine monitoring package
- Gas leak detection per cylinder (only dual fuel (DF) and gas)

Mounting System

- Elastic mounting - genset / engine

TECHNICAL DATA

Ratings	Units	6CM43C	7CM43C	8CM43C	9CM43C
Engine Type	[-]	4-stroke-cycle	4-stroke-cycle	4-stroke-cycle	4-stroke-cycle
Configuration	[-]	6 cylinder	7 cylinder	8 cylinder	9 cylinder
Fuel Type	[-]	Diesel oil, heavy fuel oil (HFO), crude oil	Diesel oil, heavy fuel oil (HFO), crude oil	Diesel oil, heavy fuel oil (HFO), crude oil	Diesel oil, heavy fuel oil (HFO), crude oil
Genset Rating Range Up To	[kWe]	5 520	6 440	7 360	8 290
Engine Rating Range Up To	[kW]	5 640	6 580	7 520	8 460
Frequency At Speed	[rpm] (50Hz / 60Hz)	50 Hz @ 500 60 Hz @ 514	50 Hz @ 500 60 Hz @ 514	50 Hz @ 500 60 Hz @ 514	50 Hz @ 500 60 Hz @ 514
Voltage	[kV]	3-13.8	3-13.8	3-13.8	3-13.8
Genset Efficiency Up To	[%]	47.7	47.7	47.7	47.8
Emission Level Up To	[-]	WB II	WB II	WB II	WB II
Ready To Accept Loads (Preheated/Vented)	[s]	40	40	40	40
Normal Ramp Up To 100% Load	[s]	95	95	95	95
Emergency Ramp Up 10% To 100% Load	[s]	35	35	35	35
Bore	[mm / in]	430 / 16.93	430 / 16.93	430 / 16.93	430 / 16.93
Stroke	[mm / in]	610 / 24.02	610 / 24.02	610 / 24.02	610 / 24.02
Swept Volume	[l / cu in]	88.6 / 5 406	88.6 / 5 406	88.6 / 5 406	88.6 / 5 406
Mean Effective Pressure Up To	[bar / psig]	25.5 / 370	25.5 / 370	25.5 / 370	25.5 / 370
Aspiration	[-]	turbocharged-aftercooled	turbocharged-aftercooled	turbocharged-aftercooled	turbocharged-aftercooled
Specific Fuel Oil Consumption (SFOC) - WB I	(g/kWh) / (lb/kWh)	173 / 0.381	173 / 0.381	173 / 0.381	173 / 0.381
Specific Fuel Oil Consumption (SFOC) - WB II	(g/kWh) / (lb/kWh)	174 / 0.384	174 / 0.384	174 / 0.384	174 / 0.384
Specific Energy Consumption (BSEC)	(kJ/kWh) / (Btu/kWh)	-	-	-	-
Specific Pilot Fuel Consumption (Only Dual Fuel)	(kJ/kWh) / (Btu/kWh)	-	-	-	-
Specific Lube Oil Consumption	(g/kWh) / (lb/kWh)	0.35 / 0.0008	0.35 / 0.0008	0.35 / 0.0008	0.35 / 0.0008
Length	[mm / in]	12 202 / 480	12 999 / 512	13 729 / 541	14 459 / 569
Width	[mm / in]	3 400 / 134	3 400 / 134	3 400 / 134	3 400 / 134
Height	[mm / in]	6 278 / 247	6 649 / 262	6 649 / 262	6 649 / 262
Dry Weight - Genset	[t / lb]	178.0 / 392 422	195.0 / 429 901	210.0 / 462 970	240.0 / 529 109

Rating Definition And Conditions

Ratings and fuel consumption based on ISO 3046-1 at standard reference conditions.

Lubricating oil consumption tolerance on value +/- 50%.

The Genset rating depends on the efficiency of the final generator specifications.

For liquid: Reference liquid fuel is distillate diesel. Reference lower calorific value: 42700 kJ/kg.

Engine brake specific fuel oil consumption (SFOC) tolerance 5%, without engine driven pumps. For each engine driven pump an additional brake specific fuel consumption of 1% at 100% load has to be calculated.

For dual fuel: Reference gaseous fuel is natural gas with methan number > 80. Minimum lower heating value: 28000 kJ/m³.

Engine brake specific energy consumption (BSEC) tolerance 5%, without engine driven pumps. For each engine driven pump an additional brake specific energy consumption of 1% at 100% load has to be calculated.

Gaseous fuel: Reference gaseous fuel is natural gas with methan number > 80. Minimum lower heating value: 31500 kJ/m³.

Engine brake specific energy consumption (BSEC) tolerance 5%, incl. engine driven lube oil pump.

For each engine driven pump an additional brake specific fuel consumption of 1% at 100% load has to be calculated.

Caterpillar Energy Solutions

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