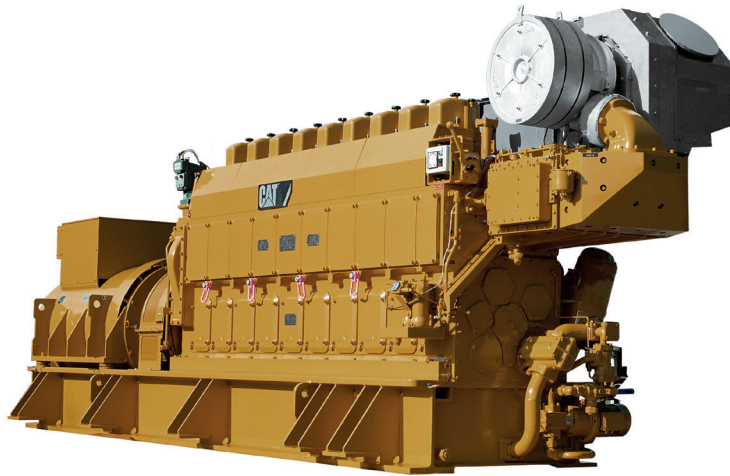


# CM20C Electric Power Generator Set

985 - 1 650 kW<sub>e</sub>



## Cat® Engine Specifications CM20C, 4-Stroke-Cycle-Liquid Fuel

**Configuration**  
6, 8, 9 cylinder

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

**Genset rating**  
985 - 1 650 kW<sub>e</sub>

**Genset efficiency**  
up to 43.1 %

**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 times 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/Nm<sup>3</sup>
- Gaseous: Natural gas with methane number > 80 and lower heating value of 31.5 MJ/Nm<sup>3</sup>

### 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	6CM20C	8CM20C	9CM20C
Engine Type	[-]	4-stroke-cycle	4-stroke-cycle	4-stroke-cycle
Configuration	[-]	6 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
Genset Rating Range Up To	[kWe]	1 100	1 465	1 650
Engine Rating Range Up To	[kW]	1 140	1 520	1 710
Frequency At Speed	[rpm] (50Hz / 60Hz)	50 Hz @ 1 000 60 Hz @ 900	50 Hz @ 1 000 60 Hz @ 900	50 Hz @ 1 000 60 Hz @ 900
Voltage	[kV]	3-13.8	3-13.8	3-13.8
Genset Efficiency Up To	[%]	43.1	43.0	43.0
Emission Level Up To	[-]	WB II	WB II	WB II
Ready To Accept Loads (Preheated/Vented)	[s]	40	40	40
Normal Ramp Up To 100% Load	[s]	75	75	75
Emergency Ramp Up 10% To 100% Load	[s]	25	25	25
Bore	[mm / in]	200 / 7.87	200 / 7.87	200 / 7.87
Stroke	[mm / in]	300 / 11.81	300 / 11.81	300 / 11.81
Swept Volume	[l / cu in]	9.4 / 575	9.4 / 575	9.4 / 575
Mean Effective Pressure Up To	[bar / psig]	24.2 / 351	24.2 / 351	24.2 / 351
Aspiration	[-]	turbocharged-aftercooled	turbocharged-aftercooled	turbocharged-aftercooled
Specific Fuel Oil Consumption (SFOC) Up To - World Bank Emission Stage 1 (WB I)	(g/kWh) / (lb/kWh)	189 / 0,417	189 / 0,417	189 / 0,417
Specific Fuel Oil Consumption (SFOC) Up To - World Bank Emission Stage 2 (WB II)	(g/kWh) / (lb/kWh)	189 / 0,417	189 / 0,417	189 / 0,417
Specific Energy Consumption (BSEC) Up To	(kJ/kWh) / (Btu/kWh)	-	-	-
Specific Pilot Fuel Consumption (Only Dual Fuel)	(kJ/kWh) / (Btu/kWh)	-	-	-
Specific Lube Oil Consumption	(g/kWh) / (lb/kWh)	0.6 / 0.0013	0.6 / 0.0013	0.6 / 0.0013
Length	[mm / in]	6 073 / 239	6 798 / 268	7 125 / 281
Width	[mm / in]	1 680 / 66	1 816 / 71	1 816 / 71
Height	[mm / in]	2 833 / 112	3 010 / 119	3 010 / 119
Dry Weight - Genset	[t / lb]	18.8 / 41 447	23.1 / 50 927	30.0 / 66 139

### 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/m<sup>3</sup>.

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/m<sup>3</sup>.

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.

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## Caterpillar Energy Solutions

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