CM20C Electric Power Generator Set
985 - 1 650 kWe

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

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 kWe

Genset efficiency
up to 43.1 %

Emissions up to
World bank emission certification (Stage 2)
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/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

### CM20C Electric Power Generator Set

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Ratings</th>
<th>Units</th>
<th>6CM20C</th>
<th>8CM20C</th>
<th>9CM20C</th>
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<tbody>
<tr>
<td>Engine type</td>
<td>[-]</td>
<td>4-stroke-cycle</td>
<td>4-stroke-cycle</td>
<td>4-stroke-cycle</td>
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<tr>
<td>Configuration</td>
<td>[-]</td>
<td>6 cylinder</td>
<td>8 cylinder</td>
<td>9 cylinder</td>
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<tr>
<td>Fuel Type</td>
<td>[-]</td>
<td>Diesel oil, heavy fuel oil (HFO) / crude oil</td>
<td>Diesel oil, heavy fuel oil (HFO) / crude oil</td>
<td>Diesel oil, heavy fuel oil (HFO) / crude oil</td>
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<tr>
<td>Genset Rating Range Up To</td>
<td>[kWe]</td>
<td>1 100</td>
<td>1 465</td>
<td>1 650</td>
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<tr>
<td>Engine Rating Range Up To</td>
<td>[kW]</td>
<td>1 140</td>
<td>1 520</td>
<td>1 710</td>
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<tr>
<td>Frequency At Speed</td>
<td>[rpm]</td>
<td>50 Hz @ 1 000 / 60 Hz @ 900</td>
<td>50 Hz @ 1 000 / 60 Hz @ 900</td>
<td>50 Hz @ 1 000 / 60 Hz @ 900</td>
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<tr>
<td>Voltage</td>
<td>[kV]</td>
<td>3-13.8</td>
<td>3-13.8</td>
<td>3-13.8</td>
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<tr>
<td>Genset Efficiency Up To</td>
<td>[%]</td>
<td>43.1</td>
<td>43.0</td>
<td>43.0</td>
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<tr>
<td>Emission Level Up To</td>
<td>[-]</td>
<td>WB II</td>
<td>WB II</td>
<td>WB II</td>
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<tr>
<td>Ready To Accept Loads (Preheated/Vented)</td>
<td>[s]</td>
<td>40</td>
<td>40</td>
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<tr>
<td>Normal Ramp Up To 100% Load</td>
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<td>75</td>
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<tr>
<td>Emergency Ramp Up 10% To 100% Load</td>
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<td>25</td>
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<tr>
<td>Bore</td>
<td>[mm / in]</td>
<td>200 / 7.87</td>
<td>200 / 7.87</td>
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<td>Stroke</td>
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<td>300 / 11.81</td>
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<td>Mean Effective Pressure Up To</td>
<td>[bar / psig]</td>
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<td>24.2 / 351</td>
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<tr>
<td>Aspiration</td>
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<td>turbocharged-aftercooled</td>
<td>turbocharged-aftercooled</td>
<td>turbocharged-aftercooled</td>
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<tr>
<td>Specific Fuel Oil Consumption (SFOC) Up To - World Bank Emission Stage 1 (WB I)</td>
<td>[g/kWh] / [lb/kWh]</td>
<td>189 / 0.417</td>
<td>189 / 0.417</td>
<td>189 / 0.417</td>
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<tr>
<td>Specific Fuel Oil Consumption (SFOC) Up To - World Bank Emission Stage 2 (WB II)</td>
<td>[g/kWh] / [lb/kWh]</td>
<td>189 / 0.417</td>
<td>189 / 0.417</td>
<td>189 / 0.417</td>
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<td>Specific Energy Consumption (BSEC) Up To</td>
<td>[kJ/kWh] / [Btu/kWh]</td>
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<td>-</td>
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<tr>
<td>Specific Pilot Fuel Consumption (Only Dual Fuel)</td>
<td>[kJ/kWh] / [Btu/kWh]</td>
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<tr>
<td>Specific Lube Oil Consumption</td>
<td>[g/kWh] / [lb/kWh]</td>
<td>0.6 / 0.0013</td>
<td>0.6 / 0.0013</td>
<td>0.6 / 0.0013</td>
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<tr>
<td>Length</td>
<td>[mm / in]</td>
<td>6 073 / 239</td>
<td>6 798 / 268</td>
<td>7 125 / 281</td>
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<td>Width</td>
<td>[mm / in]</td>
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<td>1 816 / 71</td>
<td>1 816 / 71</td>
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<td>Height</td>
<td>[mm / in]</td>
<td>2 833 / 112</td>
<td>3 010 / 119</td>
<td>3 010 / 119</td>
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<tr>
<td>Dry Weight - Genset</td>
<td>[t / lb]</td>
<td>18.8 / 41 447</td>
<td>23.1 / 50 927</td>
<td>30.0 / 66 139</td>
</tr>
</tbody>
</table>

### 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 methane 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 methane 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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