

Cat® CG170B-20

50 Hz Continuous Gas Generator

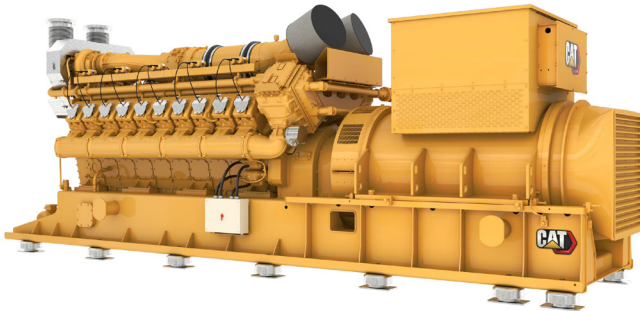


Image shown may not reflect actual configuration.

Bore – mm (in)	170 (6.7)
Stroke – mm (in)	195 (7.68)
Displacement – L (in ³)	89 (5431)
Aspiration	Turbocharged
Fuel System	Gas Mixture
Governor Type	A4

	Fuel Type	ekW (kVA)	Compression Ratio	Engine Speed – rpm
CG170B-20 – P Configuration	Natural Gas	2300 (2300)	14.0	1500
CG170B-20 – R Configuration	Natural Gas	2300 (2300)	13.0	1500
CG170B-20 – X Configuration	Biogas	2300 (2300)	14.0	1500
CG170B-20 – Z Configuration	Propane Gas	1880 (1880)	12.0	1500

Features

Cat® Engine

- Robust high-speed block design provides prolonged life and lower owning and operating costs
- Higher power density and efficiency
- Extended maintenance intervals

Generator Set Package

- High electrical efficiency
- Lower maintenance and overhaul costs driven by lower oil consumption
- Generator set reliability verified through torsional vibration, fuel gas consumption, oil consumption, transient performance, and endurance testing

Generators

- High-efficiency design
- Designed to match performance and output characteristics of Cat engines
- Grid code and non-grid-code compliance

Applications

- Caterpillar generator sets can maximize power production opportunities in an extensive range of industries
- Supports hydrogen blends with up to 25 % hydrogen by volume
- A 2.0 MW power node is available for most configurations.

Low Heating Value (LHV) Gas Option

- Supporting Coal Mine Methane (CMM), sewage gas, landfill gas, biogas, and other applications requiring start and operation with low methane / lower heating value gases
- Capable of fuel fluctuation of 5 MN per minute

Total Plant & Energy Management (TPEM)

- Smart and secure
- Hardware and software for the engine and a holistic plant control
- Integrated remote access for all operation and service tasks
- State-of-the-art touchscreen user interface with integrated service tool

Warranty

- 24-months unlimited-hour warranty for continuous operation

Financing

- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local territory manager for availability in your region

Standard and Optional Equipment

Engine

Air Cleaner

- ☐ Turbocharger with a water-cooled bearing case
- ☐ 2 single-stage, single-element intake air filters with service indicator

Cooling System

- ☐ Flange connections for all fluids VG-type or ISO flanges
- ☐ CHP Module
- ☐ Electrical jacket water and aftercooler coolant pump
- ☐ Stainless steel mixture cooler

Exhaust System

- ☐ PEARL/Low resistance exhaust system
- ☐ Exhaust Wastegate
- ☐ Closed crankcase ventilation system
- ☐ Optional exhaust muffler
- ☐ SCR-system

Fuel Gas System

- ☐ Gas mixture system
- ☐ Independently controlled cylinder monitoring and ignition system
- ☐ Prechamber spark plugs
- ☐ Zero pressure & pre-pressured gas train
- ☐ Gas treatment system
- ☐ Gas analysis device
- ☐ Low Heating Value (LHV) intake air throttle valve system for gases with a minimum heating value of 3 MJ/Nm³

General

- ☐ Crankshaft vibration damper and guard
- ☐ External free-stand combustion air preheating unit

Lubrication

- ☐ Electric prelubrication pump
- ☐ Electric preheating
- ☐ Base frame with extended lube oil volume
- ☐ 24V lubrication pump option

Protection System

- ☐ Explosion Relief Valves
- ☐ Flame arresters

Starting/Charging

- ☐ 24 V starting motor
- ☐ Battery disconnect switch

Generators

Output voltage

- ☐ 400V 10000V
- ☐ 416V 10500V
- ☐ 6000V 11000V
- ☐ 6300V
- ☐ 6600V
- ☐ Other voltages available upon request

Attachments

- ☐ Anti-condensation heater
- ☐ Generator RTD module
- ☐ Neutral Ground – LV
- ☐ Cross-Current CT – HV
- ☐ Differential CTs – HV
- ☐ PTs – HV

Control System

Controller

- ☐ TPEM (Total Plant & Energy Management)

Attachments

- ☐ Busbar connections: left or right
- ☐ Winding temperature sensors
- ☐ 3-phase sensing and KVAR/ PF control
- ☐ Reactive droop
- ☐ Anti-condensation space heater

Vibration Isolators

- ☐ Spring isolators
- ☐ Seismic isolators

Certifications

- ☐ 2006/42/EC & 2006/95/EC Declaration of Incorporation
- ☐ Eurasian Conformity (EAC)
- ☐ Turkey certification
- ☐ Ukraine certification
- ☐ Nigeria Soncap certificate
- ☐ Uzbekistan certificate
- ☐ 50 Hz Grid Code

Note: Some options may not be available on all models. Certifications may not be available with all model configurations. Consult your territory manager for availability.

50 Hz Natural Gas Package Performance – P Configuration

Performance	Continuous			
Frequency	50 Hz		50 Hz	
Genset power rating @ 1.0 power factor – ekW (kVA)	2300	(2300)	2300	(2300)
Engine Speed – rpm	1500		1500	
Compression ratio	14		14	
NO _x emission level – mg/Nm ³ (g/bhp-hr) NO _x	250	(—)	500	(—)
Configuration	P		P	
Genset electrical efficiency (@ 1.0 power factor)	44.0%		45.0%	
Fuel Gas Consumption				
100 % load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.18	(7766)	8.00	(7592)
75 % load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.42	(7998)	8.21	(7795)
50 % load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.94	(8484)	8.67	(8229)
Cooling System				
Auxiliary Circuit temperature (maximum inlet) – °C (°F)	44	(112)	44	(112)
Jacket water temperature (maximum outlet) – °C (°F)	93	(199)	93	(199)
Inlet Air				
Combustion air inlet flow rate (0°C, 101.3 kPa)/(77°F, 14.7 psia) – Nm³/bkW-hr (ft³/min)	6.67	(8900)	6.34	(8461)
Altitude Capability				
At 25°C (77°F) ambient, above sea level – m (ft)	100	(328)	100	(328)
Exhaust System				
Exhaust temperature – engine outlet – °C (°F)	381	(718)	379	(714)
Exhaust gas mass flow – kg/bkW-hr (lb/hr)	5.44	(27600)	5.18	(26262)

The data shown is representative of a P configuration. For specific application data, contact your territory manager.

50 Hz Natural Gas Package Performance – R Configuration

Performance	Continuous			
Frequency	50 Hz		50 Hz	
Genset power rating @ 1.0 power factor – ekW (kVA)	2300	(2300)	2300	(2300)
Engine Speed – rpm	1500		1500	
Compression ratio	13		13	
NO _x emission level – mg/Nm³ (g/bhp-hr) NO _x	250	(0.48)	500	(0.94)
Configuration	R		R	
Genset electrical efficiency (@ 1.0 power factor)	42.9%		44.0%	
Fuel Gas Consumption				
100 % load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.39	(7963)	8.18	(7766)
75 % load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.57	(8141)	8.33	(7911)
50 % load with fan – MJ/ekW-hr (Btu/ekW-hr)	9.09	(8630)	8.80	(8353)
Cooling System				
Auxiliary Circuit temperature (maximum inlet) – °C (°F)	44	(112)	44	(111)
Jacket water temperature (maximum outlet) – °C (°F)	93	(199)	93	(199)
Inlet Air				
Combustion air inlet flow rate (0°C, 101.3 kPa)/(77°F, 14.7 psia) – Nm³/bkW-hr (ft³/min)	6.82	(9112)	6.51	(8688)
Altitude Capability				
At 25°C (77°F) ambient, above sea level – m (ft)	100	(328)	100	(328)
Exhaust System				
Exhaust temperature – engine outlet – °C (°F)	409	(768)	404	(759)
Exhaust gas mass flow – kg/bkW-hr (lb/hr)	5.57	(28259)	5.32	(26965)

The data shown is representative of a R configuration. For specific application data, contact your territory manager.

50 Hz Biogas Package Performance – X Configuration

Performance	Continuous			
Frequency	50 Hz		50 Hz	
Genset power rating @ 1.0 power factor – ekW (kVA)	2300	(2300)	2300	(2300)
Engine Speed – rpm	1500		1500	
Compression ratio	14		14	
NO _x emission level – mg/Nm ³ (g/bhp-hr) NO _x	250	(0.54)	500	(1.06)
Configuration	X		X	
Genset electrical efficiency (@ 1.0 power factor)	42.4%		43.4%	
Fuel Gas Consumption				
100 % load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.48	(8046)	8.29	(7870)
75 % load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.73	(8286)	8.51	(8078)
50 % load with fan – MJ/ekW-hr (Btu/ekW-hr)	9.30	(8826)	9.02	(8565)
Cooling System				
Auxiliary Circuit temperature (maximum inlet) – °C (°F)	44	(111)	48	(119)
Jacket water temperature (maximum outlet) – °C (°F)	93	(199)	93	(199)
Inlet Air				
Combustion air inlet flow rate (0°C, 101.3 kPa)/(77°F, 14.7 psia) – Nm³/bkW-hr (ft³/min)	3.47	(4948)	3.28	(4683)
Altitude Capability				
At 25°C (77°F) ambient, above sea level – m (ft)	100	(328)	100	(328)
Exhaust System				
Exhaust temperature – engine outlet – °C (°F)	446	(835)	446	(835)
Exhaust gas mass flow – kg/bkW-hr (lb/hr)	5.32	(26978)	5.06	(25635)

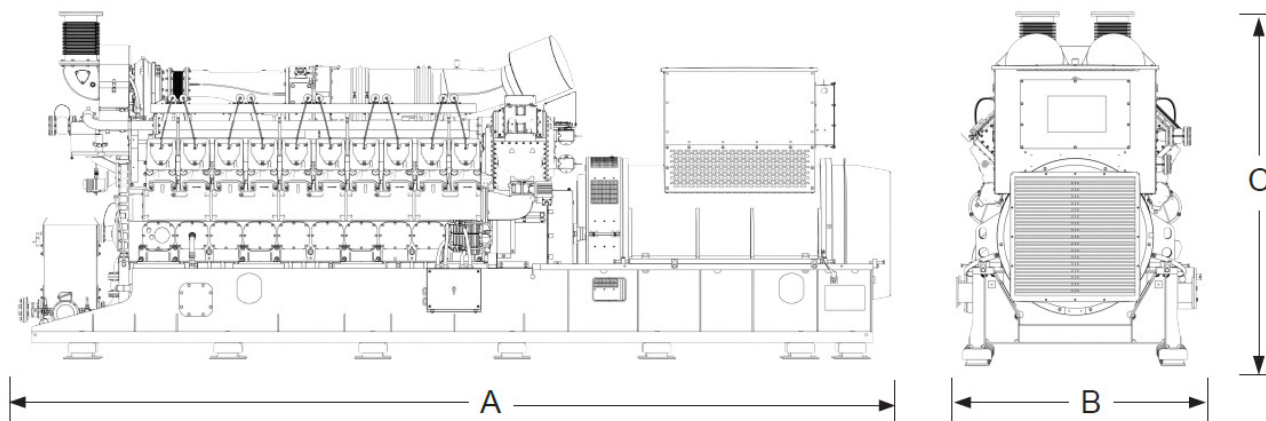
The data shown is representative of a X configuration. For specific application data, contact your territory manager.

50 Hz Propane Package Performance – Z Configuration

Performance	Continuous	
Frequency	50 Hz	
Genset power rating @ 1.0 power factor – ekW (kVA)	1880	(1880)
Engine Speed – rpm	1500	
Compression ratio	12	
NO _x emission level – mg/Nm ³ (g/bhp-hr) NO _x	250	(—)
Configuration	Z	
Genset electrical efficiency (@ 1.0 power factor)	41.8%	
Fuel Gas Consumption		
100 % load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.60	(—)
75 % load with fan – MJ/ekW-hr (Btu/ekW-hr)	8.91	(—)
50 % load with fan – MJ/ekW-hr (Btu/ekW-hr)	9.49	(—)
Cooling System		
Auxiliary Circuit temperature (maximum inlet) – °C (°F)	40	(—)
Jacket water temperature (maximum outlet) – °C (°F)	93	(—)
Inlet Air		
Combustion air inlet flow rate (0°C, 101.3 kPa)/(77°F, 14.7 psia) – Nm ³ /bkW-hr (ft ³ /min)	2.61	(—)
Altitude Capability		
At 25°C (77°F) ambient, above sea level – m (ft)	100	(—)
Exhaust System		
Exhaust temperature – engine outlet – °C (°F)	454	(—)
Exhaust gas mass flow – kg/bkW-hr (lb/hr)	5.43	(—)

The data shown is representative of a Z configuration. For specific application data, contact your territory manager.

Weights and Dimensions



Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Dry Weight kg (lb)
6600 (259.84)	1710 (67.32)	2190 (86.22)	21,400 (37,082)

Note: For reference only. Do not use for installation design. Contact your territory manager for precise weights and dimensions.

Ratings Definitions

Continuous Power

Output available with non-varying load for an unlimited time. Average power output is 70-100% of the continuous power rating. Typical peak demand is 100% of continuous rated kW for 100% of operating hours.

Applicable Codes and Standards

IEC 60204-1, ISO 3046, ISO 8528, 2014/35/EU, 2006/42/EC, 2014/30/EU, EN 61000-6-4, EN 61000-6-2.

Note: Codes may not be available in all model configurations. Consult your territory manager for availability.

Fuel Gas Requirements

1. For transient response, ambient, and altitude capability information, contact your territory manager.
2. The specified fuel pressure range applies at the engine gas control valve. Additional gas train components must be considered in pressure and flow calculations.
3. For complete definitions, operating conditions, and generator performance data, refer to the standard data sheets in the AISTO XT Document Library or contact your territory manager.

www.cat.com/electricpower

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