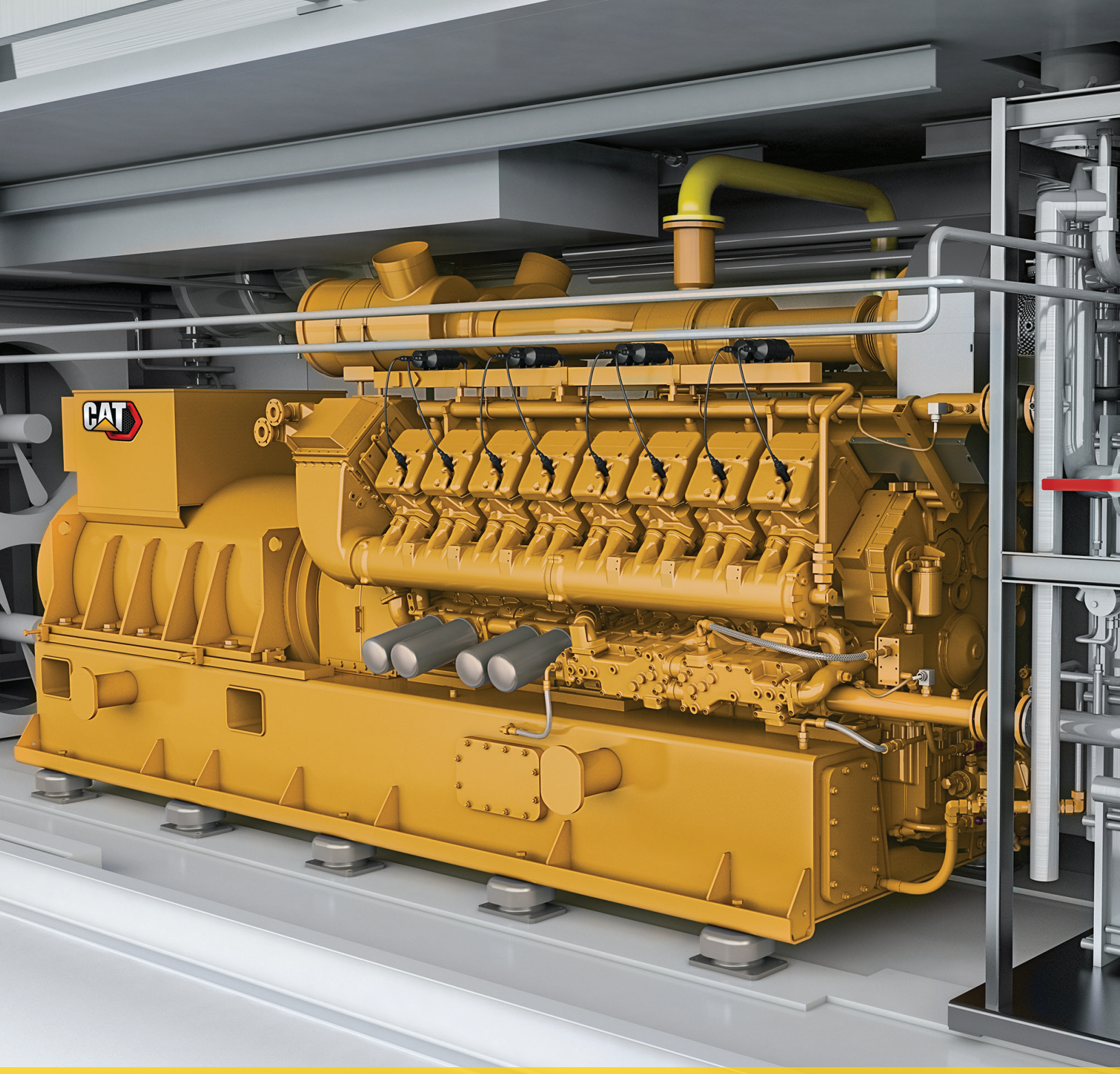


CAT® CG170 Series Gas Generator Sets

CAT® CG170

SMARTER ENERGY SOLUTIONS

COMMERCIAL AND INDUSTRIAL FACILITIES
Facilities such as manufacturing plants, resorts, shopping centers, office or residential buildings, universities, data centers and hospitals reduce operating costs and carbon footprint simultaneously.

ELECTRIC UTILITIES
Caterpillar has led innovation to deliver stationary and containerized gas power plants to electric utilities and district energy facilities around the world for both continuous grid support and peak electricity demand.

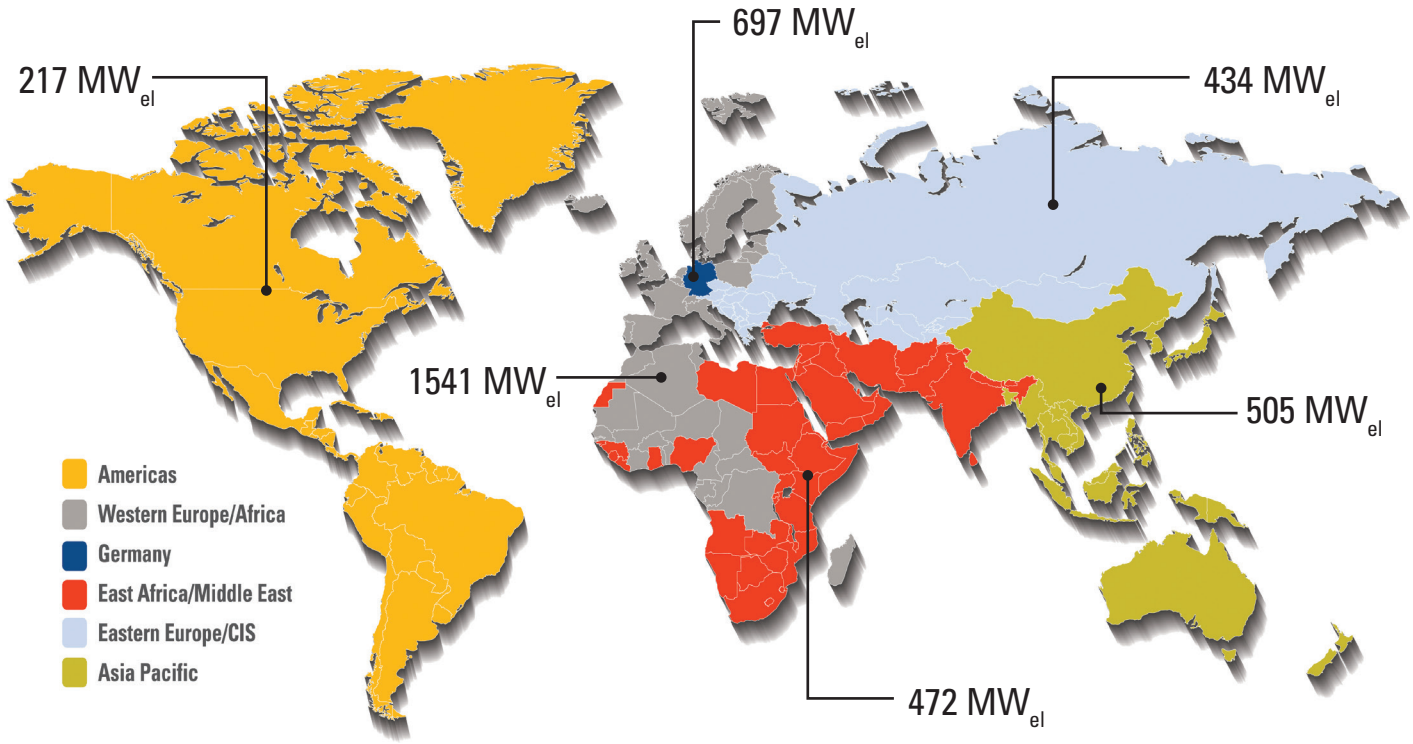
MINES
Mining operators increase mine safety and reduce carbon emissions with coal gas, while many other mining operations are realizing the benefits of onsite gas power generation to support greenfield site development.

AGRICULTURE AND FOOD / BEVERAGE PROCESSING
Biogas, a useful byproduct of the anaerobic digestion of organic waste, is created by food processors, ethanol and biodiesel manufacturers, and farms around the world as a renewable fuel resource for Cat® powered electricity generation.

LANDFILLS AND WASTEWATER TREATMENT PLANTS
Landfill and sewage gases are is generated by communities around the world as part of sanitary process infrastructure. Instead of destroying or flaring the methane gas produced, communities make beneficial use of this fuel as part of a sustainable energy program.

GREENHOUSES
In greenhouses, Cat gas generator sets simultaneously deliver electricity for lighting or sale to the local grid, hot water for facility heating, and carbon dioxide as an organic fertilizer for increased crop production.

Installed capacity of 3,866 MW_{el} with more than 2,854 generator sets worldwide



MEETING YOUR NEEDS HAS SHAPED OUR HISTORY

At Caterpillar, we understand what it takes to deliver a successful gas power generation system, and it starts with a core machine that is designed for efficiency and reliability. Since the 1920s, Caterpillar has been designing and building engines for power production. Although the technology has changed over the years, the philosophy hasn't: to deliver the most reliable power generation at the lowest possible cost of ownership and operation. Today, Caterpillar not only manufactures power generation equipment, but we also provide customized project financing and trade solutions via Cat Financial and Cat World Trade.

THE COMPLETE SOLUTION

Caterpillar is your complete gas solutions partner. From mechanical systems such as gas fuel train and heat recovery systems, to exhaust aftertreatment that complies with the world's most stringent emission requirements, Cat Gas Solutions engineering works with your local Cat dealer to deliver a complete scope of supply. Caterpillar also provides electrical systems such as master controls and paralleling switchgear, electrical distribution switchgear and uninterruptible power supplies (UPS) that can meet either UL or IEC requirements.

PRODUCT SUPPORT WORLDWIDE

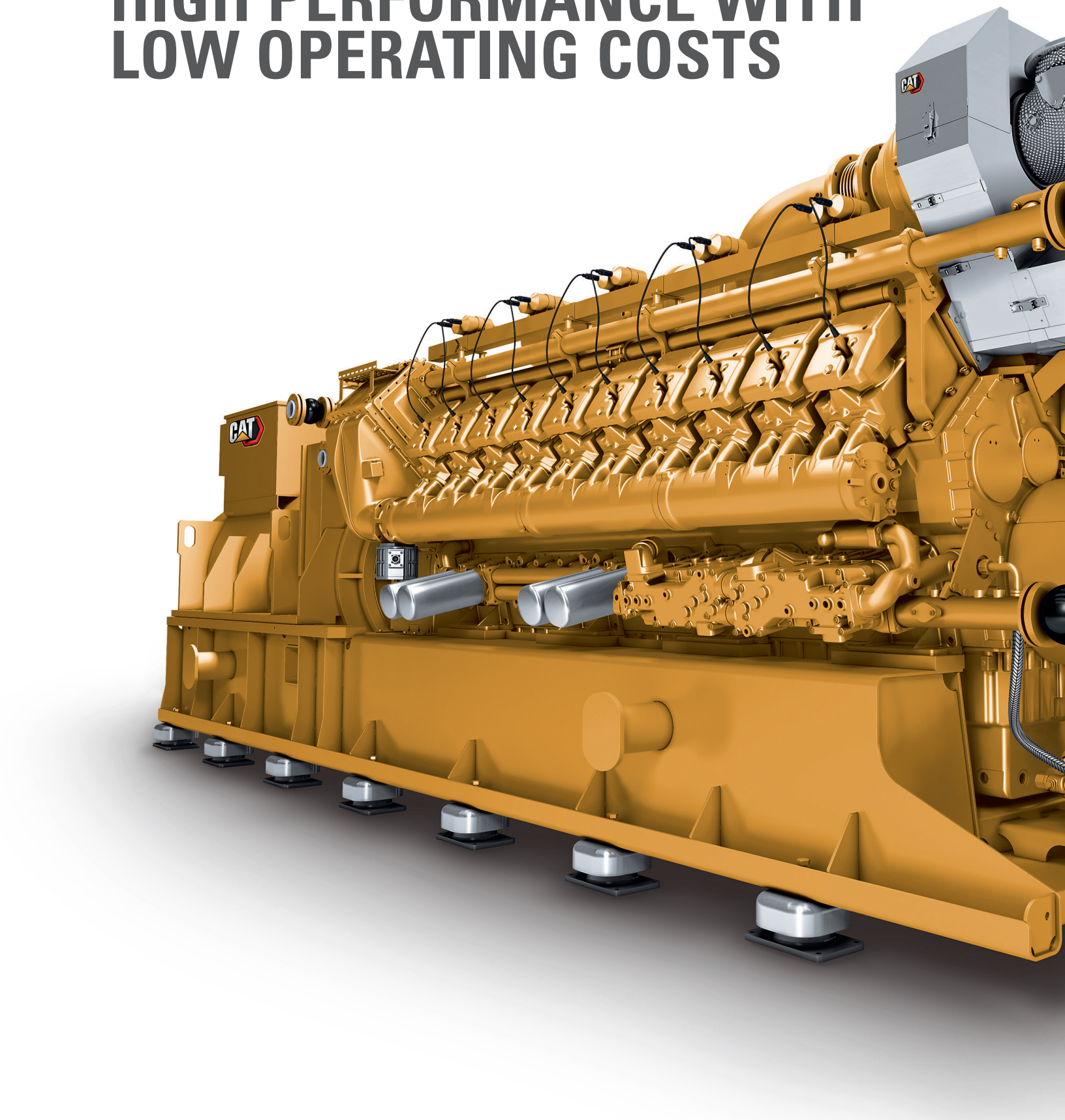
Your gas power system is supported by our factory trained global network of Cat dealers. Therefore, you can rest assured that your equipment will be ordered, delivered, installed and commissioned in consultation with a local expert. You'll also have the confidence that Caterpillar will be there to keep you up and running. Cat dealers have over 1,600 dealer branch stores operating in 200 countries to provide the most extensive post-sales support including oil and fuel monitoring services, preventive maintenance and comprehensive customer support agreements.

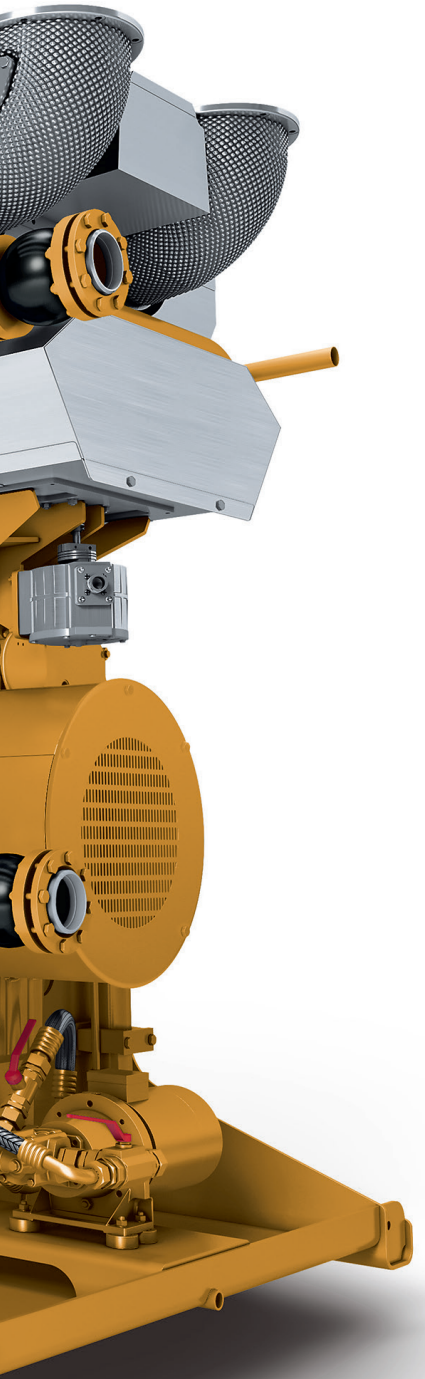
LOWER LIFE CYCLE COST

With longer maintenance intervals, higher fuel efficiency and competitive repair options, Caterpillar delivers the lowest total owning and operating costs. When you design your facility within the Cat Application and Installation Guidelines, you can expect generator set availability up to 99 percent of planned operating hours annually. It all adds up to a strong return on your investment, year after year.

CG170:

HIGH PERFORMANCE WITH LOW OPERATING COSTS





HIGHLY EFFICIENT

With recent improvements of inlet ducting, combustion chamber design and high efficiency spark plugs, the CG170 gas generator delivers up to 43.7 percent electrical efficiency and more recoverable heat while reducing carbon emissions.

LOWER OPERATING COSTS

An optimized lubrication system means that the CG170 consumes up to 1,900 liters (500 gallons) less lubricating oil each year than competing gas generators, which means more money stays in your company's pockets.

GREATER AVAILABILITY

The CG170 utilizes soot-free combustion with chamber plugs for extended maintenance intervals up to 4,000 hours. Newly optimized blow-by gas recirculation reduces turbocharger maintenance intervals and boosts efficiency.

SYSTEM CONTROL

Control the entire system, not just the engine, with the Cat Total Electronic Management System. Control or monitoring of ancillary equipment such as heat recovery modules, exhaust aftertreatment and fuel treatment systems becomes seamless. Features like temperature monitoring for each cylinder and anti-knock control allow for maximum power output and the best possible fuel utilization, even with fluctuating gas composition.

HIGH ALTITUDE AND AMBIENT PERFORMANCE

When your facility requires operation isolated from the electric utility grid, an optimized CG170 turbocharging system is provided to ensure transient load response that will keep your operation running.

50 Hz PRODUCT PERFORMANCE

ENGINE TYPE		CG170-12			CG170-16		CG170-20	
Bore/stroke	mm	170/195	170/195	170/195	170/195	170/195	170/195	170/195
Displacement	dm^3	53.1	53.1	53.1	70.8	70.8	88.5	88.5
Speed	rpm	1500			1500		1500	
Mean piston speed	m/s	9.8	9.8	9.8	9.8	9.8	9.8	9.8
Length [1]	mm	4,660	4,790	4,790	5,430	5,430	6,200	6,200
Width [1]	mm	1,810	1,810	1,810	1,810	1,810	1,710	1,710
Height [1]	mm	2,210	2,210	2,210	2,210	2,210	2,190	2,190
Dry weight genset	kg	11,200	11,700	11,700	13,300	13,300	17,900	17,900

NATURAL GAS

ENGINE TYPE		CG170-12			CG170-16		CG170-20	
Configuration		RW[5]	K[6]	R[7]	K[6]	R[7]	R[7]	P[8]
Electrical power [3]	kW	1,000	1,125	1,200	1,500	1,560	2,000	2,000
Mean effective pressure	bar	15.5	17.4	18.6	17.5	18.1	18.6	18.6
Thermal output [4] ±8 %	kW	1,056	1,267	1,189	1,688	1,576	1,983	1,912
Electrical efficiency [3]	%	43.0	40.7	43.7	40.8	43.3	43.7	44.4
Thermal efficiency [3]	%	45.4	45.8	43.3	45.9	43.8	43.3	42.5
Total efficiency [3]	%	88.4	86.6	87.0	86.7	87.1	87.0	86.9

$NO_x \leq 500$ mg/Nm³, 1 g/bhp-h

BIOGAS

ENGINE TYPE		CG170-12		CG170-16	CG170-20
Configuration		XW[9]	X[10]	X[10]	X[10]
Electrical power [3]	kW	1,000	1,200	1,560	2,000
Mean effective pressure	bar	15.5	18.6	18.1	18.6
Thermal output [4] ±8 %	kW	1,035	1,192	1,566	2,010
Electrical efficiency [3]	%	42.6	43.0	42.7	43.0
Thermal efficiency [3]	%	44.1	42.7	42.9	43.2
Total efficiency [3]	%	86.7	85.7	85.6	86.2

$NO_x \leq 500$ mg/Nm³ [2]
Sewage gas (65% CH_4 / 35% CO_2)
Biogas (60% CH_4 / 32% CO_2, Rest N_2)
Landfill gas (50% CH_4 / 27% CO_2, Rest N_2)
Minimum heating value Hu = 5.0kWh/Nm³

1) Transport dimensions for gensets, components set up separately must be taken into consideration.
2) NOx ≤ 500 mg/Nm³; exhaust gas dry at 5 % O2.
3) According to ISO 3046-1 at U = 0.4 kV, cosphi = 1.0 for 50 Hz and a methane number of MN 80 (TCG 2020) or MN 70 (TCG 2020K) for natural gas.
4) Exhaust gas cooled to 120 °C for natural gas and 150 °C for biogas.
5) RW = High Response for Requested Power. Optimized for high total efficiency at requested power.
6) K = Robustness. Optimized for robustness and low CAPEX.
7) R = High Response. Optimized for high total efficiency.
8) P = High Efficiency. Optimized for high electrical efficiency.
9) XW = Biogas for Requested Power. Optimized for operation with biogases at requested power.
10) X = Biogas for Requested Power. Optimized for operation with biogases at requested power.

Data for special gas and dual gas operation on request.

The values given on these datasheets are for information purposes only and not binding. The information given in the offer is decisive. Contact your Cat dealer for site and fuel specific performance.

60 Hz PRODUCT PERFORMANCE

ENGINE TYPE		CG170-12		CG170-12		CG170-20
Bore/stroke	mm	170/195	170/195	170/195	170/195	170/195
Displacement	dm^3	53.1	53.1	70.8	70.8	88.5
Speed	rpm	1500		1500		1500
Mean piston speed	m/s	9.8	9.8	9.8	9.8	9.8
Length [1]	mm	5,970	5,970	6,640	6,640	7,470
Width [1]	mm	1,790	1,790	1,790	1,790	1,710
Height [1]	mm	2,210	2,210	2,210	2,210	2,190
Dry weight genset	kg	13,000	13,000	14,900	14,900	19,800

NATURAL GAS

ENGINE TYPE		CG170-12		CG170-16		CG170-20
Configuration		K[5]	R[6]	K[5]	R[6]	R[6]
Electrical power [3]	kW	1,125	1,200	1,500	1,560	2,000
Mean effective pressure	bar	17.4	18.7	17.6	18.3	18.8
Thermal output [4] ±8 %	kW	1,274	1,196	1,703	1,589	1,997
Electrical efficiency [3]	%	40.4	43.4	40.4	43.0	43.4
Thermal efficiency [3]	%	45.8	43.2	45.9	43.8	43.3
Total efficiency [3]	%	86.2	86.6	86.3	86.8	86.7

$NO_x \leq 500$ mg/Nm³, 1 g/bhp-h

BIOGAS

ENGINE TYPE		CG170-12	CG170-16	CG170-20
Configuration		X[7]	X[7]	X[7]
Electrical power [3]	kW	1,200	1,560	2,000
Mean effective pressure	bar	18.7	18.3	18.7
Thermal output [4] ±8 %	kW	1,201	1,580	2,024
Electrical efficiency [3]	%	42.7	42.3	42.7
Thermal efficiency [3]	%	42.7	42.8	43.2
Total efficiency [3]	%	85.4	85.1	85.9

$NO_x \leq 500$ mg/Nm³ [2]
Sewage gas (65% CH_4 / 35% CO_2)
Biogas (60% CH_4 / 32% CO_2, Rest N_2)
Landfill gas (50% CH_4 / 27% CO_2, Rest N_2)
Minimum heating value Hu = 5.0kWh/Nm³

1) Transport dimensions for gensets, components set up separately must be taken into consideration.
2) NOx ≤ 500 mg/Nm³; exhaust gas dry at 5 % O2.
3) According to ISO 3046-1 at U = 0.48kV, cosphi = 1.0 for 60 Hz and a methane number of MN 80 (TCG 2020) or MN 70 (TCG 2020K) for natural gas.
4) Exhaust gas cooled to 120 °C for natural gas and 150 °C for biogas.
5) K = Robustness. Optimized for robustness and low CAPEX.
6) R = High Response. Optimized for high total efficiency.
7) X = Biogas. Optimized for operation with biogases.

Data for special gas and dual gas operation on request.

The values given on these datasheets are for information purposes only and not binding. The information given in the offer is decisive. Contact your Cat dealer for site and fuel specific performance.

LET'S DO THE WORK.™

For more information and to contact your local Cat dealer, visit cat.com/powergeneration

LEBE0017-03 March 2022