

Jenbacher type 3



efficient, durable, reliable

Long service intervals, maintenance-friendly engine design and low fuel consumption ensure maximum efficiency in our type 3 engines. Optimized components prolong service life even when using non-pipeline gases such as landfill gas. The type 3 stands out in its 500 to 1,100 kW power range due to its technical maturity and high degree of reliability.

reference installations

model, plant

key technical data

description

J312 GS
Containerized
solution
Landfill site;
Cavenago, Italy

Fuel Landfill gas
Engine type 3 x JMC 312 GS-L.L
Electrical output 1,803 kW
Thermal output 2,241 kW
Commissioning September 1999

Every system has its own landfill gas feeder line and exhaust gas treatment line. The generated electricity is used on-site, excess power is fed into the public grid. The employment of the CL.AIR® system ensures the purification of the exhaust gas to meet all relevant Italian emission requirements. As a special feature, at this plant the thermal energy is used for landfill leachate treatment, as well as for greenhouse heating.



J316 GS
Profusa,
producer of coke;
Bilbao, Spain

Fuel Coke gas and natural gas
Engine type 12 x JGS 316 GS-S/N.L
Electrical output
a) with 100% coke gas 5,642 kW
b) with 60% coke gas and 40% natural gas,
or 100% natural gas 6,528 kW
Commissioning November 1995

This installation designed by GE's Jenbacher product team enables Profusa to convert the residual coke gas with a hydrogen content of approximately 50% into valuable electrical energy.



J320 GS
Ecoparc I;
Barcelona, Spain

Fuel Biogas and natural gas
Engine type 5 x JMS 320 GS-B/N.L
Electrical output 5,240 kW
Thermal output
a) with biogas 2,960 kW
b) with natural gas 3,005 kW
Commissioning December 2001
to January 2002

In Ecoparc I, organic waste is processed into biogas, which serves as energy source for our gas engines. The generated electricity is used on-site as well as fed into the public power grid. A portion of the thermal energy is used as process heat in the digesters, and the excess heat is bled off in the air coolers.



J320 GS
Amtex Spinning Mills;
Faisalabad, Pakistan

Fuel Natural gas
Engine type 4 x JGS 320 GS-N.L
Electrical output 4,024 kW
Commissioning November 2002,
May 2003

The natural gas-driven units generate electricity for spinning mills in one of Pakistan's most important textile centers. Special features of this Jenbacher plant allow for high ambient temperature, dusty inlet air, and operation in island mode.



GE imagination at work

technical data

Configuration	V 70°		
Bore (mm)	135		
Stroke (mm)	170		
Displacement/cylinder (lit)	2.43		
Speed (rpm)	1,500 (50 Hz) 1,200/1,800 (60 Hz)		
Mean piston speed (m/s)	8.5 (1,500 rpm) 6.8 (1,200 rpm) 10.2 (1,800 rpm)		
Scope of supply	Generator set, cogeneration system, generator set/cogeneration in container		
Applicable gas types	Natural gas, flare gas, propane, biogas, landfill gas, sewage gas. Special gases (e.g., coal mine gas, coke gas, wood gas, pyrolysis gas)		
Engine type	J312 GS	J316 GS	J320 GS
No. of cylinders	12	16	20
Total displacement (lit)	29.2	38.9	48.7

Dimensions l x w x h (mm)

Generator set	J312 GS	4,700 × 1,800 × 2,300
	J316 GS	5,200 × 1,800 × 2,300
	J320 GS	5,700 × 1,700 × 2,300
Cogeneration system	J312 GS	4,700 × 2,300 × 2,300
	J316 GS	5,300 × 2,300 × 2,300
	J320 GS	5,700 × 1,900 × 2,300
Container	J312 GS	12,200 × 2,500 × 2,600
	J316 GS	12,200 × 2,500 × 2,600
	J320 GS	12,200 × 2,500 × 2,600

Weights empty (kg)

	J312 GS	J316 GS	J320 GS
Generator set	8,000	8,800	10,500
Cogeneration system	9,400	9,900	11,000
Container (generator set)	19,400	22,100	26,000
Container (cogeneration)	20,800	23,200	26,500

outputs and efficiencies

Natural gas

1,200 rpm | 60 Hz

1,500 rpm | 50 Hz

1,800 rpm | 60 Hz

NOx <	Type	Pel (kW) ₁	η _{el} (%)	Pth (kW) ₂	η _{th} (%)	η _{tot} (%)	Pel (kW) ₁	η _{el} (%)	Pth (kW) ₂	η _{th} (%)	η _{tot} (%)	Pel (kW) ₁	η _{el} (%)	Pth (kW) ₂	η _{th} (%)	η _{tot} (%)
500 mg/Nm ³	312						526	39.4	635	47.6	87.0	540	37.2	723	49.8	87.0
	312	435	39.8	497	45.4	85.2	625	39.8	731	46.6	86.4	633	38.1	808	48.6	86.7
	316	582	40.3	649	44.9	85.2	835	39.9	988	47.3	87.2	848	38.2	1,079	48.7	86.9
	320	794	40.7	870	44.5	85.2	1,064	40.8	1,190	45.6	86.4	1,060	39.0	1,313	48.3	87.3
250 mg/Nm ³	312						526	38.6	659	48.4	87.0	540	36.1	767	51.3	87.4
	312						601	38.9	726	47.0	85.9	633	36.7	854	49.5	86.2
	316						802	39.0	967	47.0	86.0	848	36.9	1,140	49.6	86.5
	320						1,064	39.9	1,238	46.4	86.3	1,060	38.1	1,361	49.0	87.1
350 mg/Nm ³	312	418	38.7	500	46.2	84.9	601	39.1	736	47.9	87.0					
	316	559	38.8	666	46.2	85.0	802	39.2	983	48.0	87.2					
	320	729	39.1	858	46.0	85.1	1,064	40.1	1,222	46.1	86.2					

Biogas

1,200 rpm | 60 Hz

1,500 rpm | 50 Hz

1,800 rpm | 60 Hz

NOx <	Type	Pel (kW) ₁	η _{el} (%)	Pth (kW) ₂	η _{th} (%)	η _{tot} (%)	Pel (kW) ₁	η _{el} (%)	Pth (kW) ₂	η _{th} (%)	η _{tot} (%)	Pel (kW) ₁	η _{el} (%)	Pth (kW) ₂	η _{th} (%)	η _{tot} (%)
500 mg/Nm ³	312						526	40.4	558	42.9	83.3	540	37.2	703	48.4	85.6
	312						625	39.7	692	44.0	83.7	633	38.1	787	48.4	86.5
	316						703	40.5	744	42.9	83.4					
	316						835	39.9	921	43.9	83.8	848	38.2	1,048	47.3	85.5
	320						1,064	40.8	1,088	41.7	82.5	1,060	39.0	1,274	46.9	85.9
250 mg/Nm ³	312											633	36.7	836	48.5	85.2
	316											848	36.9	1,114	48.4	85.3
	320											1,060	36.9	1,387	48.3	85.2

Propane

1,200 rpm | 60 Hz

1,500 rpm | 50 Hz

NOx <	Type	Pel (kW) ₁	η _{el} (%)	Pth (kW) ₂	η _{th} (%)	η _{tot} (%)	Pel (kW) ₁	η _{el} (%)	Pth (kW) ₂	η _{th} (%)	η _{tot} (%)
500 mg/Nm ³	312	340	36.4	461	49.4	85.8	407	36.0	576	50.9	86.9
	316	455	36.6	616	49.5	86.1	544	36.1	769	51.0	87.1
	320	570	36.7	769	49.5	86.2	681	36.1	960	50.9	87.0
250 mg/Nm ³	312						407	33.9	630	52.5	86.4
	316						544	34.0	841	52.5	86.5
	320						681	34.0	1,049	52.4	86.4

1) Electrical output based on ISO standard output and standard reference conditions according to ISO 3046/I-1991 and p.f. = 1.0/low voltage alternator according to VDE 0530 REM with respective tolerance; minimum methane number 70 for natural gas

2) Total heat output with a tolerance of +/- 8%, exhaust gas outlet temperature 120°C, for biogas exhaust gas outlet temperature 180°C

3) Special version with higher compression ratio

All data according to full load and subject to technical development and modification.