

Technical Description

Genset

JGS 416 GS-B.L

AB Energy 416-39

Electrical output

999 kW el.

Emission values

NOx < 450 mg/Nm³ (5% O₂)

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0.01 Technical Data (at genset)

Data at:

Full load Part Load

Fuel gas LHV	kWh/Nm ³		4,5		
			100%	75%	50%
Energy input	kW	[2]	2.385	2.075	1.461
Gas volume	Nm ³ /h	*)	530	461	325
Mechanical output	kW	[1]	1.029	871	580
Electrical output	kW el.	[4]	999	845	560
Heat to be dissipated		[5]			
~ Intercooler 1st stage (Engine jacket water cooling circuit)	kW		175		
~ Intercooler 2nd stage (Low temperature circuit)	kW		45		
~ Lube oil (Engine jacket water cooling circuit)	kW		144		
~ Jacket water	kW		196		
~ Surface heat	ca. kW	[7]	71		
~ Balance heat	kW		24		
Spec. fuel consumption of engine	kWh/kWh	[2]	2,32	2,38	2,52
Lube oil consumption	ca. kg/h	[3]	0,31	~	~
Electrical efficiency	%		41,9%	40,7%	38,3%

*) approximate value for pipework dimensioning

[] Explanations: see 0.10 - Technical parameters

All heat data is based on standard conditions according to attachment 0.10. Deviations from the standard conditions can result in a change of values within the heat balance, and must be taken into consideration in the layout of the cooling circuit/equipment (intercooler; emergency cooling; ...). In the specifications in addition to the general tolerance of +/- 8% on the thermal output a further reserve of 10% is recommended for the dimensioning of the cooling requirements.

Main dimensions and weights (at genset)

Length	mm	~ 6.200
Width	mm	~ 1.800
Height	mm	~ 2.200
Weight empty	kg	~ 12.500
Weight filled	kg	~ 13.200

Connections

Jacket water inlet and outlet	DN/PN	100/10
Exhaust gas outlet	DN/PN	300/10
Fuel gas (at gas train)	DN/PN	125/16
Fuel Gas (at genset)	DN/PN	125/10
Water drain ISO 228	G	1/2"
Condensate drain	mm	18
Safety valve - jacket water ISO 228	DN/PN	1 1/2"/2,5
Lube oil replenishing (pipe)	mm	28
Lube oil drain (pipe)	mm	28
Jacket water - filling (flex pipe)	mm	13
Intercooler water-Inlet/Outlet 1st stage	DN/PN	100/10
Intercooler water-Inlet/Outlet 2nd stage	DN/PN	65/10

Output / fuel consumption

ISO standard fuel stop power ICFN	kW	1.029
Mean effe. press. at stand. power and nom. speed	bar	19,00
Fuel gas type		Biogas
Based on methane number Min. methane number	MZ d)	135 100
Compression ratio	Epsilon	12,50
Min./Max. fuel gas pressure at inlet to gas train	mbar	80 - 200 c)
Allowed Fluctuation of fuel gas pressure	%	± 10
Max. rate of gas pressure fluctuation	mbar/sec	10
Maximum Intercooler 2nd stage inlet water temperature	°C	55
Spec. fuel consumption of engine	kWh/kWh	2,32
Specific lube oil consumption	g/kWh	0,30
Max. Oil temperature	°C	85
Jacket-water temperature max.	°C	95
Filling capacity lube oil (refill)	lit	~ 360

c) Lower gas pressures upon inquiry

d) based on methane number calculation software AVL 3.1

0.02 Technical data of engine

Manufacturer		GE Jenbacher
Engine type		J 416 GS-B225
Working principle		4-Stroke
Configuration		V 70°
No. of cylinders		16
Bore	mm	145
Stroke	mm	185
Piston displacement	lit	48,88
Nominal speed	rpm	1.500
Mean piston speed	m/s	9,25
Length	mm	3.660
Width	mm	1.495
Height	mm	2.085
Weight dry	kg	5.195
Weight filled	kg	5.830
Moment of inertia	kgm ²	13,50
Direction of rotation (from flywheel view)		left
Flywheel connection		SAE 18"
Radio interference level to VDE 0875		N
Starter motor output	kW	7
Starter motor voltage	V	24

Thermal energy balance

Energy input	kW	2.385
Intercooler	kW	220
Lube oil	kW	144
Jacket water	kW	196
Exhaust gas total	kW	735
Exhaust gas cooled to 180 °C	kW	482
Exhaust gas cooled to 100 °C	kW	613
Surface heat	kW	41
Balance heat	kW	24

Exhaust gas data

Exhaust gas temperature at full load	°C [8]	460
Exhaust gas mass flow rate, wet	kg/h	5.491
Exhaust gas mass flow rate, dry	kg/h	5.105
Exhaust gas volume, wet	Nm ³ /h	4.268
Exhaust gas volume, dry	Nm ³ /h	3.806
Max.admissible exhaust back pressure after engine	mbar	60

Combustion air data

Combustion air mass flow rate	kg/h	5.064
Combustion air volume	Nm ³ /h	3.918
Max. admissible pressure drop in front of intake-air filter	mbar	10

Sound pressure level

Aggregate b)	dB(A) re 20μPa	96
31,5 Hz	dB	84
63 Hz	dB	88
125 Hz	dB	97
250 Hz	dB	95
500 Hz	dB	93
1000 Hz	dB	88
2000 Hz	dB	87
4000 Hz	dB	90
8000 Hz	dB	88
Exhaust gas a)	dB(A) re 20μPa	118
31,5 Hz	dB	105
63 Hz	dB	120
125 Hz	dB	127
250 Hz	dB	115
500 Hz	dB	113
1000 Hz	dB	111
2000 Hz	dB	108
4000 Hz	dB	109
8000 Hz	dB	107

Sound power level

Aggregate	dB(A) re 1pW	116
Measurement surface	m ²	100
Exhaust gas	dB(A) re 1pW	126
Measurement surface	m ²	6,28

a) average sound pressure level on measurement surface in a distance of 1m according to DIN 45635, precision class 2.

b) average sound pressure level on measurement surface in a distance of 1m (converted to free field) according to DIN 45635, precision class 3.

The spectra are valid for aggregates up to bmpe=19 bar. (add safety margin of 1dB to all values per increase of 1 bar pressure).
Operation with 1200 rpm see upper values, operation with 1800 rpm add 3 dB to upper values.

Engine tolerance ± 3 dB