Niroo Pak
Gas Aria

S Series
Gas Engines

Guascor Energy

Alternatif Power®

Solution Partner Gas Engines Iran

SL Gas engines

A robust, reliable and fuel flexible power generation

- Mechanical power output: from 209 kWb to 1,150 kWb (1,200, 1,500 and 1,800 rpm)
- Powered by natural gas, landfill and sewage gas, flare and well gas, syngas
- Proven reliable and robust design
- Fast start availability
- Fuel flexibility
- Fuel blending availability
- Eco friendly
- Cost efficient implementation and service

SL models :

- G-18SL
- G-24SL
- G-36SL
- G-48SL
- G-56SL

G-SL Gas engines

The SL gas engines offer systems for a large variety of applications as Cogeneration/ trigeneration, Sewage/landfills/bio digestion processes for utilities and public buildings, and different kind of industries : textile, cement, food processing,... as well as greenhouses.processing,... as well as greenhouses.
Also is able to operate with a low quality gases, flare gas and syngas from a gasification process.

Applications

- Power generation (cont, LTP, ESP, PRP,...)
- CHP and Trigeneration
- Waste to power
- Marine applications
- Mechanical drive (for pump driving)

Best-in-class global efficiencies for CHP in

Natural gas S Series :

500 1,030 kWe

Power generation - CHP

Power output	241 to 1058 kWe (natural gas)
Fuel	Natural gas, biogas, landfill gas, sewage gas, flare gas, well gas, syngas
Frequency	50 and 60 Hz
Speed	1,200 / 1,500 / 1,800 rpm
Electric efficiency	36 - 39,8 %
Thermal efficiency	51 - 55 %
Total efficiency	90 - 91.5 %
NOx emissions	500 mg / Nm3

(*) Lower emission engines are available.

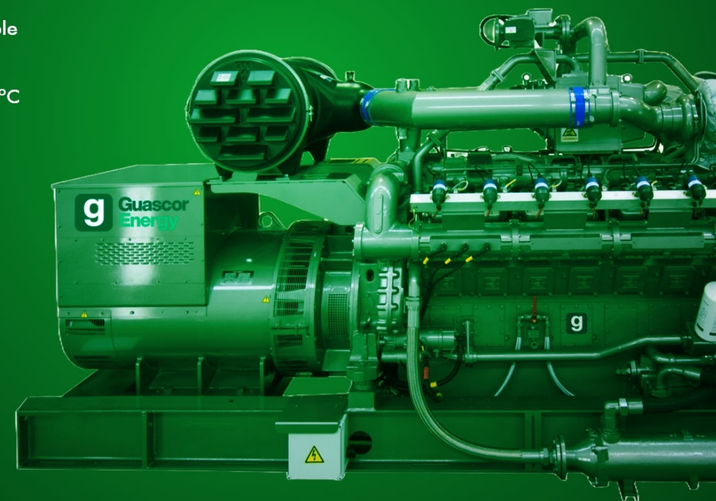
- Lean burn, turbocharged and aftercooled
- Electronically carburated
- Fuel blending capability (natural gas/biogas) available
- Single or double circuit cooling system
- High cooling temperature option in main circuit 120°C
- Different auxiliary cooling circuit temperatures
- Oil cooler in main circuit option available
- Dry/wet exhaust manifold
- Single/double stage intercooler
- Reduced oil consumption
- Emissions control
- Compliant with the U.S. emissions standards
- Fast start availability

Physical dimensions

Approximate weight (genset)	4,000 to 10,000 kg
Length	2.8 - 4.3 m
Frequency	1.5 - 1.7 m
Height	2.1 - 2.3 m

- Fuel blending system available for biogas gensets
- Integrated proprietary GCS-E engine and GCS-G genset control systems
- High flexibility through modularity

Supplied as a stand-alone engine, genset or in a fully containerized unit



SR Gas engines

Designed for rich burn power generation

- Mechanical power output: from 220 kW to 870 kWb (1,800 rpm)
- Powered by natural gas
- Robust design
- Eco friendly
- Load acceptance great flexibility

SR models :

- G-18SR
- G-24SR
- G-36SR
- G-48SR
- G-56SR

G-SR Gas engines

This engine is spark ignited and powered by natural gas and well gas. Robust and reliable, has great flexibility for load acceptance and great performance for

Applications

- ***Power Generation***
- ***Cogeneration***

- Only suitable for 60 Hz markets (USA)
- Part of the LNGo solution package

- Rich burn
- Turbocharged and aftercooled
- Wet Exhaust Manifold
- Electronically carburated
- Powered by natural gas and well gas
- Double circuit cooling system
- Different auxiliary cooling circuit temperatures
- Single/double stage intercooler
- Great flexibility for load acceptance
- Emissions control
- Compliant with the U.S emissions standards

Power generation - CHP

Power output*	273 to 844 kWe
Fuel	Natural gas, Well gas
Frequency	60 Hz
Speed	1,800 rpm
Electric efficiency	33 - 34 %

Physical dimensions

Approximate weight (genset)	4,000 to 10,000 kg
Length	2.8 - 4.3 m
Width	1.5 - 1.7 m
Height	2.1 - 2.3 m

SM Gas engines

Designed for fuel flexible power generation

- Mechanical power output: from 1,055 to 1,100 kWb when powered by natural gas, landfill, and sewage gas (1,500 and 1,800 rpm)
- Mechanical power output from 275 to 1067 kWb when powered by propane LPG (1,500 and 1,800 rpm)
- Powered by natural gas, landfill, sewage gas and propane
- High efficiency
- Load acceptance great flexibility
- High quick start and operational availability
- Standard interchangeable parts

SM gas engines

- SGE-18SM
- SGE-24SM
- SGE-36SM
- SGE-48SM
- SGE-56SM

G-SM Gas engines

The SM gas engine offers systems for a large variety of applications such as Cogeneration/trigeneration.
The SM gas engine is also able to operate with other types of gases like propane or biogases.

Applications

- Power generation
- CHP and Trigeneration
- Waste to power

- Great flexibility for running with fuels as propane
- Integrated proprietary GCS-E engine and GCS-G genset control systems
- High flexibility through modularity

- Lean burn, turbocharged and aftercooled
- Miller cycle
- Electronically carburated
- Double circuit cooling system
- Different auxiliary cooling circuit temperatures
- Oil cooler in main circuit option available
- Dry/Wet exhaust manifold
- Single/double stage intercooler
- Reduced oil consumption
- Emissions control
- Compliant with the U.S. emissions standards

Power generation - CHP	
Power output*	275 to 1030 kWe (Propane (LPG))
Fuel	Propane
Frequency	50 and 60 Hz
Speed	1,500 / 1,800 rpm
Electric efficiency	36 - 36.3 %
Thermal efficiency	53 - 55 %
Total efficiency	91 - 93 %
NOx emissions	500 mg / Nm3

Power generation	
Power output*	1,025 to 1,060 kW
Fuel	Natural gas, biogas
Frequency	50 and 60 Hz
Speed	1,500 / 1,800 rpm
Electric efficiency	39 - 41 %
Thermal efficiency	51 - 52 %
Total efficiency	92 %
NOx emissions	500 mg / Nm3

Physical dimensions	
Approximate weight (genset)	4,000 to 10,000 kg
Length	2.8 - 4.3 m
Width	1.5 - 1.7 m
Height	2.1 - 2.3 m

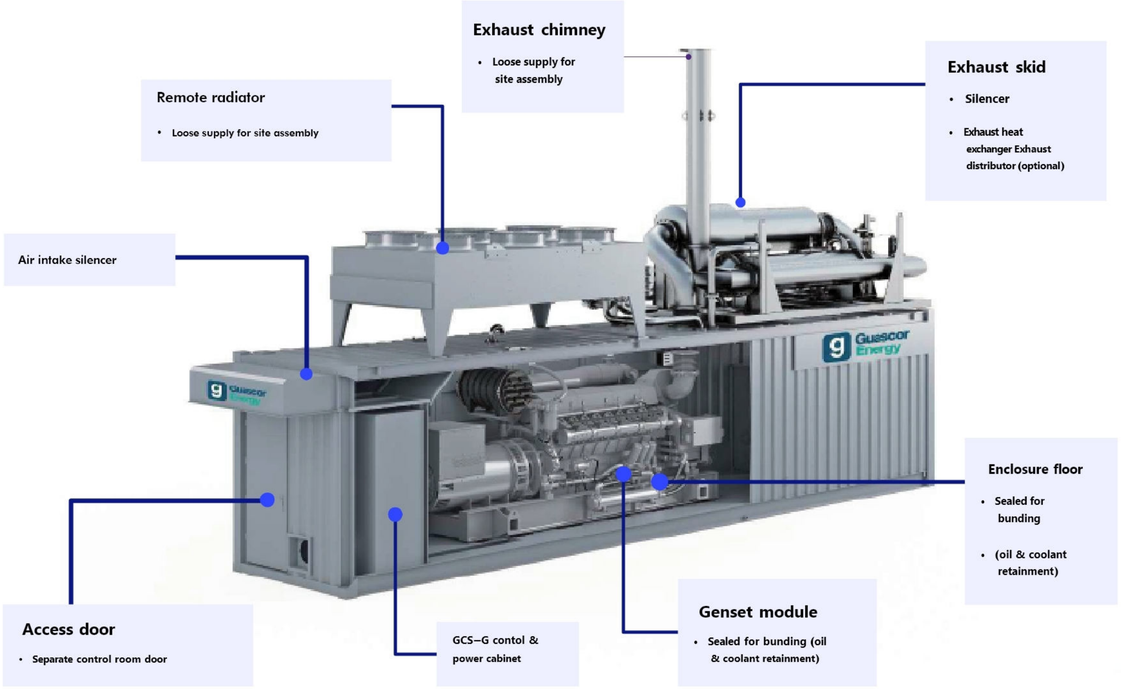
Supplied as a stand-alone engine, genset or in a fully containerized unit

Container models

Container type	40 feet container with embedded aircooler	40 feet container with top mounted aircooler	30 feet container with remote radiator	Soundproof canopy
Brief description	The container is comprised of following individual areas: Engine room is the base module containing the genset, cooling pumps, thermostatic valves and daily oil tank. Cabinet room containing the electrical, control and power panels. Aircooler room containing the cooling system and gas ramp. When necessary also will include the heat recovery skid. Top mounted area- containing the exhaust silencer, chimney and if necessary the exhaust heat recovery. (for local assembly) (*) External use	The container is comprised of following individual areas: Engine room is the base module containing the genset, cooling pumps, thermostatic valves and daily oil tank. Also a heat water recovery skid can be included if necessary. Cabinet room containing the electrical, control and power panels. Top mounted area containing the exhaust silencer, chimney and the genset cooling system. If necessary also will include the exhaust heat recovery skid. (for local assembly) (*) External use	The container is comprised of following individual areas: Engine room is the base module containing the genset, cooling pumps, thermostatic valves and daily oil tank. Cabinet room containing control and power panels. The gas ramp will be installed on foot of it in one side. The cooling system, aircooler and exhaust silencer will be installed outside the container. Indoor use.	The container is comprised of a common bedframe that includes: The genset, pumps, thermostatic valves, plate heat exchanger, expansion vessels, exhaust recovery system, oil tank and control and power panels. The exhaust silencer will be installed on the roof and the aircooler outside in a remote area. (*) External use
Sound pressure level	Down to 75 dB (A) in 10 m except for the 56SL T30 model with 75 dB (A) in 1 m	Down to 75 dB (A) in 10m except for the 56SL T30model with 75 dB (A) in 1 m	Down to 75 dB (A) in 1 m	Down to 75 dB (A) in 1 m
Ambient temperatures (*)	The container is designed for ambient temperatures of -18ºC to 35ºC with an option to reach up to 45ºC	The container is designed for ambient temperatures of -18ºC to 45ºC	The container is designed for ambient temperatures of -10ºC to 29.5ºC	The container is designed for ambient temperatures of 0ºC to 35ºC
Dimensions	Length:12,192 mm; Width: 2,438 mm; Height: 2,896 mm	Length:12,192 mm; Width: 2,438 mm; Height: 2,896 mm	Length:9,144 mm; Width: 2,438 mm; Height: 2,896 mm	Length:6,000 mm; Width: 2,000 mm; Height: 3,100 mm
Applications by engine models	Power generation: S Series including 56SLT30. H Series Line engine. Cogeneration: All engines except for V engines of the H Series and 56 lite engines (SL, SM)	Power generation: H Series except for 24 HM, SM gas propane. Cogeneration: H Series except for 24HM, SM gas propane and 56 liter engines	Fast start: 56SL T30 engine	Power Generation, Cogeneration for all L engines

Container models

Key features



Performance data
overview

Engine Model	Speed (rpm)	Fuel type	Electrical Power (kW)	Electrical Eff. (%)	Thermal Power (kW)	Thermal Eff. (%)	Global Eff. (%)	Engine Dimensions [L x W x H] (m)	Engine Dry Weight (kg)	Genset Dimensions [L x W x H] (m)	Genset Dry Weight [kg]
G-18SL	1,200	Natural gas	241	38.6	320	51.3	89.9	2.0 x 0.95 x 1.46	2,700	3.02 x 1.2 x 1.85	4,000
G-24SL		Natural gas	322	36.1	485	54.6	90.7	2.61 x 0.95 x 1.46	3,500	3.66 x 1.27 x 1.91	4,940
G-36SL		Natural gas	484	38.6	656	52.2	90.8	2.64 x 1.37 x 1.74	4,200	3.83 x 1.66 x 2.13	7,230
G-48SL		Natural gas	648	37.7	980	55.1	92.8	3.14 x 1.37 x 1.74	5,450	4.4 x 1.66 x 2.18	9,225
G-56SL		Natural gas	762	39.0	1,013	51.8	90.8	3.0 x 1.55 x 2.2	5,800	4.67 x 1.66 x 2.18	10,000
G-18SL	1,500	Natural gas	303	39.1	396	51.0	90.1	2.0 x 0.95 x 1.46	2,700	3.02 x 1.2 x 1.85	4,000
G-24SL		Natural gas	404	38.5	546	51.9	90.4	2.61 x 0.95 x 1.46	3,500	3.66 x 1.27 x 1.91	4,940
G-36SL		Natural gas	610	38.9	810	51.7	90.6	2.64 x 1.37 x 1.74	4,200	3.83 x 1.66 x 2.13	7,230
G-48SL		Natural gas	811	38.8	1,093	52.2	91.0	3.14 x 1.37 x 1.74	5,450	4.4 x 1.66 x 2.18	9,225
G-56SL		Natural gas	954	39.0	1,280	52.2	91.2	3.0 x 1.55 x 2.2	5,800	4.67 x 1.66 x 2.18	10,000
G-56SL T30		Natural gas	1,058	39.8	1,379	51.8	91.6	3.0 x 1.55 x 2.2	5,800	4.67 x 1.66 x 2.18	10,000
G-18SL	1,800	Natural gas	336	37.4	477	53.0	90.4	2.0 x 0.95 x 1.46	2,700	3.02 x 1.2 x 1.85	4,000
G-24SL		Natural gas	436	38.5	666	55.1	93.6	2.61 x 0.95 x 1.46	3,500	3.66 x 1.27 x 1.91	4,940
G-36SL		Natural gas	676	37.7	953	53.1	90.8	2.64 x 1.37 x 1.74	4,200	3.83 x 1.66 x 2.13	7,230
G-48SL		Natural gas	874	36.1	1,340	55.4	91.5	3.14 x 1.37 x 1.74	5,450	4.4 x 1.66 x 2.18	9,225
G-56SL		Natural gas	1,030	39.0	1,534	54.5	93.5	3.0 x 1.55 x 2.2	5,800	4.67 x 1.66 x 2.18	10,000

Performance data
overview

Engine Model	Speed (rpm)	Fuel type	Electrical Power (kW)	Electrical Eff. (%)	Thermal Power (kW)	Thermal Eff. (%)	Global Eff. (%)	Engine Dimensions [L x W x H] (m)	Engine Dry Weight (kg)	Genset Dimensions [L x W x H] (m)	Genset Dry Weight [kg]
G-18SL	1,200	Biogas	241	38.4	322	51.4	89.8	2.0 x 0.95 x 1.46	2,700	3.02 x 1.2 x 1.85	4,000
G-24SL		Biogas	322	36.0	486	54.5	90.5	2.61 x 0.95 x 1.46	3,500	3.66 x 1.27 x 1.91	4,940
G-36SL		Biogas	484	38.3	663	52.4	90.7	2.64 x 1.37 x 1.74	4,200	3.83 x 1.66 x 2.13	7,230
G-48SL		Biogas	648	36.3	982	55.0	91.3	3.14 x 1.37 x 1.74	5,450	4.4 x 1.66 x 2.18	9,225
G-56SL		Biogas	762	38.6	1,026	52.0	90.6	3.0 x 1.55 x 2.2	5,800	4.67 x 1.66 x 2.18	10,000
G-18SL	1,500	Biogas	303	39.0	398	51.0	90.0	2.0 x 0.95 x 1.46	2,700	3.02 x 1.2 x 1.85	4,000
G-24SL		Biogas	404	38.4	546	51.8	90.2	2.61 x 0.95 x 1.46	3,500	3.66 x 1.27 x 1.91	4,940
G-36SL		Biogas	610	38.9	810	51.6	90.5	2.64 x 1.37 x 1.74	4,200	3.83 x 1.66 x 2.13	7,230
G-48SL		Biogas	811	38.7	1,097	52.2	90.9	3.14 x 1.37 x 1.74	5,450	4.4 x 1.66 x 2.18	9,225
G-56SL		Biogas	954	38.9	1,287	52.2	91.1	3.0 x 1.55 x 2.2	5,800	4.67 x 1.66 x 2.18	10,000
G-18SL	1,800	Biogas	336	37.2	480	53.1	90.3	2.0 x 0.95 x 1.46	2,700	3.02 x 1.2 x 1.85	4,000
G-24SL		Biogas	436	35.9	663	54.7	90.6	2.61 x 0.95 x 1.46	3,500	3.66 x 1.27 x 1.91	4,940
G-36SL		Biogas	676	37.6	955	53.1	90.7	2.64 x 1.37 x 1.74	4,200	3.83 x 1.66 x 2.13	7,230
G-48SL		Biogas	874	36.0	1,345	55.4	91.4	3.14 x 1.37 x 1.74	5,450	4.4 x 1.66 x 2.18	9,225
G-56SL		Biogas	1,030	36.4	1,540	54.6	91.0	3.0 x 1.55 x 2.2	5,800	4.67 x 1.66 x 2.18	10,000

Performance data
overview

Engine Model	Speed (rpm)	Fuel type	Electrical Power (kW)	Electrical Eff. (%)	Thermal Power (kW)	Thermal Eff. (%)	Global Eff. (%)	Engine Dimensions [L x W x H] (m)	Engine Dry Weight (kg)	Genset Dimensions [L x W x H] (m)	Genset Dry Weight [kg]
G-56SM	1,500	Natural gas	1,025	39.7	1,319	51.0	90.7	3.0 x 1.55 x 2.2	5,800	4.67 x 1.66 x 2.18	10,000
	1,800	Natural gas	1,063	37.9	1,486	52.9	90.8				
	1,500	Biogas	1,025	39.4	1,330	51.1	90.5				
	1,800	Biogas	1,063	37.8	1,494	52.9	90.7				
G-18SR	1,800	Natural gas	268	32.4	498	60.1	92.5	2.55 x 1.19 x 2.30	2,750	2.67 x 1.36 x 2.43	4,100
G-24SR		Natural gas	361	31.6	698	61.2	92.8	2.99 x 1.23 x 2.58	3,500	3.00 x 1.38 x 2.79	5,200
G-36SR		Natural gas	539	32.5	1,000	60.3	92.8	2.91 x 1.61 x 3.35	4,500	3.18 x 1.75 x 3.50	7,750
G-48SR		Natural gas	724	31.8	1,403	61.5	93.3	3.42 x 1.61 x 3.75	5,400	4.26 x 1.75 x 3.91	9,250
G-56SR		Natural gas	839	33.2	1,518	60.1	93.3	3.42 x 1.52 x 4.03	5,600	4.26 x 1.75 x 3.91	9,300
G-56HM	1,200	Natural gas	1,011	42.5	1,120	47.1	89.6	4.04 x 2.14 x 2.22	7,500	5.54 x 2.14 x 2.32	12,200
G-24HM	1,500	Natural gas	501	42.7	564	48.0	90.7	3.22 x 2.08 x 1.59	4,200	3.95 x 2.08 x 1.74	6,230
G-42HM		Natural gas	1,011	43.0	1,090	46.4	89.4	3.57 x 2.15 x 2.37	6,250	4.86 x 2.15 x 2.37	10,735
G-56HM		Natural gas	1,315	43.4	1,400	46.2	89.6	4.04 x 2.14 x 2.22	7,500	5.54 x 2.14 x 2.32	12,200
G-24HM	1,800	Natural gas	499	40.5	599	48.5	89.0	3.22 x 2.08 x 1.59	4,200	3.95 x 2.08 x 1.74	6,230
G-42HM		Natural gas	1,007	41.1	1,184	48.4	89.5	3.57 x 2.15 x 2.37	6,250	4.86 x 2.15 x 2.37	10,735
G-56HM		Natural gas	1,305	41.3	1,534	48.4	89.7	4.04 x 2.14 x 2.22	7,500	5.54 x 2.14 x 2.32	12,200

Engine Model	Speed (rpm)	Fuel type	Electrical Power (kW)	Electrical Eff. (%)	Thermal Power (kW)	Thermal Eff. (%)	Global Eff. (%)	Engine Dimensions [L x W x H] (m)	Engine Dry Weight (kg)	Genset Dimensions [L x W x H] (m)	Genset Dry Weight [kg]
G - 56HM	1,200	Biogas	1,011	42.2	1132	47,3	89.5	4.04 x 2.14 x 2.22	7,500	5.54 x 2.14 x 2.32	12,200
G-24HM	1500	Biogas	501	42.5	567	48.1	90.6	3.22 x 2.08 x 1.59	4,200	3.95 x 2.08 x 174	6,230
G-42HM		Biogas	1,011	42.8	1,101	46.6	89.4	3.57 x 2.15 x 2.37	6,250	4.86 x 2.15 x 2.37	10,735
G-56HM		Biogas	1,315	43.1	1,412	46.3	89.4	4.04 x 2.14 x 2.22	7,500	5.54 x 2.14 x 2.32	12,200
G-24HM	1,800	Biogas	499	40.2	604	48.6	88.8	3.22 x 2.08 x 1.59	4,200	3.95 x 2.08 x 1.74	6,230
G-42HM		Biogas	1,007	41.0	1,190	48.5	89.5	3.57 x 2.15 x 2.37	6,250	4.86 x 2.15 x 2.37	10,735
G-56HM		Biogas	1,305	41.1	1,547	48.6	89.7	4.04 x 2.14 x 2.22	7,500	5.54 x 2.14 x 2.32	12,200
G-86EM	1,500	Natural gas	2,013	45.7	2,085	46,9	92.6	6.56 x 2.43 x 2.75	15,500	6.56 x 2.43 x 2.75	25,000
G-100EM	1,200	Natural gas	2,007	45.4	2,057	46.6	92	6.56 x 2.43 x 2.75	15,500	6.56 x 2.43 x 2.75	25,000

Notes

(1) For S Series: Natural Gas MN>75 and Biogas: 62,5% CH4, 36% CO2 and 1,5% N2. For other type of gases, please contact Engines.
(2) For H and E Series: Natural Gas MN>80 and Biogas 67% CH4 and 33% CO2 (only for H Series).
(3) Thermal efficiency of the S Series engines calculated considering the exhaust gases heat recovery until 120°C.
(4) Thermal efficiency of the E Series engines calculated considering the exhaust gases heat recovery until 80°C.
(5) Emissions level for SR Series: 0,1 g/bHPh.
(6) SR dimensions including catalyzer.

Remarks

- Engine performance data acc. to ISO 3046/1, 25°C and 500 meters above sea level, with a tolerance of +5%.
- Emissions level: NOx < 500 mg/Nm3 (50 Hz) and 1 g/bHPh (60Hz).
- Lower emission engines are available. Please, contact for performance data.
- Electrical power at power factor = 1.400 V (50Hz) and 480 V(60 Hz).
- The dimensions and weights are approximate values and are subject to changes without prior notice.
- The values given in this data sheet are for information purposes only and not binding.