We power the world with innovative gas engines

Siemens gas engine portfolio
Gas engines from 190 to 2,065 kW

The Siemens gas engine range has been designed and tailored to help meet our customers’ challenges in a dynamic market environment.

Our models range from 190 to 2,065 kW, fulfilling the requirements of wide spectrum of applications in terms of efficiency, reliability, flexibility, and environmental compatibility.

The products offer low lifecycle costs and an excellent return of investment.

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Data shown is electrical output published at 22°C from 18th June 2018. Mechanical power of the SL Series includes Standby and Prime app for all the engines range for 50 Hz and 60 Hz.

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Siemens best-in-class, high-efficiency, low-emission gas engines and gensets are designed for various applications such as power generation, cogeneration, and waste to energy. These engines are suitable for a broad range of commercial, industrial and municipal uses with long service intervals, easy maintenance and low fuel consumption.

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SL- Gas engines:
A robust, reliable and fuel flexible power generation

- Mechanical power output: from 190 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
- Load acceptance great flexibility
- Best in class global efficiency
Fuel blending system available for biogas gensets

Integrated proprietary GCS-E engine and GCS-G genset control systems

High flexibility through modularity

Fuel generation - CHP

Power output 179 to 1,028 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 %

Thermal efficiency 51 - 55 %

Total efficiency 90 - 91.5 %

NOx emissions 500 mg / Nm³

(*) Lower emission engines are available

Best-in-class global efficiencies for CHP in Natural gas S Series: 500 - 1,030 kWe

Lean burn, turbocharged and aftercooled

Electronically carbureted

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

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

Applications

- Power generation (lTP, LTP, PBR, ...)
- CHP and Trigeneration: CHP and Trigeneration
- Waste to power: Waste to power
- Marine applications: Marine applications
- Mechanical drive (for pump driving): Mechanical drive (for pump driving)

References

- Universities
  - Wesleyan (USA)
  - Wolverhampton (UK)
- Utilities (Landfill, sewage plants)
  - ETE (Brazil)
  - Johannesbarg (South Africa)
  - Fypasa (Mexico)
  - Storms Hog (USA)

Siemens containerized CHP biogas genset solution for Johannesburg Water, South Africa.
Fuel blending system available for biogas gensets

SGE-SL Marine gas engines

The complete family of SGE-SL gensets with a variety of applications such as Auxiliary power generation and electrical propulsion - constant speed.

Applications

- For a large variety of vessels: tugboats, tankers, ferries, oceanographic, special vessels and others
- Auxiliary power generation
- Electrical propulsion


Applications

- A gas fueled vessel.
- For a large variety of vessels: tugboats, tankers, ferries, oceanographic, special vessels and others
- Auxiliary power generation
- Electrical propulsion

Power generation

- Power output*: 320 - 1110 KVA (256-888 kWe)
- Fuel: LNG. Methane number from 70
- Frequency: 50 and 60 Hz
- Speed: 1,500 & 1,800 rpm
- Emissions compliant IMO/500 mg/NOx

Physical dimensions

- Approximate weight (genset): 2,700 to 10,000 kg
- Length: 2.0 - 4.6 m
- Width: 0.9 - 1.6 m
- Height: 2.1 - 2.3 m

(*) Based on existing gas engines power ratings for the ambient conditions required in the marine market.

Note 1) For a large variety of vessels as tugboats, tankers, ferries, oceanographic, special vessels.

- Working speeds: 1,500 & 1,800 rpm
- Emissions compliant IMO/500 mg/NOx
- Coolant configurations: With mechanical and electrical water pumps
- Water circuits T°: 3040°C
SR- Gas engines:

- Designed for rich burn power generation
- Mechanical power output: from 281 to 870 kW (1,800 rpm)
- Powered by natural gas
- Robust design
- Eco friendly
- Load acceptance great flexibility

SR gas engines:
Used in the LNGo System
Fuel blending system available for biogas gensets

SGE-SR

Gas engine family

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 power generation and cogeneration.

Applications
- Power Generation
- Cogeneration

Applications

LNGo Power modules (SL), Alt tagas Ltd., British Columbia, Canada.

Power generation - CHP

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel</td>
<td>Natural gas, Well gas</td>
</tr>
<tr>
<td>Power output</td>
<td>27 to 884 kW</td>
</tr>
<tr>
<td>Frequency</td>
<td>60 Hz</td>
</tr>
<tr>
<td>Speed</td>
<td>1,800 rpm</td>
</tr>
<tr>
<td>Electric efficiency</td>
<td>33 - 34 %</td>
</tr>
</tbody>
</table>

Physical dimensions

<table>
<thead>
<tr>
<th>Feature</th>
<th>Approximate weight (genset)</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4,000 to 10,000 kg</td>
<td>2.8 - 4.3 m</td>
<td>1.5 - 1.7 m</td>
<td>2.1 - 2.3 m</td>
</tr>
</tbody>
</table>

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

Rich burn
Turbocharged and aftercooled
Wet Exhaust Manifold
Electronically carbureted
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
Supplied as a stand-alone engine, genset or in a fully containerized unit

Physical dimensions

LNGo micro-scale natural gas liquefaction system

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

- 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 906 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
Fuel blending system available for biogas gensets

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 and biogas.

Applications
- Power generation
- CHP and Trigeneration
- Waste to power

SGE-24SM
- Puerto Rico (propane), Food industry
- Trigeneration

SGE-56SM
- Anaerobic digestion from POME and animal manure in Thailand and Indonesia

References

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

Power generation - CHP
- Power output: 303 to 873 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 kWe
- 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
HM gas engines:

- Designed for high performance power generation
- Mechanical power output: from 520 to 1,350 kWh (1,200, 1,500 and 1,800 rpm)
- Powered by natural gas, sewage gas and landfill gas
- Fuel flexibility and fuel blending availability
- High performance
- Low life cycle cost
- Cost efficient
- Compact solution
- Best-in-class electrical efficiencies in biogas and natural gas

HM gas engines
SGE-24HM
SGE-42HM
SGE-56HM
Fuel blending system available for biogas gensets

The proven HM engine series offers a robust design with Miller cycle. This is the first reference of the 42HM model engine recently released. A cost efficient compact solution for power generation and cogeneration processes.

Applications
- Power generation (50 Hz and 60 Hz)
- CHP - cogeneration

References
Sokołowie Podlaski - Poland
- Supply two genset SGE-42HM
- Power output - 2 MWe

Customer: SOKOŁÓW SA

Best-in-class electrical efficiencies in Biogas (W2P) engines, H Series:
- 24HM: 500 kW; 42HM: 1,000 kW; 56HM: 1,300 kW

Best-in-class electrical efficiencies in Natural gas H Series:
- 24HM: 500 kW; 56HM: 1,300 kW

- Proven design
- High thermal efficiency
- Integrated proprietary GCS-E engine and GCS-G genset control systems

SGE-HM

Gas engines

The proven HM engine series offers a robust design with Miller cycle.

This is the first reference of the 42HM model engine recently released.

A cost efficient compact solution for power generation and cogeneration processes.

Applications
- Power generation (50 Hz and 60 Hz)
- CHP - cogeneration

References
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- Supply two genset SGE-42HM
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Best-in-class electrical efficiencies in Biogas (W2P) engines, H Series:
- 24HM: 500 kW; 42HM: 1,000 kW; 56HM: 1,300 kW

Best-in-class electrical efficiencies in Natural gas H Series:
- 24HM: 500 kW; 56HM: 1,300 kW

- Proven design
- High thermal efficiency
- Integrated proprietary GCS-E engine and GCS-G genset control systems
Control system
- Proprietary, fully integrated, engine control system for optimized performance and diagnosis

Lubrication system
- Slick, split oil circuit
- Internal oil pump
- Centrifugal oil filter for WP applications

Combustion system
- Two camshafts, Miller cycle
- Cylinder head designed for maximum volumetric efficiency with water-cooled exhaust valve seats
- Pre-chamber sparkplugs

Power train
- High-swirl pistons optimized for high efficiency
- Rings designed for optimized oil consumption

Intake & exhaust systems
- One high-efficiency turbocharger, water cooled
- Two-stage, on-engine integrated, charge cooler
- Two intake manifolds outside the engine
- Dry exhaust manifolds, inside the engine

HM: Key features
EM- Gas engines:

**Designed for Best-in-class power generation**

- Mechanical power output: 2,065 kW (1,200 and 1,500 rpm)
- Direct Drive in 60 Hz (1,200 rpm) option
- Powered by natural gas
- Best-in-class, excellent efficiency in small footprint
- Lowest emissions
- High operational availability
- Low life cycle cost

SGE-86EM
SGE-100EM
Fuel blending system available for biogas gensets

The EM gas engines are the most compact competitive choice with the ability to deliver high power output with even 200 mg/Nm3 NOx.

Applications

- Power generation (50 Hz and 60 Hz)
- CHP - cogeneration

Best-in-class electrical efficiency in Natural gas E Series: 86 EM: - 2,000 kWe

- Miller cycle
- High efficiency turbocharger
- Dry exhaust manifold
- Electronically carbureted
- New piston design for best performance
- Two circuit cooling system – Main circuit
- Auxiliary cooling variable temperature new concept
- Oil cooler in main circuit
- Direct Drive for 60 Hz (1,200 rpm) option
- 90,000 hours for major overhaul
- Reduced oil consumption
- Emissions control

Supplied as a stand-alone engine, genset or in a fully containerized unit
Control system
- Proprietary, fully integrated, engine control system for optimized performance and diagnosis

Combustion system
- One single camshaft, Miller cycle
- Cylinder head designed for maximum volumetric efficiency with water-cooled exhaust valve seats
- Pre-combustion chamber with direct gas injection optimized for high efficiency and low emissions

Lubrication system
- On-engine integrated O/C (HT water circuit)
- External, accessible, oil pump
- Centrifugal oil filter

Intake & exhaust systems
- Two high efficiency turbochargers, water-cooled, with two bypass valves
- Staged, air-to-air intercooler, charge cooler
- Dry oiler nozzles inside the engine
- Dry exhaust manifolds, outside the engine

Power train
- Forged steel piston for high peak combustion pressures
- Rings designed for optimized consumption
- Low mass and high resistance connecting rod

EM: Key features
Container models

<table>
<thead>
<tr>
<th>Container type</th>
<th>40 feet container with embedded aircooler</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brief description</strong></td>
<td><strong>Container is comprised of following</strong></td>
</tr>
<tr>
<td></td>
<td><strong>engine room-</strong> containing the genset,</td>
</tr>
<tr>
<td></td>
<td>cooling pumps, thermostatic valves, oil</td>
</tr>
<tr>
<td></td>
<td>and daily oil tank. Also a heat water</td>
</tr>
<tr>
<td></td>
<td>recovery skid can be inserted if</td>
</tr>
<tr>
<td></td>
<td>necessary.</td>
</tr>
<tr>
<td></td>
<td><strong>cabinet room -</strong> containing the</td>
</tr>
<tr>
<td></td>
<td>electrical, control and power panels.</td>
</tr>
<tr>
<td></td>
<td><strong>aircoolers room -</strong> containing the</td>
</tr>
<tr>
<td></td>
<td>exhaust silencer, chimney, and if</td>
</tr>
<tr>
<td></td>
<td>necessary the exhaust heat recovery</td>
</tr>
<tr>
<td></td>
<td>(for local assembly) (*) External use</td>
</tr>
<tr>
<td></td>
<td><strong>top mounted area -</strong> containing the</td>
</tr>
<tr>
<td></td>
<td>exhaust silencer, chimney and if</td>
</tr>
<tr>
<td></td>
<td>necessary the exhaust heat recovery</td>
</tr>
<tr>
<td></td>
<td>(for local assembly) (*) External use</td>
</tr>
<tr>
<td>Sound pressure level</td>
<td>Down to 75 dB (A) in 10 m except for</td>
</tr>
<tr>
<td></td>
<td>the 56SL T30 model with 75 dB (A) in 1 m</td>
</tr>
<tr>
<td>Ambient temperatures (*)</td>
<td>The container is designed for ambient</td>
</tr>
<tr>
<td></td>
<td>temperatures of -18°C to 45°C with an</td>
</tr>
<tr>
<td>Dimensions</td>
<td>L: 1,132 mm; W: 2,438 mm; Height: 2,896 mm</td>
</tr>
<tr>
<td></td>
<td>Power generation: H Series except for 25</td>
</tr>
</tbody>
</table>
### Performance Data Overview

<table>
<thead>
<tr>
<th>Engine Model</th>
<th>Speed (rpm)</th>
<th>Fuel Type</th>
<th>Electrical Power (kW)</th>
<th>Thermal Power (kW)</th>
<th>Thermal Efficiency (%)</th>
<th>Electrical Efficiency (%)</th>
<th>Dimensions [L x W x H] (m)</th>
<th>Engine Weight (kg)</th>
<th>Genset Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGE - 24 SL</td>
<td>1,200</td>
<td>Natural gas</td>
<td>404 38.5 546 52.0 90.4 2.61 x 1.37 x 1.74 4,200 3.83 x 1.66 x 2.13 7,230</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGE - 36 SL</td>
<td>1,200</td>
<td>Natural gas</td>
<td>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</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGE - 56 SL</td>
<td>1,200</td>
<td>Natural gas</td>
<td>874 40.0 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</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. For S Series: Natural Gas 67% CH₄ and 33% CO₂ (only for H Series).
2. For H and E Series: Natural Gas MN>80 and Biogas.
3. Thermal efficiency of the S Series engines calculated considering the exhaust gases.
4. Lower emission engines are available. Please, contact Siemens for performance data.
5. Emissions level: NOx < 500 mg/Nm³ (50 Hz) and 1 g/bHPh (60Hz).
6. The power and weights are approximate values and are subject to changes without prior notice.
7. The dimensions and weights are approximate values and are subject to changes without prior notice.
8. - The values given in this data sheet are for information purposes only and not binding.
9. Remarks: Engine performance data acc. to ISO 3046/1, 25ºC and 500 meter above sea level, with a reference of 0.87.

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### Additional Data

- **Notes:**
  - (1) For S Series: Natural Gas 67% CH₄ and 33% CO₂ (only for H Series).
  - (2) For H and E Series: Natural Gas MN>80 and Biogas.
  - (3) Thermal efficiency of the S Series engines calculated considering the exhaust gases.
  - (4) Lower emission engines are available. Please, contact Siemens for performance data.
  - (5) Emission level: NOx < 500 mg/Nm³ (50 Hz) and 1 g/bHPh (60Hz).
  - (6) Emission level: NOx < 500 mg/Nm³ (50 Hz) and 1 g/bHPh (60Hz).
  - (7) The power and weights are approximate values and are subject to changes without prior notice.
  - (8) The dimensions and weights are approximate values and are subject to changes without prior notice.
  - (9) - The values given in this data sheet are for information purposes only and not binding.

---

### Additional Tables

- **Engine Model**
  - SGE - 24 SL
  - SGE - 36 SL
  - SGE - 56 SL
  - SGE - 18 SL
  - SGE - 48 SL

- **Fuel Type**
  - Natural gas
  - Biogas

- **Engine Dimensions**
  - [L x W x H] (m)
  - Weight (kg)
  - Genset Weight (kg)

- **Performance Data**
  - Power (kW)
  - Efficiency (%)
  - Engine Weight (kg)
  - Genset Weight (kg)

---

### Additional Text

- Siemens generator sets are engineered considering the exhaust gases.
- Lower emission engines are available. Please, contact Siemens for performance data.
- Emissions level: NOx < 500 mg/Nm³ (50 Hz) and 1 g/bHPh (60Hz).
- The power and weights are approximate values and are subject to changes without prior notice.
- 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.