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.

- Data referred to thermal balances published at 18th June 2018
- Mechanical power of the SL Series includes Standby and Prime app for all the engines except for 56SL and 56SR

<table>
<thead>
<tr>
<th>Model</th>
<th>50 Hz</th>
<th>60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGE-18SR</td>
<td>281 kW</td>
<td>275 kW</td>
</tr>
<tr>
<td>SGE-24SR</td>
<td>375 kW</td>
<td>350 kW</td>
</tr>
<tr>
<td>SGE-36SR</td>
<td>560 kW</td>
<td>560 kW</td>
</tr>
<tr>
<td>SGE-48SR</td>
<td>561 kW</td>
<td>561 kW</td>
</tr>
<tr>
<td>SGE-56SR</td>
<td>418 kW</td>
<td>418 kW</td>
</tr>
<tr>
<td>SGE-24SM</td>
<td>281 kW</td>
<td>281 kW</td>
</tr>
<tr>
<td>SGE-36SM</td>
<td>360 kW</td>
<td>360 kW</td>
</tr>
<tr>
<td>SGE-48SM</td>
<td>550 kW</td>
<td>550 kW</td>
</tr>
<tr>
<td>SGE-56SM</td>
<td>190 kW</td>
<td>190 kW</td>
</tr>
<tr>
<td>SGE-24SL</td>
<td>275 kW</td>
<td>275 kW</td>
</tr>
<tr>
<td>SGE-36SL</td>
<td>360 kW</td>
<td>360 kW</td>
</tr>
<tr>
<td>SGE-48SL</td>
<td>550 kW</td>
<td>550 kW</td>
</tr>
<tr>
<td>SGE-56SL</td>
<td>190 kW</td>
<td>190 kW</td>
</tr>
<tr>
<td>SGE-24EM</td>
<td>281 kW</td>
<td>281 kW</td>
</tr>
<tr>
<td>SGE-36EM</td>
<td>360 kW</td>
<td>360 kW</td>
</tr>
<tr>
<td>SGE-48EM</td>
<td>550 kW</td>
<td>550 kW</td>
</tr>
<tr>
<td>SGE-56EM</td>
<td>190 kW</td>
<td>190 kW</td>
</tr>
<tr>
<td>SGE-24HM</td>
<td>281 kW</td>
<td>281 kW</td>
</tr>
<tr>
<td>SGE-36HM</td>
<td>360 kW</td>
<td>360 kW</td>
</tr>
<tr>
<td>SGE-48HM</td>
<td>550 kW</td>
<td>550 kW</td>
</tr>
<tr>
<td>SGE-56HM</td>
<td>190 kW</td>
<td>190 kW</td>
</tr>
</tbody>
</table>
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

SL gas engines
SGE-18SL
SGE-24SL
SGE-36SL
SGE-48SL
SGE-56SL
Fuel blending system available for biogas gensets

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

High flexibility through modularity

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**SGE-SL**

Gas engines

The SGE-SL gas engines offer systems for a large variety of applications as Cogeneration/Cogen, Sewage/landfill/digester processes for utilities and public buildings, and different kinds of industries: textile, cement, food processing, ... as well as greenhouses.

Also is able to operate with a low quality gases, flare gas and syngas from a gasification process.

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**Applications**

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

**References**

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

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**Modular Design**

- Integrated proprietary GCS-E engine and GCS-G genset control systems
- High flexibility through modularity

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

- Lean burn, turbocharged and aftercooled
- Electronically controlled
- 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
- Compliance with the U.S. emission standards
- Fast start availability
- Supplied as a stand alone engine, genset or in a fully containerized unit

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**Power generation / CHP**

- Power output: 179 kW to 1,028 kW (natural gas)
- Fuel: Natural gas, biogas, landfill gas, sewage gas, flare gas, well gas, biogas
- Frequency: 50 and 60 Hz
- Speed: 1,200 / 1,500 / 1,800 rpm
- Electrical efficiency: 36 - 39%
- Thermal efficiency: 51 - 55%
- Total efficiency: 90 - 91.5%
- NOx emissions: 500 mg / Nm3

(*) Lean engines available

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**Physical dimensions**

- Approximate weight (genset): 4,000 to 10,000 kg
- Length: 1.5 - 7 m
- Width: 2.1 - 2.3 m
- Height: 2.1 - 2.3 m
Fuel blending system available for biogas gensets

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: tugs, tankers, ferries, oceanographic, special vessels and others

- Auxiliary power generation
- Electrical propulsion

A gas fueled vessel.


Power generation

- Power output* 274 to 1,110 kWe (natural gas)
- 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.

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

Working speeds: 1,500 & 1,800 rpm

Emissions compliant IMO 500 mg/NOx

Working speeds: 1,500 and 1,800 rpm

Fuel: LNG (Liquefied Natural Gas).

Methane number from 70

Cooling configurations: With mechanical and electrical water pumps

Water circuits T°: 30441 °C

A gas fueled vessel.

SGE-SL marine gas engines.
SR- Gas engines:
Designed for rich burn power generation

- Mechanical power output: from 281 to 870 kWb (1,800 rpm)
- Powered by natural gas
- Robust design
- Eco friendly
- Load acceptance great flexibility

SR gas engines:
Used in the LNGo System

SR gas engines:
SGE-18SR
SGE-24SR
SGE-36SR
SGE-48SR
SGE-56SR
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.

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

Applications
- Power Generation
- Cogeneration

Power generation - CHP

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Power output</th>
<th>Frequency</th>
<th>Speed</th>
<th>Electric efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural gas, Well gas</td>
<td>27 to 844 kW</td>
<td>50 Hz</td>
<td>1,800</td>
<td>33 - 34 %</td>
</tr>
</tbody>
</table>

Physical dimensions

<table>
<thead>
<tr>
<th>Approximate weight (genset)</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<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>
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 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. A CHP package of SM genset.

Applications

- Power generation
- CHP and Trigeneration
- Waste to power

References

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

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

New Food industry plant, two containerized SGE-24SM engines.

SGE-SM

Gas engines

Power generation - CHP

Power output
- 303 to 873 kWe (Propane (LPG))
- 1,025 to 1,060 kWe

Fuel
- Propane
- Natural gas, biogas

Frequency
- 50 and 60 Hz
- 50 and 60 Hz

Speed
- 1,500 / 1,800 rpm
- 1,500 / 1,800 rpm

Electrical efficiency
- 36 - 36.3 %
- 39 - 41 %

Thermal efficiency
- 53 - 55 %
- 51 - 52 %

Total efficiency
- 91 - 95 %
- 92 %

NOX emissions
- 500 mg / Nm3
- 500 mg / Nm3

Specifications

Approximate weight
- 4,000 to 10,000 kg
- 150 kg / Henrik

Length
- 2.8 - 4.3 m
- 2.6 - 3.2 m

Width
- 1.5 - 1.7 m
- 1.1 - 1.3 m

Height
- 2.1 - 2.3 m
- 0.9 m

SGE-SM

Great flexibility for running with fuels as propane.

Integrated proprietary GCS-E engine and GCS-S genset control systems.

High flexibility through modularity.

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

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

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))
- 1,025 to 1,060 kWe

Fuel:
- Propane
- Natural gas, biogas

Frequency:
- 50 and 60 Hz
- 50 and 60 Hz

Speed:
- 1,500 / 1,800 rpm
- 1,500 / 1,800 rpm

Electrical efficiency:
- 36 - 36.3 %
- 39 - 41 %

Thermal efficiency:
- 53 - 55 %
- 51 - 52 %

Total efficiency:
- 91 - 95 %
- 92 %

NOX emissions:
- 500 mg / Nm3
- 500 mg / Nm3
HM- Gas engines:

Designed for high performance power generation

- Mechanical power output: from 520 to 1,350 kWe
  (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

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

Customer: SOKÓŁÓW SA

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

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

Condensation plant - Sokołowie Podlaskim - Poland.
HM: Key features

Control system
- Proprietary, fully integrated, engine control system for optimized performance and diagnosis

Lubrication system
- Dry sump system
- Internal oil pump
- Central oil filter for H2P applications

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

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

Power train
- High swirl pistons optimized for high efficiency
- Rings designed for optimized oil consumption
EM gas engines:

- Designed for Best-in-class power generation
  - Mechanical power output: 2,065 kWb (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

EM gas engines
SGE-86EM
SGE-100EM
SGE-EM

Gas engines

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

Applications

- Highest efficiency in its class
- Lower emissions
- Lower footprint
- Best power-performance ratio
- Direct Drive for 60 Hz (1,200 rpm) option
- Lower OPEX

Power generation - CHP

- Power output: 2,012 kW
- Fuel: Natural gas
- Frequency: 50 and 60 Hz
- Speed: 1,200 / 1,500 rpm
- Thermal efficiency: 41 %
- Electric efficiency: 45.4 %
- NOx emissions: 50 mg per Nm³ NOx

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

Physical dimensions

- Approximate weight: 14,515 kg
- Length: 6.4 m
- Height: 2.9 m
- Width: 2.0 m

Note 1) Also available at 230 rpm and 90,000 hours for major overhaul

Dry exhaust manifold

Electronically carburated

High efficiency turbocharger

New piston design for best performance

Reduced oil consumption

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

Physical dimensions

- Approximate weight: 14,515 kg
- Length: 6.4 m
- Height: 2.9 m
- Width: 2.0 m

Power output: 2,012 kW

Fuel: Natural gas

Frequency: 50 and 60 Hz

Speed: 1,200 / 1,500 rpm

Thermal efficiency: 41 %

Electric efficiency: 45.4 %

NOx emissions: 50 mg per Nm³ NOx

Note 1) Also available at 230 rpm and 90,000 hours for major overhaul
**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
- Two-stage, on-engine integrated, charge cooler
- One intake manifold 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

**Key features**

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

- **Intake & exhaust systems**
  - Two high efficiency turbochargers, water-cooled, with two bypass valves
  - Two-stage, on-engine integrated, charge cooler
  - One intake manifold inside the engine
  - Dry exhaust manifolds, outside the engine

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  - One single camshaft, Miller cycle
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  - Proprietary, fully integrated engine control system for optimized performance and diagnosis

- **Lubrication system**
  - On-engine integrated O/C (HT water circuit)
  - External, accessible oil pump
  - Centrifugal oil filter
**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 the following individual areas:

- **Engine room** - 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

**Sound pressure level**

- Down to 75 dB (A) in 10 m except for the 30X 150 model with 75 dB (A) in 1 m
- Down to 75 dB (A) in 10 m except for the 30X 150 model with 75 dB (A) in 1 m
- Down to 75 dB (A) in 10 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 35ºC with an option to reach up 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**

- L:12,192 mm; W: 2,438 mm; Height: 2,896 mm
- L:9,144 mm; W: 2,438 mm; Height: 2,896 mm
- L:6,000 mm; W: 2,000 mm; Height: 3,100 mm

**Applications by engine models**

- Power generation: 5 Series including 56X/T30, 5 Series Line engine
- Cogeneration: All engines except for V engines, the 8 Series and 56 lite engines (5G, 5T)
- Power generation: 6 Series except for 24HM, 24HM gas propane
- Cogeneration: H Series except for 24HM, 56 gas propane and 56 lite engines
- Fast start: 56X, T30 engine
- Power Generators, Cogenerators for all L engines

(*) For other configurations please contact the Siemens Engine Business
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