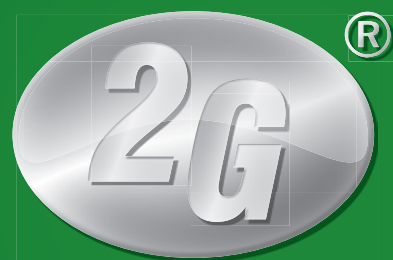


2G. Product portfolio.

Combined heat & power plants for distributed cogeneration of heat and power.
Highly efficient and reliable. 50 to 2,000 kW.

2G. Combined Heat & Power.



Global success with cogeneration.

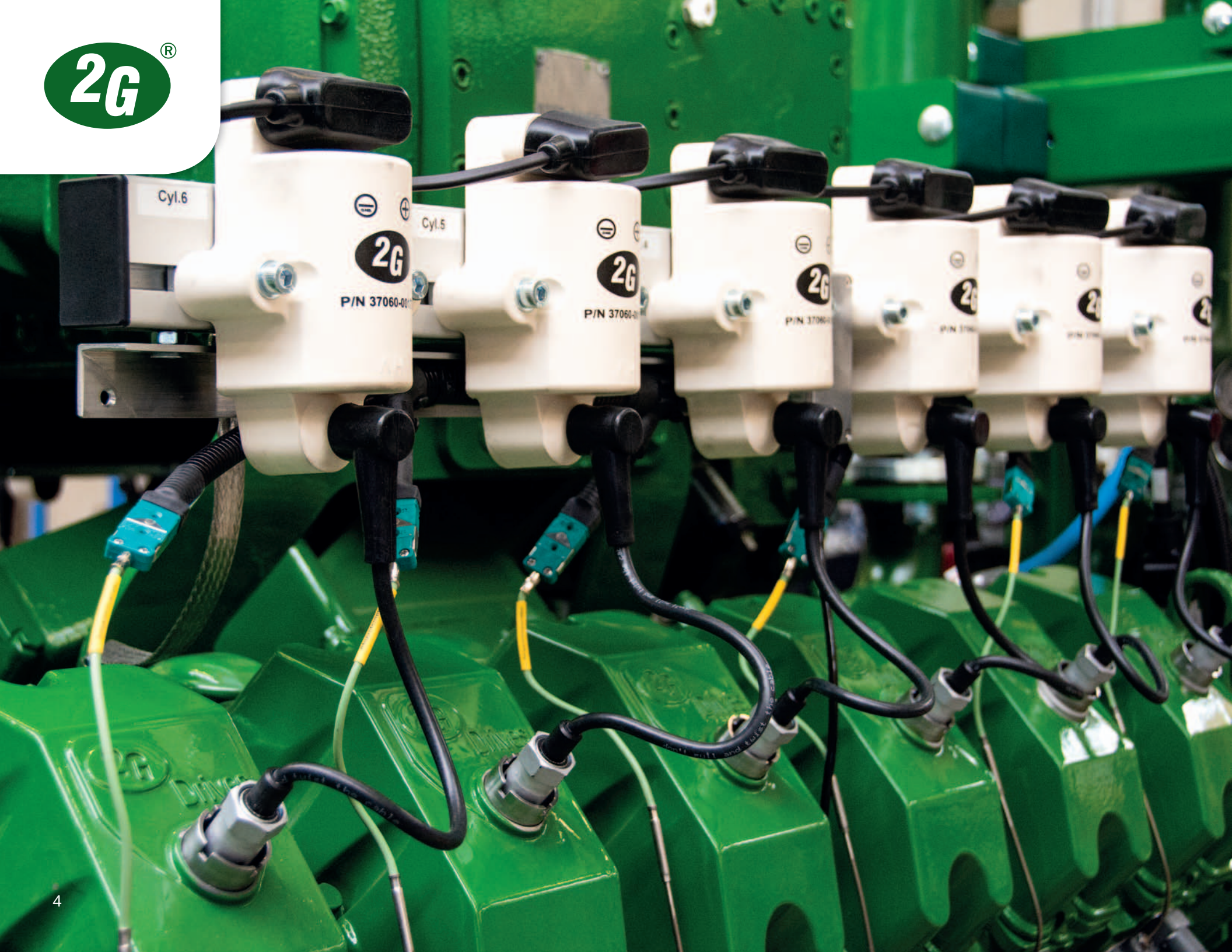
A 2G Combined Heat & Power (CHP) system is the ideal solution for anyone wanting to reduce energy costs in the long-term and wishing to protect themselves against further increases in electricity prices.

As a pioneer, innovator and one of the world's leading manufacturers of Combined Heat & Power systems, we have commissioned thousands of technologically advanced, highly efficient CHP plants since 1995.

Satisfied customers in more than 35 countries confirm the quality, performance and reliability of our products and solutions.

2G is listed as a publicly traded company on the Entry Standard of the Frankfurt Stock Exchange and has a workforce of more than 580 employees.

The 2G product range includes CHP plants ranging in electrical output from 50 kW to 2,000 kW.



Your benefits with modular Combined Heat & Power systems.

Advanced technology makes modular Combined Heat & Power plants an attractive solution, offering various benefits. Unlike individually engineered CHP plants, modular systems ease installation and incorporate components perfectly geared towards each other. To ensure the highest reliability and efficiency, they go through comprehensive factory testing as a package before shipping. That saves cost and lowers the risk.



Save Money

Industry leading efficiencies. That means you can cut your energy cost by 40% and focus on what's really important.



Increase Reliability

Power outages are threatening your business success. Our systems provide reliable power independent of weather and time.



Be Independent

Energy prices are increasing.
Be your own energy supplier and take back control over your energy cost.



Be Sustainable

Meet the highest environmental standards. Lower CO₂ emissions by 60%.



The technology of the future.

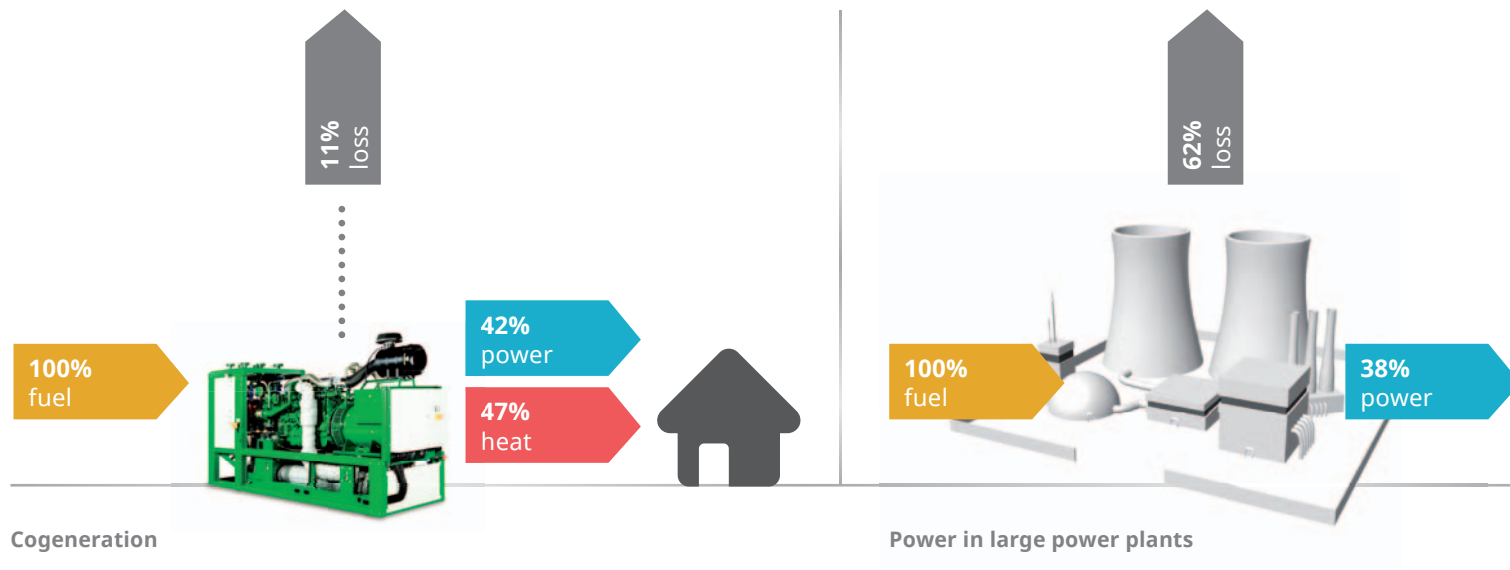
The power grid of the future will not be made up of a few large power plants but rather of many small ones. As part of the transformation of the energy sector, Combined Heat & Power plants are increasingly gaining importance in the creation of a decentralized, stable and sufficient power grid – due to their distributed nature, controllability and predictable availability. With a plant by 2G you can also make a contribution to a stable, clean energy supply of the future.

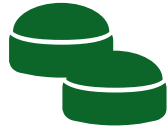
Highly efficient and climate-friendly.

The simultaneous generation of electrical energy and useful heat is described as Combined Heat & Power (CHP). The heat, a byproduct of electrical generation, is recovered from the engine jacket water and exhaust gas and can be used for heating, cooling or generating steam (see page 24).

Thus the heat arising during the production of electricity does not simply escape unused into the atmosphere, but is put to practical use. This is what makes the technology of cogeneration so efficient and climate-friendly. It saves up to 40 percent in primary energy. CO₂ emissions drop by up to 60 percent compared to conventional power generation in large power plants.

Comparison of distributed and centralized power generation.





Biogas plants



Office and administration buildings



Chemical and pharmaceutical industry



Landfill sites



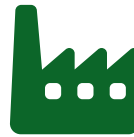
Shopping centers



Greenhouses



Hotels



Industry and commerce



Sewage treatment plants

Many different areas of use.

2G power plants have already demonstrated their strengths in many applications, like in residential buildings, office and administration buildings, nurseries, schools, hotels, senior citizen centers, hospitals and a wide variety of industrial and commercial businesses. Nowadays, virtually every business is suitable for the use of cogeneration.



Hospitals



Agricultural businesses



Food industry



Public facilities



Data centers



Schools and universities



Swimming pools



Senior citizen centers



Sports and event centers



District heating



Hydrogen



Residential buildings



We set standards.

2G power plants have proven their value for the cogeneration of power and heat for many years. We set standards for the industry with reliable, leading-edge technology that is Engineered in Germany and Manufactured in the U.S., complemented with outstanding service.



Engineered in Germany. Manufactured in the U.S.

Together with prestigious universities and research institutes, our group's own research and development company, 2G Drives, continuously improves the 2G engine technology resulting in industry leading technology. We have successfully achieved significant increases in efficiency and made them permanently reproducible.

Verified grid conformity.

The 2G power plants meet the requirements of local interconnection guidelines and are suitable for selling the excess electricity generated into the energy grid, when paralleling the system with the utility.

Highly developed control technology.

The 2G control technology enables needs-based management of flexible running modes in on/off operation or part load operation. Every 2G power plant is infinitely adjustable between 50 and 100 percent load. Effective analysis tools which have revolutionized remote maintenance and service are an integral part of the sophisticated control concept.





g-box

Profitable small power plant.

Small, profitable & quiet.

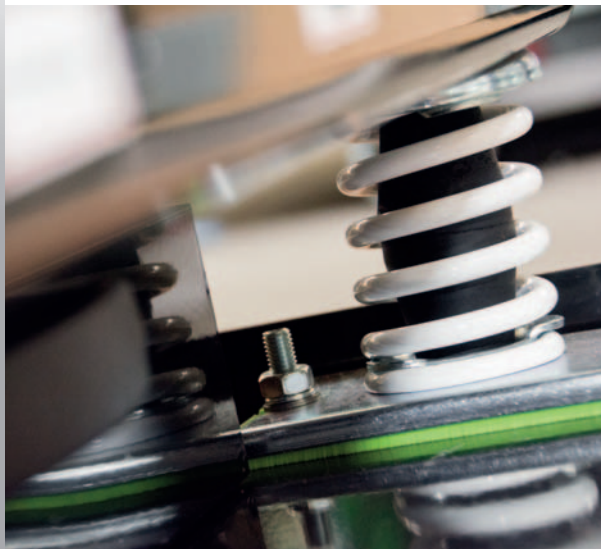
The g-box is 2G's profitable small power plant with an electrical output of 50 kW. The connection-ready module includes a control cabinet with PLC controller. While the powerful unit works extremely efficient, the low noise output makes it suitable for various applications like hotels, offices or residential buildings.

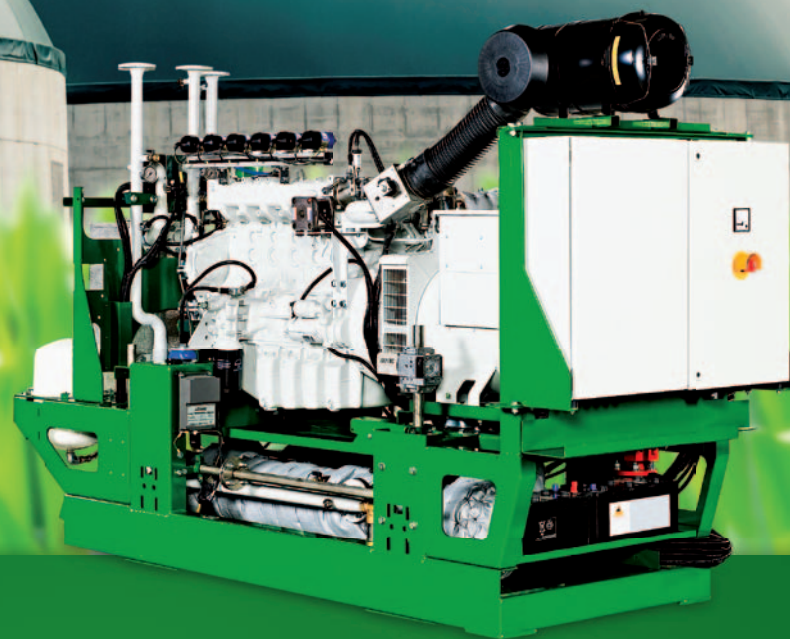
- Connection-ready for easy integration
- Compact design requires minimal space for installation
- Super-silent and fully enclosed compact module (max 55 dB(A) at a distance of 3 ft)
- Very economical – highest thermal efficiencies through condensing technology
- Completely water-cooled – no need for costly installation of air ducts
- High availability, reliability and low-maintenance

g-box. 50 kW.

Type	Electrical output	Thermal output
	Natural gas	Natural gas
g-box 50	50 kW	100 kW

Efficiency levels, see p. 28-31.
Installation options, see p. 22-23.





filius

Compact biogas specialist.

Compact biogas specialist.

As a highly efficient power plant ranging in output from 50 to 64 kW, the filius is specifically designed for smaller biogas plants. It is usually pre-assembled in a container as a connection-ready compact module and can be commissioned quickly and easily.

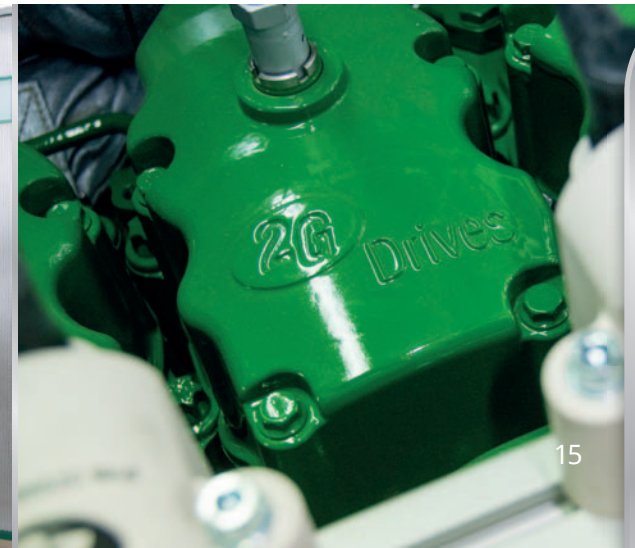
- Designed for smaller biogas plants
- Modules available in space-saving filius container
- Connection-ready container solution facilitates on-site installation and reduces installation costs
- Compact design enables easy access for maintenance work

filius. 50 to 64 kW.

Type	Electrical output	Thermal output
	Biogas	Biogas
filius 104	50 kW	73 kW
filius 204	64 kW	90 kW

Efficiency levels, see p. 28-31.

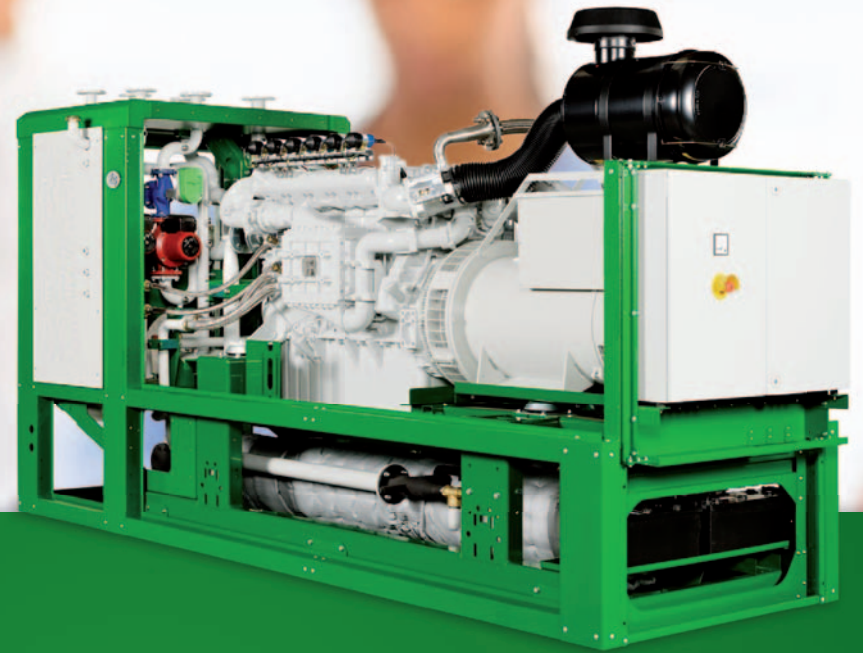
Installation options, see p. 22-23.



A woman with light brown hair pulled back, wearing a white lab coat, is smiling warmly at the camera. In the background, two other people are visible but out of focus.

patruus

Traditional solution.



Traditional solution.

With engine technology that has been established for decades, the patruus is the most experienced member of the 2G power plant family. It is a resilient and efficient supplier of power and heat in the electrical output range up to 400 kW.

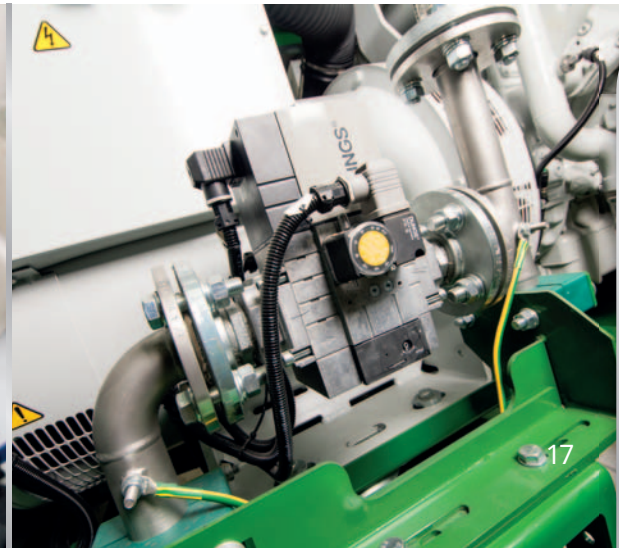
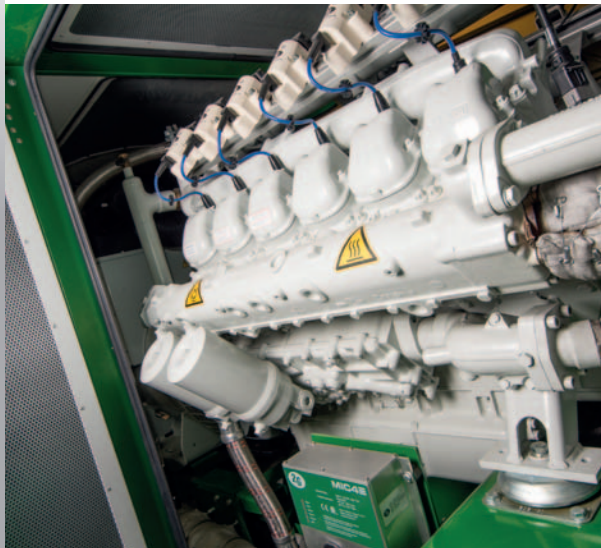
- Designed as a connection-ready compact module
- High plant availability due to established engine technology
- Available with both naturally-aspirated or turbocharged engines
- Modular design facilitates installation in hard to reach places
- Resilient and low-maintenance
- Available as a twinpack configuration with two modules per container for twice the power

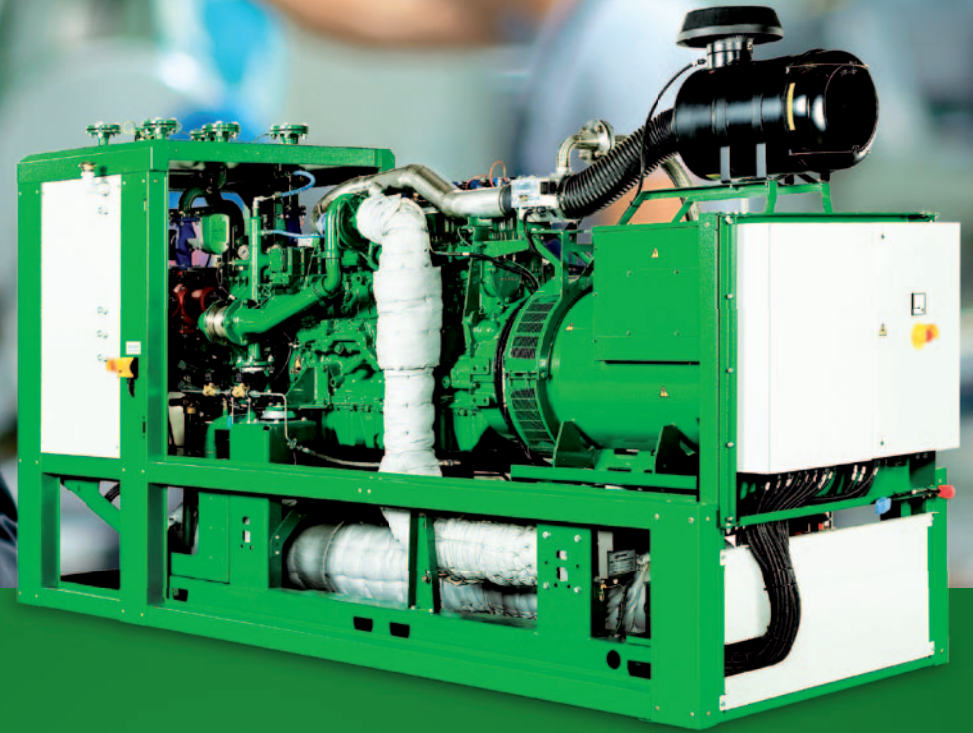
patruus. 50 to 400 kW.

Type	Electrical output		Thermal output	
	Natural gas	Biogas	Natural gas	Biogas
patruus 50	-	50 kW	-	73 kW
patruus 64	-	64 kW	-	90 kW
patruus 160	160 kW	-	244 kW	-
patruus 190	-	190 kW	-	235 kW
patruus 200	200 kW	-	280 kW	-
patruus 265	265 kW	-	415 kW	-
patruus 370	-	370 kW	-	473 kW
patruus 400	400 kW	-	541 kW	-

Efficiency levels, see p. 28-31.

Installation options, see p. 22-23.





agenitor

Evolution in efficiency.

Evolution in efficiency.

The agenitor by 2G is the result of intensive work by the 2G research and development team. Improving combustion chamber geometry has made it possible to increase the efficiency of the agenitor significantly.

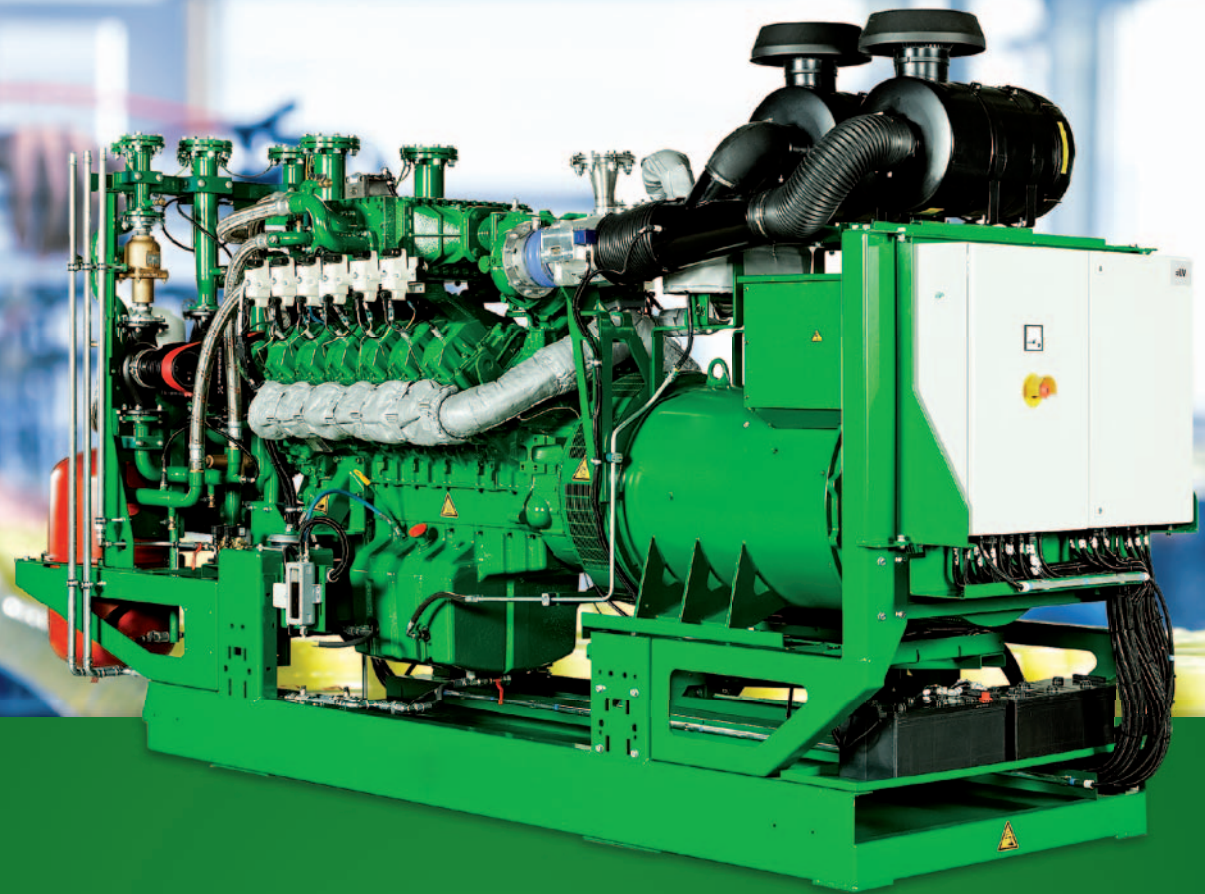
- Highly efficient power plant with optimized gas engine – and therefore lower fuel costs
- Modular design facilitates installation in hard to reach places
- Very reliable even in regular start-stop operation thanks to highly wear-resistant engine components
- Resilient and low-maintenance
- Available as a twinpack configuration with two modules per container for twice the power

agenitor. 220 to 450 kW.

Type	Electrical output		Thermal output	
	Natural gas	Biogas	Natural gas	Biogas
agenitor 206	220 kW	220 kW	262 kW	243 kW
agenitor 306	250 kW	250 kW	297 kW	272 kW
agenitor 408	330 kW	330 kW	350 kW	338 kW
agenitor 212	-	400 kW	-	473 kW
agenitor 312	450 kW	450 kW	535 kW	513 kW

Efficiency levels, see p. 28-31.
Installation options, see p. 22-23.





avus

Built for big tasks.

Built for big tasks.

The avus is a highly efficient 2G power plant for high electric power consumption (above 500 kW) which is used in larger industrial projects or for supplying micro grids.

The modular built systems include all components and are, due to their “plug & play” functionality, easy to install.

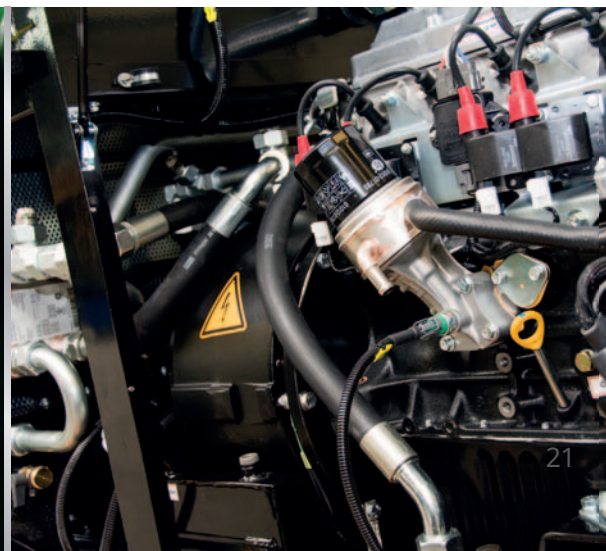
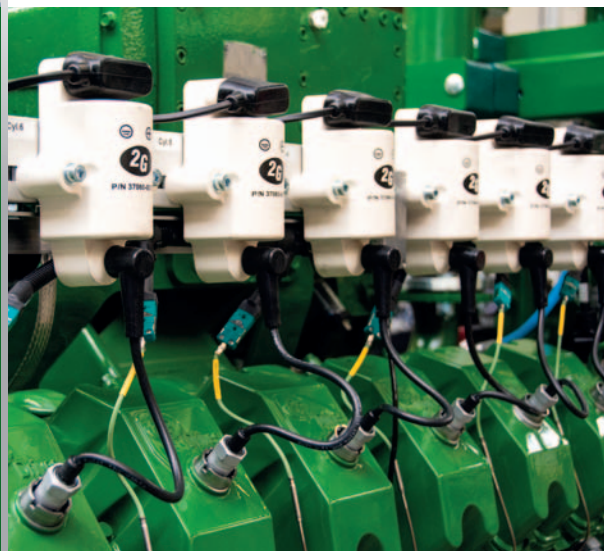
- Interconnection of multiples units allows for higher electrical output. A Master Control system enables synchronization and load sharing to up to 5 modules.
- Efficient running mode and operating times due to excellent engine quality

avus. 500 to 2,000 kW.

Type	Electrical output		Thermal output	
	Natural gas	Biogas	Natural gas	Biogas
avus 500 plus	500 kW	500 kW	529 kW	511 kW
avus 600c	600 kW	600 kW	680 kW	642 kW
avus 800c	800 kW	800 kW	892 kW	838 kW
avus 1200c	1,200 kW	1,200 kW	1,196 kW	1,183 kW
avus 1500c	1,560 kW	1,560 kW	1,589 kW	1,575 kW
avus 2000c	2,000 kW	2,000 kW	1,991 kW	1,998 kW

Efficiency levels, see p. 28-31.

Installation options, see p. 22-23.





filius container

Sizes available (LWH)

19.7 ft x 8 ft x 9.2 ft

29.5 ft x 8 ft x 9.2 ft

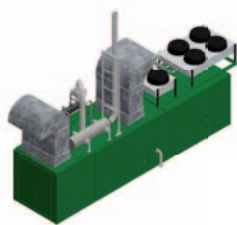
Acoustic emissions*

Standard: 65 dB (A)

Super silent: up to 55 dB (A)

Information

Easy installation due to complete pre-assembly in the factory and compact design, integrated electrical installation



Standard container

Sizes available (LWH)

21.3 ft x 9.8 ft x 9.8 ft

29.5 ft x 9.8 ft x 9.8 ft

34.4 ft x 9.8 ft x 9.8 ft

39.4 ft x 9.8 ft x 9.8 ft

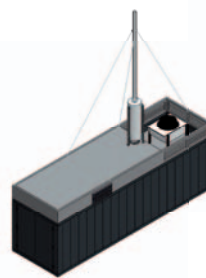
Acoustic emissions*

Standard: 65 dB (A)

Super silent: up to 52 dB (A)

Information

Made of sheet steel, lined internally with fleece and galvanized perforated sheet metal, integrated electrical installation



High Line container

Sizes available (LWH)

29.5 ft x 9.8 ft x 12.1 ft

34.4 ft x 9.8 ft x 12.1 ft

39.4 ft x 9.8 ft x 12.1 ft

39.4 ft x 14.1 ft x 17.5 ft

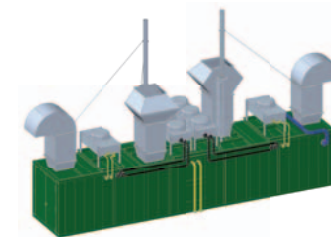
Acoustic emissions*

Standard: 65 dB (A)

Super silent: up to 45 dB (A)

Information

Like standard container, optimized design, cooler in addition to supply and return air ducts integrated in the container roof



Container Twin Pack

Sizes available (LWH)

42.7 ft x 9.8 ft x 9.8 ft

49.2 ft x 9.8 ft x 9.8 ft

Acoustic emissions*

Standard: 65 dB (A)

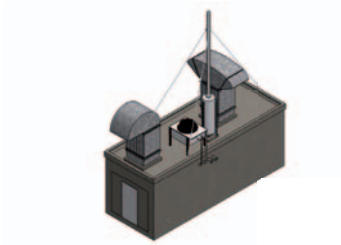
Super silent: up to 52 dB (A)

Information

Like standard container, two modules per container create redundant system and increase flexibility

Extremely versatile. And quiet.

2G power plants can be installed in various ways – depending on local conditions and the requirements for sound attenuation. They can therefore be incorporated in existing buildings or heating systems or can be set up separately in a container or engine room. With the appropriate sound attenuation package, noise emission can be as low as 35 dB (A) at a distance of 33 feet.



Standard concrete acoustic enclosure

Sizes available (LWH)

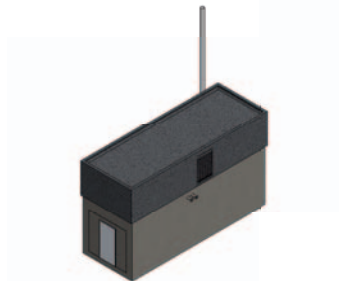
29.5 ft x 10.8 ft x 12.1 ft
30 ft x 14.1 ft x 12.1 ft
37.4 ft x 14.1 ft x 12.1 ft

Acoustic emissions*

Standard: 45 dB (A)
Super silent: up to 35 dB (A)

Information

Complete concrete enclosure of the 2G power plant, wall thickness 6.3 inch, integrated electrical installation



High Line concrete acoustic enclosure

Sizes available (LWH)

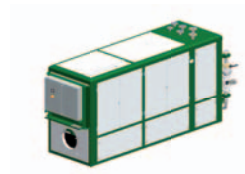
29.5 ft x 10.8 ft x 17.6 ft
30 ft x 14.1 ft x 17.6 ft
37.4 ft x 14.1 ft x 17.6 ft

Acoustic emissions*

Standard: 45 dB (A)
Super silent: up to 35 dB (A)

Information

Like standard concrete acoustic enclosure, optimized design, cooler (size-dependent) in addition to supply and return air ducts integrated in the container roof



Sound capsule

Sizes available (LWH)

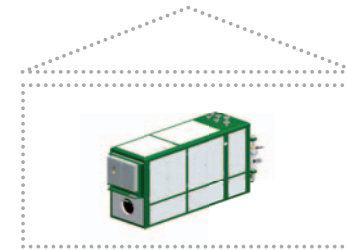
Depending on product

Acoustic emissions*

Standard: 65 dB (A)

Information

Encapsulation of the entire 2G power plant using sheet steel cases, easily accessible through doors and maintenance flaps, outside 0.06 inch galvanized sheet steel, inside 0.04 inch galvanized perforated sheet metal



Engine room

Sizes available (LWH)

Individual

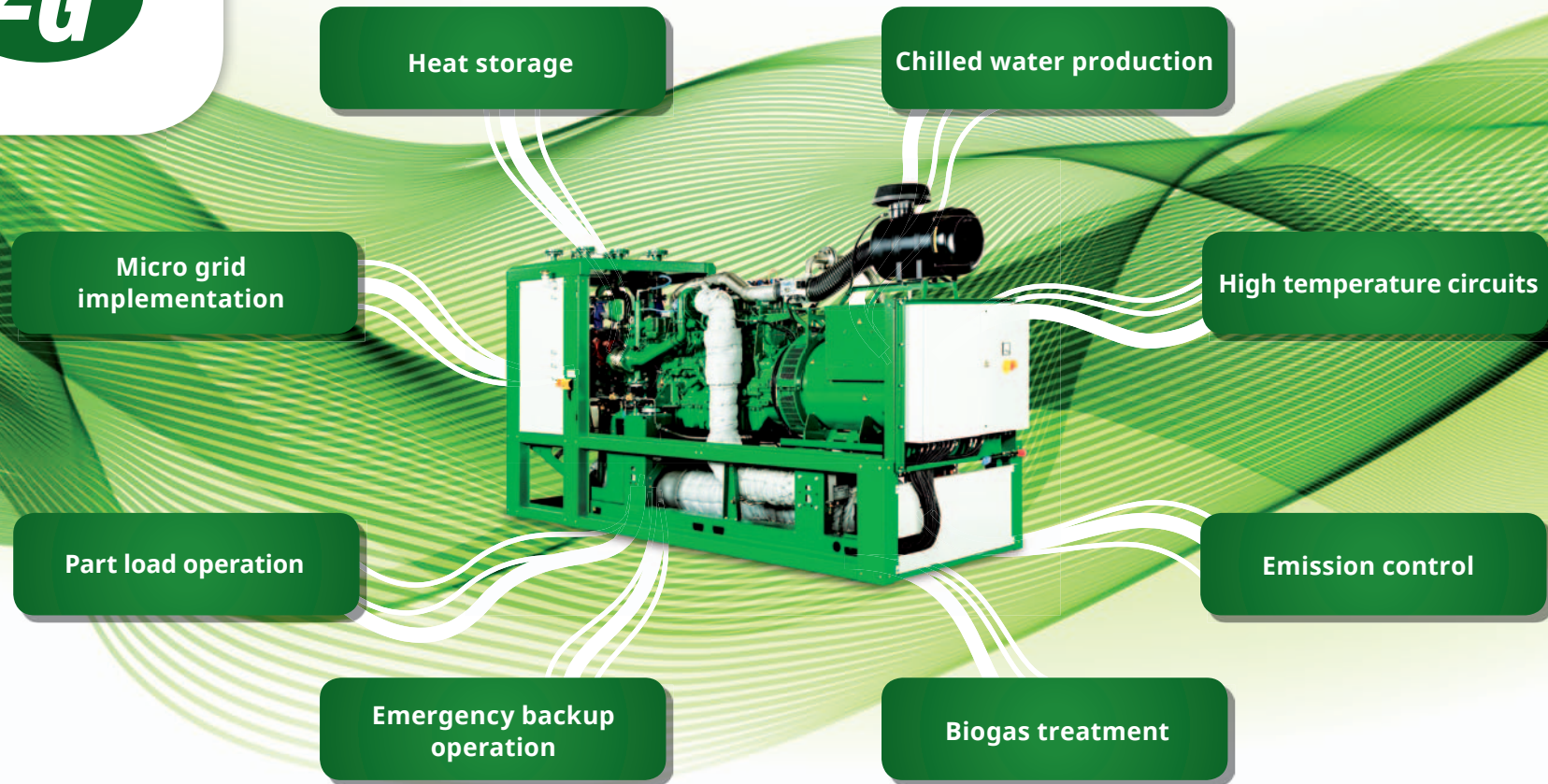
Acoustic emissions*

Individual, up to 35 dB (A)

Information

Custom installation in existing buildings, project planning and design by 2G, frequently combined with sound capsule

* at a distance of 33 feet



Innovative energy concepts.

Air-conditioning of offices, generating hot steam for industry or meeting highest emission standards – 2G CHP systems offer the right solution for the requirements of your facility. 2G's highly efficient power plants are all about a stable decentralized energy supply for the future.

Storing heat.

Incorporating a heat storage, allows to collect thermal energy for later use and gives the operator flexibility to adjust the 2G system to individual thermal needs.

Cooling with heat.

The heat generated during cogeneration can be converted into chilled water by means of an absorption chiller and can be used, for example, for environmentally-compatible air conditioning.

Raising the temperature.

Incorporated in steam, hot water and thermal oil applications, 2G power plants can provide customized solutions for various industries.

Treating exhaust gas.

By installing catalyst technology in a 2G power plant, it is possible to remove pollutants that are still present in the exhaust gas, to meet strictest emission requirements.

Biogas treatment.

After the natural fermentation process, biogas often contains residues of undesirable substances, such as sulfur. The biogas is upgraded by using activated charcoal filters and gas cooling systems.

Emergency backup.

It is not always possible or practical to connect to a stable power grid. 2G power plants are capable of operating in isolated networks (island mode) and guarantees a backup supply in an emergency.

Continuous adjustment.

Unlike large power plants, CHP plants can regulate their output within a very short time frame. 2G power plants are infinitely adjustable in the power range between 50 and 100 percent and adjust to the actual energy demand with the help of modern control technology.

Micro grid implementation.

2G power plants are an ideal solution to provide power and thermal energy to multiple facilities. Communities gain independence and resilience by operating autonomously and reduce their energy cost at the same time.



2G service. Reliable and fast.

2G offers a leading edge service concept so that every 2G power plant runs permanently and with maximum efficiency. Service is supported by the 2G Remote Controlling System for automated remote diagnosis, control and maintenance.

Automated remote diagnosis.

2G has expanded servicing via remote access to the plant control system by adding an innovative module: 2G Remote Controlling System. The key to this concept is automated remote diagnosis of all the plant parameters. If a technical disruption is looming in a 2G power plant, it is automatically reported online to the 2G service center without delay. This is carried out without the operator needing to take any action. With the relevant system parameters, the system also reports a suggested solution. An employee in the 2G service center initiates the appropriate measures immediately to ensure that the plant continues to operate. Fast and reliable!

Premium service contract. Complete cost control.

2G offers various service contracts. With a premium service contract, an operator of a 2G power plant is well protected. No additional costs arise as a result of maintenance and repair work (including all spare and wear parts). Subsequently, the operator retains full cost control.

2G service team. Professional maintenance around the clock.

A comprehensive service network and an extensive spare parts warehouse form the basis for a professional on-site maintenance and repair service. 2G service vehicles and specially trained service partners ensure our guaranteed high plant availability.



2G. Product overview – natural gas.

	Type	Output		Efficiency		
		electrical	thermal	electrical	thermal	total
g-box 50 kW	g-box 50	50 kW	100 kW	33.4 %	66.2 %	99.6 %
patruus 160 - 400 kW	patruus 160	160 kW	244 kW	36.1 %	55.1 %	91.2 %
	patruus 200	200 kW	280 kW	35.3 %	49.4 %	84.8 %
	patruus 265	265 kW	415 kW	35.6 %	55.8 %	91.4 %
	patruus 400	400 kW	541 kW	37.1 %	50.3 %	87.4 %
agenitor 220 - 450 kW	agenitor 206	220 kW	262 kW	38.3 %	45.7 %	84.0 %
	agenitor 306	250 kW	297 kW	38.8 %	46.2 %	85.0 %
	agenitor 408	330 kW	350 kW	40.6 %	43.1 %	83.7 %
	agenitor 312	450 kW	535 kW	38.9 %	46.2 %	85.1 %

2G. Product overview – natural gas.

Type	Output		Efficiency		
	electrical	thermal	electrical	thermal	total
avus 500 plus	500 kW	529 kW	40.6 %	42.9 %	83.5 %
avus 600c	600 kW	680 kW	41.1 %	46.6 %	87.7 %
avus 800c	800 kW	892 kW	41.5 %	46.3 %	87.8 %
avus 1200c	1,200 kW	1,196 kW	43.4 %	43.2 %	86.6 %
avus 1500c	1,560 kW	1,589 kW	43.0 %	43.8 %	86.8 %
avus 2000c	2,000 kW	1,991 kW	43.4 %	43.2 %	86.6 %

avus

500 - 2,000 kW

2G. Product overview – biogas.

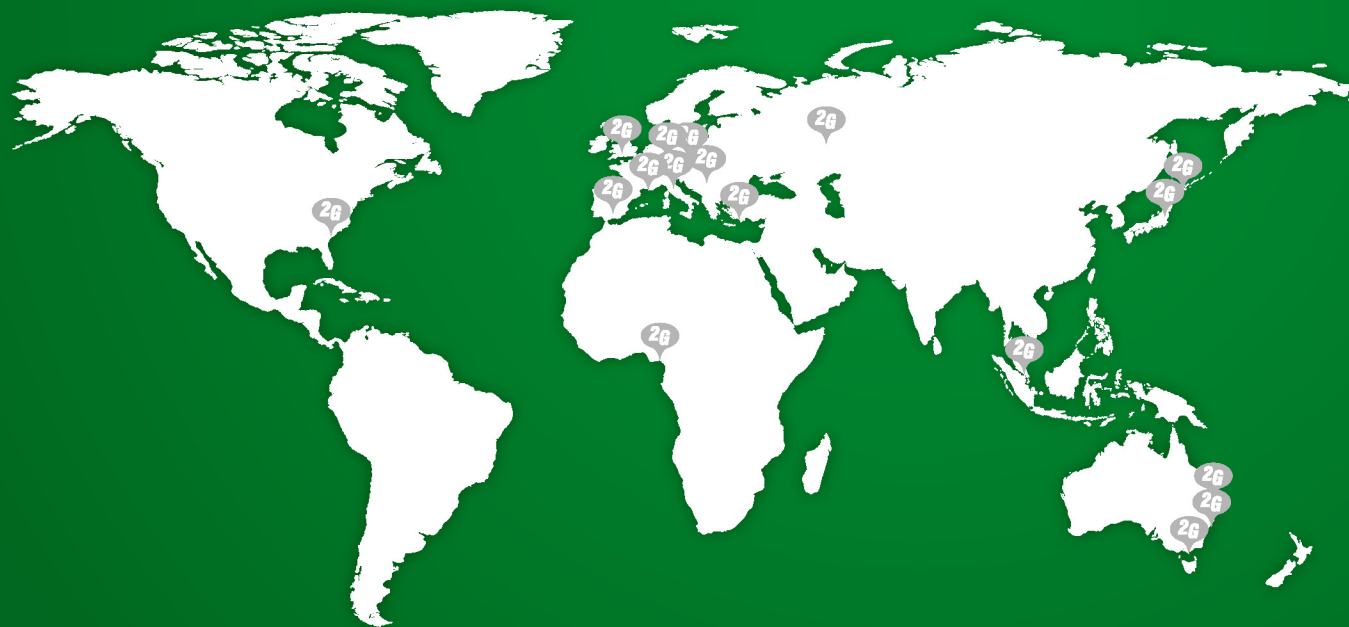
	Type	Output		Efficiency		
		electrical	thermal	electrical	thermal	total
filius 50 - 64 kW	filius 104	50 kW	73 kW	33.4 %	48.7 %	82.0 %
	filius 204	64 kW	90 kW	34.9 %	48.8 %	83.7 %
patruus 50 - 370 kW	patruus 50	50 kW	73 kW	33.4 %	48.7 %	82.0 %
	patruus 64	64 kW	90 kW	34.9 %	48.8 %	83.7 %
	patruus 190	190 kW	235 kW	36.8 %	45.4 %	82.2 %
	patruus 370	370 kW	473 kW	37.1 %	47.3 %	84.4 %
agenitor 220 - 450 kW	agenitor 206	220 kW	243 kW	38.7 %	42.7 %	81.4 %
	agenitor 306	250 kW	272 kW	39.1 %	42.5 %	81.6 %
	agenitor 408	330 kW	338 kW	40.6 %	41.6 %	82.2 %
	agenitor 212	400 kW	473 kW	38.6 %	45.7 %	84.3 %
	agenitor 312	450 kW	513 kW	38.2 %	43.5 %	81.7 %

2G. Product overview – biogas.

Type	Output		Efficiency		
	electrical	thermal	electrical	thermal	total
avus 500 plus	500 kW	511 kW	40.6 %	41.5 %	82.1 %
avus 600C	600 kW	642 kW	40.4 %	43.1 %	83.5 %
avus 800c	800 kW	838 kW	40.7 %	42.7 %	83.4 %
avus 1200C	1,200 kW	1,183 kW	42.3 %	41.7 %	84.0 %
avus 1500c	1,560 kW	1,575 kW	41.7 %	42.1 %	83.8 %
avus 2000c	2,000 kW	1,998 kW	42.3 %	42.2 %	84.5 %

avus

500 - 2,000 kW



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2G. A worldwide success.