Comprehensive supplier of biogas technologies
Biogas in general
A significant rise in global population, combined with the rapid development of industrialisation worldwide, has resulted in a substantial increase in energy consumption, consumption that is largely based on fossil fuel. As a result, large amounts of carbon dioxide now enter the Earth’s atmosphere resulting in substantial, long term damage to our climate and environment.

Today, Germany is up to 70 percent dependent for its energy supply on imports of oil, gas, coal and uranium. World-wide, fossil fuel is becoming ever more scarce and expensive. The question of how to secure an affordable energy supply has now become a central political issue around the world.

Given our concerns regarding climate change, we need a fundamental review; energy politics must take a lead and positively demonstrate how it is possible to consistently develop CO₂ neutral forms of energy.

**Biogas provides lasting environmental protection**

Biogas is one of the key renewable sources of energy next to solar and wind. After all, biogas can be produced in a particularly environmentally responsible and CO₂ neutral way from sustainable raw and energy-rich waste materials that are available at a regional level. Biogas utilises the natural energy present in organic matter.

**How is biogas produced?**

Biogas plants predominantly process energy-rich vegetation, such as grass silage, maize and sugar beet, as well as solid manure and slurry. In addition, organic residues, such as lawn cuttings, food leftovers or by-products from the food processing industry can be fermented.

Biomass is broken down by special bacteria under the exclusion of oxygen. In this process, approximately two thirds of the total amount of gas produced by the bacteria is methane; carbon dioxide, nitrogen and a small number of other gases are also produced.

The methane can be used as fuel in CHP modules, where it generates power and heat. If the biogas is upgraded, it can also be fed into the gas mains to supply decentralised CHP modules with biogas. One cubic meter of methane contains a calorific value of approx. 10 kWh. The fermented plant residues can be reused in agriculture as a high grade fertiliser.

**The major benefits of biogas are:**

- It supplies power, heat, cooling and gas in one
- It is available all year round – 24/7 – and can be stored
- It is independent of the weather and can, therefore, be made available on demand
- Processed biogas can be used in all vehicles converted to natural gas without problems, and it can be filled in tanks and transported in bottles or pipelines
System solutions/
Products
Our core business concerns the development and construction of plants for the production and economic use of biogas. We are not only one of the leading suppliers of biogas plants in Germany, but also one of the few comprehensive suppliers in our sector. Next to building systems, we also offer services covering engineering and development, as well as service and system management.

Biogas systems will only operate efficiently and economically if their system technology and microbiology are perfectly matched. Consequently, we follow the maxim “Everything from a single source”. To safeguard a high level of plant availability, our customers are supported by a competent team of specialists, covering planning, permits, process technology, biology and system construction.

The conversion of biogenous waste matter into biogas has become an important subject internationally. In many countries, the necessary political conditions and terms for subsidies are currently being created as a basis for the development of the biogas market. In future, we will concentrate even more on selected export markets.

In Italy, Schmack Biogas S.r.l. in Bolzano has been representing our interests since 2006.

Furthermore, Schmack products are marketed in the USA via BIOFerm energy systems (also a Viessmann Group authoritative brand).

Apart from Italy, other markets that are particularly attractive to us include Great Britain, France, the Benelux countries and Eastern Europe.

Our services around biogas
- Engineering and planning
- Plant construction and commissioning
- Service and operational management
- Biogas treatment and feed into the natural gas mains
- Services covering technical and microbiological aspects
- Components
- Harvest logistics and raw material management

To improve and optimise the entire process chain, every year has seen substantial investment in R & D.

Awards
Schmack Biogas has received numerous awards for its innovative developments and for its commitment to its sector. These include the German Solar Prize, the Cleantech Award and the Prize for Innovation, awarded by the Initiative Mittelstand.

### Biogas Competence in the Viessmann Group

- Sales
- Development of the main site
- Engineering and planning
- Plant construction
- Commissioning
- Operational management
- Technical service
- Biological service
- Raw material management
- Charge technology
- Agitators
- Handling technology
- Digester heaters
- Gas treatment plants
System solutions/
Products

Energy crops/
Agricultural residues
- Feed remains, landscape conservation material, straw, chicken manure
- Fodder beet, grass, residual hops, horse manure
- Manure, vegetable waste, sugar beets
- Whey, slurry

Biowaste/
Industrial residues
- Biowaste, organic waste
- Slaughterhouse waste, glycerine
- Sewage sludge
- Food waste

- PASCO feeding system
- CALIX incineration pit
- EUCO high performance digester
- COCCUS pit storage digester
- AIO All-In-One-Module (CHP module with system control and material distribution)
- Transformer station
- SULA gas-tight fermentation residue store

BIOFerm
EUCO/EUCOlino
COCCUS
Standard plant systems

Plant systems from 50 kWel to 20 MWgas

Since 1995, Schmack Biogas has been setting benchmarks for highly efficient biogas plants. Our core competence lies with the fermentation of energy plants and agricultural waste products, such as slurry and solid manure. The cornerstone of our efficient biogas plants are our „standard plant systems“. Our broad-based product range covers from 50 kWel to 20 MWgas feed-in plants – all in the form of comprehensive systems.

**EUCO® plant system**

**EUCO® Titan**
The EUCO® Titan plant system has experienced on-going development since the company’s formation and has been optimised specifically for the fermentation of sustainable raw materials. Its high level of efficiency makes it attractive, not only to agricultural enterprises, but also to investors, energy suppliers and city departments of works, all of whom bank on this leading technology.

**EUCO® MONO**
The EUCO® Mono plant system was specifically developed to ferment substances with a high proportion of dry matter such as grass, maize and solid manure, for example. It is distinguished by its particularly compact design. Contrary to all other plant systems, no circular digester is used; instead a “horizontal” digester (plug-flow digester) is employed.

**COCCUS® plant system**

**COCCUS® Titan**
As a minimum, the COCCUS® Titan plant system comprises a classic circular digester. It is primarily recommended for large industrial plants, predominantly where substances with a low proportion of dry matter are fermented.

**COCCUS® Farm**
The COCCUS® Farm plant system works at its best where most of the material available is of low energy density and low dry matter proportions, as with cattle and pig slurry, for instance. High industrial standards, usually applied by Schmack to larger system builds, were brought to bear in the development and realisation of this system.

**EUCOlino**
The small system in a modular design
The German Renewable Energy Sources Act (EEG), revised in 2012, encourages the construction of smaller biogas plants, up to 75 kWel in the agricultural sector that utilise a minimum proportion of 80 percent slurry. This prompted Schmack Biogas to develop the small EUCOlino system. This compact biogas plant allows even smaller agricultural enterprises access to biogas production. In addition, there is the opportunity to make use of the attractive EEG remuneration, as well as the intelligent heat utilisation concept for production and accommodation buildings. EUCOlino is characterised by its compact, modular design. With the EUCOlino, any combination of substrates is possible (from 10 to 90 percent slurry). Based on the material used, you choose from a selection of gas engines (50 to 100 kW). Digesters of various sizes and designs are also available.
System solutions/
Products

1. Biomass
2. Mixing area
3. Digester
4. Gas storage
5. Heating technology
6. Combined heat and power unit
7. Cooling/heat utilisation
8. Power feed into the grid
Plant systems for biogenic waste material

**BIOFerm dry fermentation system and wet/dry fermentation combination technology**

**BIOFerm dry fermentation**
For stackable feedstock polluted with foreign material

Raw material requirements for this process are extremely low. Stackable, organic solids such as biological waste, agricultural conservation material and solid manure with up to 60 percent dry substance content.

Foreign material sorting or biomass pretreatment is not necessary. The fermentation is distributed among individual garage fermenters in which the biomass is fermented (by means of a batch system) under the exclusion of air. The plant is fully automated except for filling and emptying by means of loaders or the like.

**Combination of wet and dry fermentation**
For fermenting various kinds of material flows

The combination of BIOFerm dry fermentation and Schmack dry fermentation allows for the use of various types of organic waste material for the generation of energy. Thus, dry fermentation BIOFerm technologies are increasingly used in pure biological waste fermentation, with Schmack wet fermentation technologies used in the case of pumpable feedstock with minimal impurity levels (e.g. food waste). Various material flows can be handled separately in both systems without any problems. This makes a link between waste and the NawaRo fermentation strand attractive, for example, in order to affordably process biogas to create bio methane. By combining fermentation technologies, seasonal fluctuations in feedstock can be offset.

Substrates that are too dry for wet fermentation or too wet for dry fermentation can likewise be used.

There are further advantages to be found in the use of diverse synergies between processing and electricity conversion technologies. Only one utilization strand is needed. Biogas from both utilization strands is combined and processed conjointly. Mixing facilitates a high utilization ration of biodegradable waste gas (start-up and shut-down gas can also be processed)

Using an intelligent concept such as this, a small city (approx. 50,000 residents) can be supplied with energy from substrates from the local composting plant.

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**Our advice**

BIOFerm dry fermentation is ideally suited for the exploitation of biogenic waste with a high dry substance content.

More information is available at www.bioferm-energy.com
Standard plant systems

Plant systems from $50 \text{ kW}_{el}$ to $20 \text{ MW}_{gas}$

**AIO**

**All-in-one container**
All technical modules required for control and performance are housed inside the so-called 'All-in-one container' (AIO). This control container is pre-assembled at the factory, tested in all its safety aspects and is delivered ready for use. The standard modular design of the plant creates perfectly matched interfaces.

**BIOWATCH management system**

BIOWATCH is an integral scalable management system that takes care of all measuring, controlling and management functions. It is equipped with a control and monitoring unit for the efficient automation, supervision and operation of the biogas plant. Both the Visu L and the Visu XL options include an operator’s log that automatically documents all statutory aspects concerning verifiability requirements.

**Plant system benefits**

- Low inherent power consumption and heat demand
- Industrial standard, even for the agricultural sector
- Demanding safety concept
  (TÜV approbation [Germany], CE declaration of conformity)
- Compact plant dimensions
- Efficient, well developed and reliable plant components

All operational units are perfectly matched. The uniform charging of the most diverse fermentation materials, robust agitator technology, extensive measuring and control systems, all combined with professional control technology ensure reliable plant operation and a stable fermentation process. The modular concept enables an upgrade to a higher performance level at any time.
High grade components developed in-house

Our long experience in building and operating biogas plants enables us to readily identify the critical success factors of an efficient plant. This germinated the idea and identified the need to develop and build key components in-house.

Schmack Biogas not only offers turn-key plants, but also individual components. For farmers who have planned their system on their own initiative or who want to replace a previous investment and don’t want to miss out on high quality, we can supply the most important key components individually. These components stand out through their high grade, robust and durable materials that enable operators to enjoy a smooth and low maintenance plant operation for many years to come.

PASCO® charger technology for solid matter
The PASCO® charger technology for solid matter is part of our product range. This charger system is able to process large amounts of solid manure and grass without problem and without consuming much power. The flexibility of this charger technology is remarkable: Many combinations can be accommodated, from 8 to 100 m³ of all imaginable raw materials, including the most versatile discharge and handling technologies (moving floor, screw conveyor system, high level handling, delivery through the ceiling and soon, even feeding below fill level).

Currently, the first plants are being equipped with concrete charger systems.

REMEX® agitator
The REMEX® agitator, with its large blades, is ideally suited to the uniform mixing of fermentation matter and slurry inside the digester of the biogas plant. This continual mixing, which is kind to the hard-working bacteria, safeguards an optimum mixing of materials even with high viscosities through the low and constant agitation, thereby ensuring the highest possible biogas yield. Compared to conventional paddle agitators, the REMEX® agitator stands out through its solid, low maintenance and trouble-free design and its extremely low power consumption. The flow-optimised paddle position enables a horizontal and vertical mixing of the matter, and simultaneously and reliably prevents the formation of floating or sinking layers. During operation, the agitator can be set to an optimum speed and minimum power consumption by the plant control system. The drive unit lies outside the digester, making it freely accessible at all times.

Prw-s Vertical paddle agitator
The vertical paddle agitator is ideally suited for thoroughly mixing digestates and slurry in the digester of the biogas plant. This reliable and bacteria-friendly mixing by means of the agitation process promotes optimum digestion. Sinking or floating layers are largely avoided and the biogases are stirred out. The agitator, which is designed for low maintenance, is fastened on the outside to the concrete slab, so that the drive unit is outside (easily accessible for any maintenance tasks) and the agitator unit is inside the digester.
Services
Even after their biogas plant has been completed, Schmack Biogas customers can rely on an extensive range of services covering all technical and biological aspects. With the elements that comprise the Schmack Service Concept, our customers safeguard the operational availability of their plant and keep it at peak performance.

Technical service: Competent and fast
For us, customer service begins long before any component wears or needs replacement – through qualified advice, preventative maintenance and appropriate planning by our in-house customer service department. Our service engineers, who of course have the use of company service vehicles, safeguard the function of your biogas plant through appropriate spare parts logistics.

Laboratory service:
Apart from safe, reliable plant technology, another factor exerts a decisive influence on the viability of a biogas plant, i.e. a stable fermentation process. Our bio-service takes care of monitoring and supporting biogas plants from commissioning onwards.

Consultation: We are the feed consultants for your biogas plant
Scientific experts determine, in our own laboratory, the quality of the matter to be used and check the fermentation contents by means of process-specific parameters. The results form the basis for individual advice and feed recommendations to maintain and/or improve the capacity of your plant.

We also train our customers on an individual basis and tailor the training to the specific plant to enable optimum and economical operation.

The in-house laboratory of Schmack Biogas Service GmbH is accredited in accordance with DIN EN ISO/IEC 17025:2005.

METHANOS®
High performance bacteria for doubling the digestive performance of biogas plants
Our microbiologists have succeeded in isolating high performance bacteria, which when added accelerates biogas generation. Schmack Biogas GmbH is able to produce these bacteria in large quantities. The product known under the name of METHANOS® has been patented and has won many awards.

METHANOS® is a mixture of two different bacteria species that occur naturally in biogas plants - however, only in very small quantities. Through the addition of METHANOS® in the biogas plant, the concentration of these highly efficient bacteria is only increased to a minor extent. This results in an efficiency increase in the biogas plant. In use, it has been shown that the specific gas yield from the feedstock rises from 10 to 20 percent by the use of METHANOS®. The ambient air pollution in biogas plant fermenters can be increased by up to 100 percent. A biogas plant could also be operated with more than double the power output without the additional installation of fermenters.

There is more potential in your biogas plant than you think!

METHANOS® – high performance bacteria for increased efficiency in biogas plants
You can find more information in our brochure or at www.schmack-biogas.co
Quality and Viability

Our specialists ensure a perfect result
Expertise in biogas

The actual hours run under full load each year is the crucial dimension for checking the viability of a biogas plant.

Schmack Biogas is committed to standard plant technology and extensive process-biological know-how. Many years of experience in both sectors enable the company to guarantee above average utilisation to both investors and operators.

**Wide-ranging services**
Those deciding in favour of Schmack Biogas can rely on professional support, right from the first consultation. Planning, obtaining permissions and the complete build are taken in hand by Schmack. As soon as the test run (for which an output certificate is issued) has been completed after commissioning, a further output commitment will be given. This assures you that your biogas plant will operate at a constantly high output level.

**Reliability**
With round the clock supervision through the EUVIS control centre, downtime of supported plants can be reduced to a minimum. Prevention of idle times through scheduled and specific service and maintenance deployments result in a constant and reliable plant operation. The high standard of safety applied during construction and operation protects the plant as well as its operators and the environment.

**Benefits at a glance**
- Professional support covering all technical and biological aspects
- Continuous supervision for reliable and profitable plant operation
- Assured output to safeguard your investment
- Minimised operating costs
Schmack Biogas plants

From agricultural yard installations to industrial gas feed-in plants.

Compact biogas plant Herrmannsbrunn
EUCOlino 75 kW_{el} and 104 kW_{th}

Agricultural biogas plant for feeding into the public electricity grid.

- Proprietors: Simon Böhm
- Installed electrical power: 75 kW_{el}
- Feedstock:
  - 65 % cattle manure and solid manure,
  - 35 % maize and grass silage
- Initial start-up/commissioning: December 2011
- Purpose: the use of thermal energy to heat farm buildings.

Parchau biogas plant
COCCUS farm 366, 366 kW_{el}

Plant for feeding into the electricity grid and near-field heat distribution network

- Proprietors: Landgut Parchau eG
- Installed electrical power: 366 kW_{el}
- Feedstock:
  - 2,500 t/a maize,
  - 8,000 t/a solid manure,
  - 3,000 t/a cattle slurry,
  - 1,700 t/a grain-whole plant silage (WCCS)
- Initial start-up/commissioning: December 2011
Allendorf bio methane plant (Eder)
EUCO Titan 2000G, 2 MW$_{\text{gas}}$

Plant for feeding methane gas into the natural gas network

- **Proprietors:** Viessmann Werke GmbH & Co. KG
- **Plant size:** 2 MW$_{\text{gas}}$
- **Raw biogas processing:** Carbotech PSA 350 Nm$^3$/h
- **Processing capacity:** 185 Nm$^3$/h
- **Feed-in capacity:** approx. 16 million kWh
- **Feedstock:**
  - maize silage: approx. 4,800 t/a
  - grass silage: approx. 3,300 t/a
  - Szarvasi grass: approx. 5,100 t/a
  - cattle manure: approx. 2,000 t/a
- **Initial start-up/commissioning:** August 2013

Kallmünz biomethane plant
EUCO Titan 6900G 6.9 MW$_{\text{gas}}$

Plant for feeding methane gas into the natural gas network

- **Proprietor:** REGAS GmbH & Co. KG
- **Plant size:** 6.9 MW$_{\text{gas}}$
- **Raw biogas processing:** Carbotech PSA 1050 Nm$^3$/h
- **Processing capacity:** 560 Nm$^3$/h
- **Feed-in capacity:** approx. 55 million kWh
- **Feedstock:** maize silage, catch crops and grain
- **Initial start-up/commissioning:** 2nd half 2010
Fulda biomethane plan
COCCUS Titan 3000G 3 MW_gas

Combined system: wet fermentation (Schmack) and dry fermentation for feeding into the natural gas network (Carbotech PSA)

- Proprietors: Biothan GmbH
- Plant size: 3 MW_gas (wet fermentation) and 3.9 MW_gas (dry fermentation)
- Raw biogas processing: Carbotech PSA 1000 Nm³/h
- Processing capacity: 575 Nm³/h
- Feed-in capacity: approx. 55 million kWh
- Feedstock: 32,000 t/a Biological waste (food recalls, fats and grease interceptor, beer residue remover, beer draff, old bread, liquid manure)
- Initial start-up/commissioning: 2nd half 2012

Tongeren biogas plant, Belgium
EUCO Titan 2850, 2.85 MW_el

Plant for feeding into the electricity grid

- Proprietors: Biopower Tongeren NV, Belgium
- Installed electrical power: 2.8 MW_el
- Feedstock: Maize silage, waste from food production and agriculture
- Initial start-up/commissioning: 2nd half 2012
**Sogliano Ambiente, Italy**  
**BIOFerm dry fermentation plant system**

Plant for power generation and feeding into the public grid and local near-field heat distribution network

- Proprietors: Sogliano Ambiente S.p.A.
- Plant size: 1 MWel
- Number of garage fermenters: 11
- Feedstock: 40,000 t/a biodegradable waste and municipal solid waste (0 to 80 mm fraction)
- Initial start-up/commissioning: March 2013

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**Fife Council, Scotland**  
**BIOFerm dry fermentation plant system**

Plant for power generation and feeding into the public grid

- Proprietors: Fife Council, Scotland
- Plant size: 1.8 MWel
- Number of garage fermenters: 14
- Feedstock: 40,000 t/a biodegradable waste (brewing ton) and 3,000 t/a food waste
- Initial start-up/commissioning: Juli 2013
Carbotech – market leader in gas treatment and gas feed-in

The treatment and scrubbing of biogas is a key function if biogas is to be fed into the gas mains on an industrial scale, i.e. where it is to substitute imported natural gas.

Processing biogas into biomethane gives it almost the same physical/chemical properties as conventional natural gas, enabling it to be fed into the existing gas mains. It can be stored in the same way as natural gas, transported over great distances and can be converted into other fuels, as required. Consequently, biomethane is available for all conventional types of use such as, for example, in CHP modules for the combined generation of heat and power; in industrial boilers and those in private homes; as raw material for the chemical industry, as well as fuel for motor vehicles. Biogas is a local and environmentally compatible sustainable fuel that offers flexible application and a high utilisation efficiency through the fact that it can be fed into the mains.

Highest efficiency of energy conversion through combined heat and power generation
One major benefit of feeding in biogas into the gas mains is the separation of biogas production and its utilisation. Biogas is produced where the raw material is available and is used on a decentralised basis where it is required as useful energy, i.e. power and heat, offering high conversion efficiency and low emissions.

Schmack was the first company in Germany to feed in biogas into the natural gas mains. When it comes to gas treatment, we bank on the technology and the many years of experience of Carbotech. This company is also a member of the Viessmann Group and is a specialist in the technology and processes concerning the treatment, scrubbing and production of technical gases – it is recognised as a pioneer for biogas treatment and mains feed-in. The pressure swing adsorption process (PSA) developed by Carbotech has been used in renowned feed-in projects in Germany and wider Europe for many years; today it represents one of the leading industrial standards for gas treatment.

Advantages of pressure swing adsorption
- Reduced energy consumption with higher methane yield
- Dry process with higher plant availability
- Parallel removal of N₂, O₂, CFCs and volatile organic components
- Raw biogas pre-compression and pre-cooling not required
- Subsequent drying of the generated gas not required
A comprehensive product range from the Viessmann Group

Detached houses

Apartment buildings

Industry/commerce/municipal

Local heating networks

Boilers for oil
up to 116 MW heat or
up to 120 t/h steam

Boilers for gas
up to 116 MW heat or
up to 120 t/h steam

Solar thermal systems
and photovoltaics

Individual solutions with efficient systems

The comprehensive range of products and services from Viessmann offers individual solutions with efficient systems for all fuel types and application areas. As one of the world’s leading manufacturers, Viessmann offers intelligent, convenient and efficient systems for heat, air conditioning/ventilation, cooling and decentralised power generation. Viessmann products and systems are synonymous with the very highest efficiency and reliability.

Our comprehensive product range offers top technology and sets new benchmarks. By focusing on using energy efficiently, we can help cut costs, save natural resources and protect the environment.

Everything from a single source
The Viessmann range offers the right products and systems for every requirement. Our heating systems can be wall mounted or floorstanding and are suitable for detached houses, large residential buildings, commercial and industrial premises or local heating networks. Whether for modernisation or new builds, Viessmann is always the right partner for providing heating, cooling, steam and power.

The wide ranging expertise we have at our disposal in the Group enables us to provide our trade partners with perfect solutions. Our product portfolio is rounded off with a full range of services.
The comprehensive Viessmann product range: Individual solutions with efficient systems for all energy sources and application areas

Wood combustion technology, combined heat and power generation and biogas production up to 50 MW

Heat pumps for brine, water and air up to 2 MW

Heating system accessories

Refrigeration technology

The product range for all energy sources and output ranges
- Boilers for oil and gas
  up to 116 MW heat or 120 t/h steam
- Combined heat and power generation
  up to 50 MW_{el}
- Heat pumps up to 2 MW
- Wood combustion technology
  up to 50 MW
- Biogas production plants from 18 kW_{el} to 20 MW_{gas}
- Biogas upgrading plants up to 3000 m³/h
- Solar thermal systems
- Photovoltaics
- Accessories
- Refrigeration technology

Maintenance and service
Whether it concerns commissioning, maintenance or troubleshooting – trade partners can count on the Viessmann Group for professional support. Our team will be more than happy to talk to you on the phone or in person. Our online tools can provide you with valuable tips, and if necessary spare parts can be delivered the next morning.

Training
The Viessmann Academy offers a wide range of courses, from business management seminars to technical training, designed to keep our trade partners abreast of the very latest developments in our industry.
Viessmann – climate of innovation

Viessmann is one of the world’s leading manufacturers of intelligent, convenient and efficient systems for heating, air conditioning/ventilation, cooling and decentralised power generation.

As a third generation family run business, Viessmann has been supplying highly efficient and clean heating systems for many decades.

A strong brand creates trust
Together with our brand label, our key brand message is an identifying feature throughout the world. “Climate of innovation” is a promise on three levels: It is a commitment to a culture of innovation. It is also a promise of enhanced product benefits and, at the same time, an obligation to protect the environment.

Acting in a sustainable manner
For Viessmann, taking responsibility signifies a commitment to acting sustainably. This means bringing ecology, economy and social responsibility into harmony with each other, ensuring that current needs are satisfied without compromising the quality of life for the generations to come.

We consider climate protection, environmental responsibility and resource efficiency to be key priorities throughout our company, which has more than 11,400 employees worldwide.

Example of Best Practice
With its strategic sustainability project, Viessmann demonstrates at its own head office in Allendorf (Eder) that the energy and climate policy goals set for 2050 can in fact be achieved today with commercially available technology. The results speak for themselves:

- Expansion of renewables to 60 per cent
- CO₂ emissions reduced by 80 per cent

The long-term goal is for the company to sustainably meet all of its own heating energy requirements.

Viessmann Group

<table>
<thead>
<tr>
<th>Company details</th>
<th>The comprehensive product range from the Viessmann Group for all energy sources and output ranges</th>
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<tbody>
<tr>
<td>Established in: 1917</td>
<td>Boilers for oil or gas</td>
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<tr>
<td>Employees: 11,400</td>
<td>Combined heat and power units</td>
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<td>Group turnover: €2.1 billion</td>
<td>Heat pumps</td>
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<td>Export share: 55 percent</td>
<td>Wood combustion technology</td>
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<td>27 production companies in 11 countries</td>
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<td>Sales companies and representations in 74</td>
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<td>120 sales offices worldwide</td>
<td>Photovoltaic systems</td>
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<td></td>
<td>Accessories</td>
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