

### ETW Energietechnik launch gas blender for CHPs

German gas fired combined heat and power (CHP) plant technology developer and supplier ETW Energietechnik GmbH has launched a gas blending technology that blends two gas streams of different qualities to fuel gas fired CHPs. The equipment precisely blends the two gases to a homogeneous fuel mixture and is geared towards landfills that struggle with shrinking heating values and volumes of landfill gas along their lifetime. This shrinking heating value can be compensated by gradually enriching the landfill gas with other gas such as pipeline fossil gas or biomethane. The blending is completely automatized and designed to consume the lowest possible amounts of the enrichment gas used.

According to ETW almost any gas fired CHP can easily be upgraded and the blending is completely automatized. This provides several advantages for the plant operator: At startups the CHP receives the perfectly balanced fuel, preventing startup problems attributed to low methane concentration, below 30 percent. It also allows for the operation of CHP with low methane concentration increasing its lifetime and availability, thus its economic feasibility. The CHP can be operated independently from the land-fill gas supply.



B188/5414/AS

### Eggersmann buys BEKON

Germany-based Eggersmann Gruppe GmbH & Co. KG, an international company specialized in recycling and construction, has announced it has acquired compatriot batch-biogas plant builder Bekon Holding AG. Located in the East-Westphalian city of Marienfeld, the Eggersmann Group is a rapidly expanding international plant manufacturer with many years experience in mechanical and biological waste treatment under its "KOMPOFERM" brand. The existing Bekon employees and the site in Unterfoehring will be kept on.

- The integration of BEKON



allows us to draw on even more experience and know-how in dry fermentation. The combination of both of our patents - with BEKON we increased the number by 30 more - means a clear add-on to our service portfolio and reinforcement of our market position, said Karl-günter Eggersmann, CEO of Eggersmann Group in a statement.

B188/5428/AS

### Another ElectraTherm ORC to Germany

US-based waste heat to power technology developer ElectraTherm Inc., has announced its second order to Germany this year. The order is for a "Power+ Generator" organic rankine cycle (ORC) unit for a biogas facility in Bad Kostritz. The site uses biogas to fuel up to four 540kWe engines to supply power to the grid. The ORC will utilize low temperature heat, 77-122°C, waste heat from two to three engines at any given time to generate additional electricity for the utility. This qualifies the plant for a technology bonus in the feed-in tariff structure resulting in additional revenue and, according to ElectraTherm, enables a payback of less than three years.

B188/5440/AS

# Biogas Technology Suppliers Directory 2016

Last year's directory had 116 internationally active companies providing equipment and services to the biogas sector. This year's edition includes 133 companies. The purpose of the directory is to provide an overview and the table gives a general presentation of companies and activities. It includes turnkey providers of biogas plants as well those that supply ancillary components and equipment needed for biogas and/or biomethane production. To qualify companies have to be engaged in export and/or have subsidiaries in other regions, the country shown is where it is headquartered. Although comprehensive the listing is not exhaustive neither is it an endorsement.

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COMPANY	COMMENTS	COUNTRY	WEB
ZG Energy AG	Suppliers of cogeneration systems, offers systems with an electrical capacity between 20 kW and 2 000 kW for operation with natural gas, biogas or hydrogen	Germany	<a href="http://www.2-g.com">www.2-g.com</a>
4R Group	Innovators in waste science and recycling technologies providing a low risk and cost effective recycling service	UK	<a href="http://www.4r-group.co.uk">www.4r-group.co.uk</a>
A-Consult	Designs, manufactures and installes precast concrete anaerobic digesters and storage tanks	UK	<a href="http://www.aconsult.co.uk">www.aconsult.co.uk</a>
Aardvark EM	Provides services for feasibility, planning, permitting, technical and financial due diligence for farmland waste-based projects	UK	<a href="http://www.aardvarkem.co.uk">www.aardvarkem.co.uk</a>
AAT Biogas Technology	Offers plant design, process technology and equipment for processing of organic waste and purification of highly contaminated waste water with simultaneous energy production	Austria	<a href="http://www.aat-biogas.at">www.aat-biogas.at</a>
AB Energy SpA	Represents cogeneration industry with technologies and solutions able to ensure more energy management, which cut consumptions and waste to the benefit of company competitiveness and the environment	Italy	<a href="http://www.gruppoab.it">www.gruppoab.it</a>
AcrEnergy	Develops, builds, operates and maintains biogas plants that make use of organic agricultural waste including livestock manure, fruits and vegetable waste as well as energy crops to generate biogas	UK	<a href="http://www.acreenergy.com">www.acreenergy.com</a>
ADI Systems Inc.	Offers different wastewater treatment technologies	Canada	<a href="http://www.adisystemsinc.com">www.adisystemsinc.com</a>
Aero Thermal Group	Group of companies experience in providing solutions for the aerospace, motorsports and process engineering industries with waste autoclave and thermal hydrolysis	UK	<a href="http://www.aerothermalgroup.com">www.aerothermalgroup.com</a>
Againity	Provides solution for converting waste heat into electric power in various applications	Sweden	<a href="http://www.againity.com">www.againity.com</a>
Agraferm Technologies AG	EPC contractor and technology provider for AD biogas and biomethane plants and waste treatment. The range of services also includes technical and biological service	Germany	<a href="http://www.agraferm.com">www.agraferm.com</a>
Agrar Plus Beteiligungs-GmbH	Provides energy contracting, biomass district heating systems, cogeneration, and biogas	Austria	<a href="http://www.agrarplus.at">www.agrarplus.at</a>
Agrico Engineering Sales Ltd	Manufactures the digestate treatment and handling equipment, feeding equipment, mixers, pumps and separation equipment	UK	<a href="http://www.eisele.de">www.eisele.de</a>
Agrikomp UK	Supplies anaerobic digester systems	UK	<a href="http://www.agrikomp.co.uk">www.agrikomp.co.uk</a>
Aikan A/S	Produces biogas for energy generation	Denmark	<a href="http://www.aikantechnology.com">www.aikantechnology.com</a>
Air Liquide Advanced Business & Tech.	Manufactures biogas cleaning and upgrading equipment, offers gas conversion technologies, gas pump/biomethane compression equipment	France	<a href="http://www.airliquideadvancedbusiness.com">www.airliquideadvancedbusiness.com</a>
Alvan Blanch	Develops digestate treatment and handling equipment, feeding equipment, heat exchanger	UK	<a href="http://www.alvanblanchgroup.com">www.alvanblanchgroup.com</a>
Ambient Energy LLC	Develops M3RP (Machine - Reuse, Recover, Recycle Process), which is a robust machine that can handle several different feedstock's. The technology is a conversion/transformation system that is known as pyrolysis and depolymerization, which processes carbon based feedstocks (such as roofing shingles) in an oxygen free environment	USA	<a href="http://www.ambientnrg.com">www.ambientnrg.com</a>
Amitec Oy	Offers technology, process and material handling solutions	Finland	<a href="http://www.amitec.fi">www.amitec.fi</a>
Andritz MeWa GmbH	Offers the complete process chain, from supply of the input material, to its disintegration, to feeding it to the fermenter	Germany	<a href="http://www.bio-qz.de">www.bio-qz.de</a>
Aprovis Energy Systems GmbH	Offers project planning and sales, design, electrical engineering, order processing and service and supplies products to all major engine manufacturers	Germany	<a href="http://www.aprovis-gmbh.de">www.aprovis-gmbh.de</a>
Aritor	Manufactures pre-treatment feedstock technology and separation equipment	UK	<a href="http://www.turboseparator.co.uk">www.turboseparator.co.uk</a>
Asia Biogas Co. Ltd.	Designs, constructs, finances and operates clean energy projects, centered on anaerobic digestion and biogas production	Thailand	<a href="http://www.asiabiogas.com">www.asiabiogas.com</a>
Awila Anlagenbau GmbH	Supplies dosing and feeding systems for biogas plants	Germany	<a href="http://www.awila.de">www.awila.de</a>
Awite Bioenergie GmbH	Develops, manufactures, sells and maintains individually designed process analysis systems for various types of biological reprocessing plants	Germany	<a href="http://www.awite.com">www.awite.com</a>
Balmoral Tanks	Supplies the anaerobic digester systems, digestate treatment and handling equipment, gas storage equipment, tanks	UK	<a href="http://www.balmoral-group.com">www.balmoral-group.com</a>
BDI - BioEnergy International AG	The company is suitable for the bioenergetic recovery of difficult industrial and municipal residual and waste products	Austria	<a href="http://www.bdi-bioenergy.com">www.bdi-bioenergy.com</a>
Binowa GmbH	Supplies anaerobic digester systems, offers biological optimisation, instrumentation, monitoring and control	Germany	<a href="http://www.binowa.de">www.binowa.de</a>




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COMPANY	COMMENTS	COUNTRY	WEB
Biogest Biogas	Manufactures biogas plants using Biogest PowerRing technology	Austria	www.biogest-biogas.com
Biotec Sistemi S.r.l	Offers equipment for anaerobic digestion. Supplies "turn-key" plants for e.g. the treatment of Municipal Solid Waste (MSW), Source Separated Organic Waste (SSOW), and more	Italy	www.biotecsystemi.it
Biothane Systems International	Company having focus on highly efficient, cost-effective biological methods to treat wastewater while creating energy and reducing pollution	Netherlands	www.biothane.com
Bruker Optics Ltd	Offers comprehensive support in every discipline including information and communication, consumables and spares, support and upgrades, as well as education and training	UK	www.bruker.com
BTA International GmbH	Specialist for the wet mechanical pre-treatment of different kinds of waste and the subsequent anaerobic digestion of the organic fraction according to the BTA® Process for the production of biogas	Germany	www.bta-international.de
BTS Biogas Srl GmbH	Provider of turn key biogas power plants	Italy	www.ts-energygroup.com
Cambi AS	Provides advanced waste and sludge biogas systems, focused on maximizing energy production and minimizing final product mass	Norway	www.cambi.no
Caterpillar Energy Solutions	Manufactures gas engines, electricity power plants, and CHP plants. Experienced in development and optimization of gas engines and generator sets for natural gas, biogas and other special gases	USA	catgaspower.com
CBS Concrete Products	Manufactures precast concrete wall solutions, tanks and silage clamp	Belgium	www.cbs-concreteproducts.co.uk
CCI Bioenergy	Provide equipment and technology to convert MSW to energy, using anaerobic digestion	Canada	www.ccbioenergy.com
Cellwood Machinery AB	Develops, manufactures and supplies machinery and systems for pretreatment of organic waste by superior dissolving and reject separation	Sweden	www.cellwood.se
Chinese Academy of Agricultural Mechanization Sciences	Provides straw balers, cotton stalk harvesters, straw cutting-rubbing equipments, biomass gasification technology and equipments, and the resource utilization technology of the farm & livestock wastes	China	www.caams.org.cn
Clearfleau	Supplies anaerobic digester systems	UK	www.clearfleau.com
Colsen	Operates in the water, energy and environment sector	Netherlands	www.colsen.nl
CTU- Concepte Technik Umwelt AG- Clean Technology Universe	Dynamic enterprise with vast experience in the fields of thermal waste treatment, waste gas cleaning and energy production from biomass	Switzerland	www.ctu.ch
DH Industries	Offers cryogenic services, engineering and equipment	Netherlands	www.dh-industries.com
DMT Environmental Technology	Experienced in the field of biogas upgrading. The company applies advanced membrane technology and delivers innovative technologies for desulphurization and water treatment	Netherlands	www.dmt-et.nl
Doppstadt Calbe GmbH	Manufactures feedstock pre-treatment technology and separation equipment	Germany	www.doppstadt.com
Dorset Green Machines BVDorset Group BV	Manufactures the belt dryers and produces anything from plug-and-play container solutions up to complete organic fertiliser factories	Netherlands	www.dorset.nu
Dreyer and Bosse Kraftwerke GmbH	Manufactures biogas cleaning and upgrading equipment and CHP engines	Germany	www.dreyer-bosse.com
DSM Bio-based Products & Services B.V.	Experience in fermentation technology, optimally use the "reactor" to create maximum output. Actively working on major innovations in the biomass utilisation towards renewable fuel or bio-based chemistry	Netherlands	www.dsmbiogas.com
Ecogas GmbH	Offers turnkey biogas plants	Germany	www.ecogas-gmbh.de
EConvert Water & Energy	Designs and implements technology for the treatment of industrial wastewater and biogas	Netherlands	www.econvert.nl
Eggersmann Group	Supplies anaerobic digester systems, digestate treatment and handling, instrumentation, monitoring and control	Germany	www.f-e.de
ElectraTherm Inc	Provides small-scale waste heat recovery systems	USA	www.electratherm.com
Eliopig S.r.l.	Offers turnkey biogas plants	Italy	www.eliopig.it
Eneco	Manufactures and supplies plant components. Provides control and instrumentation systems, gas control systems, connection to gas grid	Netherlands	www.energytradeuk.eneco.nl
Ennox Biogas Technology	Manufactures cleaning and upgrading equipment, digestate treatment and handling equipment, gas storage and heat exchangers	Austria	www.ennox.at

### Weltec Biopower to build 800-kW biogas plant in Colombia

Germany-based biogas technology provider Weltec Biopower GmbH has announced it has received an order from Colombia. The 800 kW biogas plant will be supplied to the country's largest egg producer, Incubadora Santander, with plant start-up expected in early 2017. The value of the deal remains undisclosed.

The order is a first for Weltec in Colombia and it's second to Latin America; in 2013 it supplied an 800 kW biogas plant to a major dairy farm with own dairy and milk powder production in Uruguay. Incubadora Santander operates several poultry farms close to the western Colombian province of Cauca producing around 3.5 million eggs a day that are sold in 14 cities around the country. The company plans to co-digest dry chicken manure from the laying hens with pro-

cess water from the production without using any additional substrate or feedstock.

According to Weltec the feedstock will be pre-treated in a sedimentation tank to remove sand and lime from the manure before being pumped into a 4 903 m3 digester via a 1 076 m3 intermediary storage unit. Stainless steel will be used in the storage tanks and digester. The digestate will be used as liquid manure on the farm's own fields.

The Colombian government has a target to increase the share of renewable electricity in the main power grid, Sistema Interconectado Nacional (SIN), to 6.5 percent by 2020. According to a Germany Trade and Invest (GTAI) report from January this year, the potential for biomass-derived energy is estimated to be 16 GWh



annually with the agricultural sector a producer of significant quantities of unutilised by-products and residuals.

B188/5430/AS

COMPANY	COMMENTS	COUNTRY	WEB
Enspar Biogas GmbH	Delivers complete biogas plants	Germany	www.enspar.de
Entec Biogas GmbH	Manufactures anaerobic digester system, biogas cleaning and upgrading equipment, digestate treatment and handling. Offers engineering and process consultancy	Austria	www.entec-biopower.at
Envitec Biogas AG	Provides systems for production of biogas - including the planning and turnkey construction of biogas plants as well as their commissioning	Germany	www.envitec-biogas.de
Envor Protech OY	Offers solutions for industrial scale anaerobic digestion processes	Finland	www.envorprotech.fi
ETW Energietechnik GmbH	Supplies solutions for combine heat and power (CHP) and biomethane plants	Germany	www.etw-energie.de
Eurotec WTT	Planners and manufactures of biogas plants, plants components and consulting	Italy	www.eurotecwtt.it
Evonik Fibres GmbH	Manufactures and supplies plant components: gas cleaning gas processing, gas upgrading and separation systems	Austria	www.evonik.com
Exergyn	Manufactures CHP engine, ORC systems	Ireland	www.exergyn.com
Extech GmbH	Provides biomass gasifiers and biogas plant components	Germany	www.extech-de.com
Farmatic Anlagenbau GmbH	Provides an alternative to conventional waste disposal for agricultural organizations, as well as industry and local authorities	Germany	www.farmatic.com
Feniks Pro d.o.o	Creates a uniform system, to monitor and manage the facilities from one place	Slovenia	www.feniks-pro.com
Flexenclosure AB	Designs and manufactures a prefabricated modular data centres and intelligent power management solutions	Sweden	www.flexenclosure.com
Fraunhofer UMSICHT	Supplies biogas cleaning and upgrading equipment, pre-treatment of feedstock technology	Germany	www.umsicht-suro.fraunhofer.de
Gazpack	Develops a unique system for upgrading biogas to green gas. The patented system is unique in its kind. It produces no waste, all outputs of the process are reusable	Netherlands	www.gazpack.nl
GE Energy Jenbacher gas engines	Manufacturers of gas-fueled reciprocating engines, packaged generator sets and cogeneration units for power generation	Austria	www.gejenbacher.com
GM Green Methane Srl	Manufactures biogas cleaning and upgrading equipment	Italy	www.gm-greenmethane.it
Green Gas International B.V	Experienced in gas drainage, conversion, treatment and management from various sources such as coal mines, landfills, waste water and biogas facilities	Netherlands	www.greengas.net
GreenWatt S.A.	Designs and installs on-site biomethanisation plants fully adapted to farming and agribusiness needs	Belgium	www.greenwatt.be
Hennlich s.r.o.	Offers energy chains applications, plant dedusting solutions and more	Czech Republic	www.hennlich.cz
Hitachi Zosen Inova AG	Delivers complete turnkey plants and system solutions for energy recovery from waste	Switzerland	www.hz-inova.com
Honeywell International Inc.	Power generation experience. Delivered control systems and services to power generation facilities	Finland	www.honeywell.com
Host Bio-Energy Installations	EPC supplier of (waste) digesters, waste pre-treatment (thermal hydrolysis), biogas upgrading systems, digestate treatment, biomass fired boilers and biomass CHP's	Netherlands	www.host.nl
HRS Heat Exchangers Ltd	Manufactures dewatering equipment, heat exchanger, offers engineering consultants	UK	www.hrs-heatexchangers.com
IES Biogas s.r.l	Plannes and manufactures of biogas plants. Offers full-system supply and turnkey plans	Italy	www.iesbiogas.it
Jones Celtic Bioenergy	Supplies anaerobic digester systems, biogas cleaning and upgrading equipment	Ireland	www.joneseng.com
Kinetic Biofuels A/S	Offers a new patented (patent pending) 2'nd Generation technology using mainly straw briquettes as raw material enabling biogas producers to more than doubling the biogas production in existing and new biogas plants. Total briquetting lines from 1,5 to 10 tons per hour can be delivered	Denmark	www.kineticbiofuel.com
Kirk UK	Supplies anaerobic digester systems and tanks	UK	www.kirk-environmental.com
KIS Group	Offers sustainable green technologies for developing biogas and biomass projects	India	www.kisgroup.net
LJM Lind Jensens Maskinfabrik A/S	Manufactures mixer/stirrer for biogas plants for handling slurry and fluids	Danmark	www.ljm.dk
Lukeneder GmbH	Manufactures biogas cleaning and upgrading equipment, offers biological optimisation, technology for feedstock	Germany	www.lukeneder.de
Lundsby Bioenergi A/S	Delivers complete biogas plants	Denmark	www.lundsby.dk
Malmberg Gruppen AB	Environmental technology company in the field of biogas, geoenery, water treatment and drilling	Sweden	www.malmberg.se
Mavitec Green Energy	Manufactures odour control equipment, separation equipment and more	Netherlands	www.mavitec.com
Megtec Systems Inc.	Gobal design, engineering, and manufacturing company providing industrial products and services to a diverse customer base serving a wide variety of market sectors	USA	www.megtec.com
MT-Energie Biogas Technologie	Plannes and manufactures biogas plants, arranging permitting, construction and commissioning support, full-system suppliers of turnkey plants	Germany	www.mt-energie.com
MTL Eaton (Crouse Hinds Group)	Offers accurate measurement and optimised production using user-friendly modular gas analyser for the biogas market	UK	www.eaton.com
Netzsch Pumpen & Systeme GmbH	Manufactures pumps for different industries	Germany	www.netzsch-pumpen.de
New Eco-tec Verfahrenstechnik	Manufactures dewatering equipment, offers digestate treatment and handling equipment	Germany	www.new-eco-tec.com
Paques BV	Supplies anaerobic digester system, biogas cleaning and upgrading equipment, liquor treatment	Netherlands	www.paques.no
Parker Hannifin Manufacturing Germany GmbH&Co.KG	Develops, manufactures, applies and sales innovative technical solutions in air and gas filtration, drying, separation, cooling and purification sectors	Germany	www.parker.com/hzd
Pentair process Technologies	Manufactures biogas cleaning and upgrading equipment, membranes, valve and separation equipment	Netherlands	www.pentair.com
PlanET Biogas Solutions, Inc	Specializes in the design, construction, and service of advanced biogas plants	Canada	www.planet-biogas.ca
PlanET Biogastechnik GmbH	Offers core competence in the construction of biogas plants, control techniques, and the construction of solid supply insertions	Germany	www.planet-biogas.com
Pöttinger Entsorgungstechnik GmbH	Offers Mobigas modular biogas systems	Austria	www.poettinger-oneworld.at
Ramboll Group A/S	Offers energy consultants, engineering consultants, environmental consultants, process consultants, project management consultants	Denmark	www.ramboll.dk
Renecon Energy	Offers energy consultants and trainings	Nigeria	www.reneconenergy.com

COMPANY	COMMENTS	COUNTRY	WEB
Renegon International AG	Offers design, engineering, construction and operation of biogas plants by means of anaerobic solid-state digestion and waste management & energy concepts	Switzerland	www.renegon.com
Revis Bioenergy GmbH	Offers crop operations, farm waste operations, planning consultants	Germany	www.revis-bioenergy.de
Rotaria Energie -und Umwelttechnik	Offers waste water treatment and biogas plant engineering and building	Germany	www.rotaria.com
RWL Water Italia	Supplies anaerobic digester systems, heat exchangers, instrumentation, monitoring and control, mixer/stirrer and pipes	Italy	www.rwlwater.com
Sandfirten Technics B.V.	Supplier of natural gas and biogas engines based on Scania and AGCO Power	Netherlands	www.sandfirten.nl
Scandinavian Biogas Fuels AB	Designes and operates biogas plants	Sweden	www.scandinavianbiogas.se
Schaumann BioEnergy GmbH	Manufactures and delivers turnkey biogas plants	Austria	www.schaumann-bioenergy.eu
Schmack Biogas AG (Viessmann Group)	Plans and constructs biogas plants optimised for the fermentation of renewable materials	Germany	www.schmack-biogas.com
Schnell Zündstrahlmotoren AG & Co. KG	Manufactures CHP engines	Germany	www.schnellmotor.com
Serge Ferrari	Supplies plant components	France	www.sergeferrari.com
Seva Energie AG	Supplies co-generation units in power range between 75 and 2 000 kW electrical output	Germany	www.seva.de
Strabag Umwelttechnik GmbH	General contractor and technology provider for anaerobic dry and wet digestion as well as aerobic composting, biological drying and RDF production	Germany	www.strabag-umwelttechnik.com
Stream BioEnergy	Develops the crops, farm waste, food waste	Ireland	www.streambioenergy.ie
Streisal GmbH	Develops, manufactures and globally markets innovative agitators and mixing systems for biogas plants, wastewater technology and industrial applications	Germany	www.streisal.de
Three Es S.r.l.	Provides technology for the pretreatment of every kind of biomass for biogas plants	Italy	www.biospr.it
Thöni Industriebetriebe GmbH	Manufacturer and supplier of AD plants for the anaerobic treatment of organic waste and agricultural by-products	Austria	www.thoeni.com
Tianjin Hi-Tech Enterprise co., Ltd	Designes and manufactures the technology for biogas plants	China	www.tj-hitech.com
TNO Energy	Works on the entire biogas value chain from biogas production, upgrading, transport, distribution and valorization	Netherlands	www.tno.nl
Triogen NL	Manufactures CHP engines, ORC systems, offers energy consultants	Netherlands	www.triogen.nl
University of Rostock Institute for Biogas, Waste Management and Energy	Conducts scientific analyses, provides expert advice, undertakes development work, compiles appraisal reports on technical and economic concepts, as well as engaging in knowledge transfer	Germany	www.biogasundenergie.de
Wackerbauer Maschinenbau	Manufactures feeding equipment, offers pre-treatment of feedstock technology and separation equipment.	Germany	www.wackerbauer.net
Valmet Corporation	Global developer and supplier of services and technologies for the pulp, paper and energy industries	Finland	www.valmet.com
Weltec Biopower GmbH	Provider of turnkey biogas and biomethane plants made from stainless steel (waste to energy, wastewater water treatment plants and agricultural plants) with references in 25 countries	Germany	www.weltec-biopower.de
Veolia Biothane	Biothane is the anaerobic treatment brand of Veolia Water Technologies and is one of the world's leading companies in the field of biological treatment of industrial wastewater	The Netherland	www.biothane.com
Vitkovic Machinery Group	Engineering group with a strong position in selected segments of machinery production	Czech Republic	www.vitkovic.cz
Vogelsang Maschinenbau GmbH	Manufactures pumping, grinding and spreading technology for the municipal, industrial and agricultural markets around the world	Germany	www.vogelsang-gmbh.com
Wuhan Cubic Optoelectronics Co.,Ltd	Designes and manufactures infrared flue gas analyzer, infrared syngas analyzer, infrared biogas analyzer and automobile exhaust gas analyzer	China	www.gassensor.com.cn
Wärtsilä Corporation	Develops and supplies gas handling and liquefaction technology	Finland	www.wartsila.com
Xebec Adsorption Inc	Designes and builds biogas upgrading plants for landfill gas, waste water treatment and anaerobic digester gas	Canada	www.xebecinc.com
Xylem Water solutions AB	Supplies plant components: offers substrate preparation and processing, stirring and pump systems	Sweden	www.xylemwatersolutions.com
Zorg Biogas AG	Offers engineering services and construction of biogas plants	Switzerland	www.zorg-biogas.com

# REVISED EEG TO RESUSCITATE GERMAN BIOGAS

2015 was the slowest year yet for biogas in Germany. The adoption in July of the revised Renewable Energy Sources Act (EEG) resuscitates hope in bucking the slowdown.

ACCORDING TO THE MOST RECENT data released by the German Biogas Association (Fachverband Biogas e.V.) 150 biogas plants came on stream in 2015, of which 130 were new plants. Among these 150 operations, more than 130 were small manure-based plants. The remaining operations included biomethane to grid injection, waste fermentation plants and onsite agricultural electricity generation facilities.

**Slow pace**  
While the number of plants did increase, it is a factor ten less than the 1 476 new plants installed in 2011. Furthermore the average size of the facilities installed during 2015 was small, adding a total of 23 MW renewable energy generation capacity. This is the lowest annual increase since the Renewable Energy Sources Act (EEG) was first adopted in 2000.

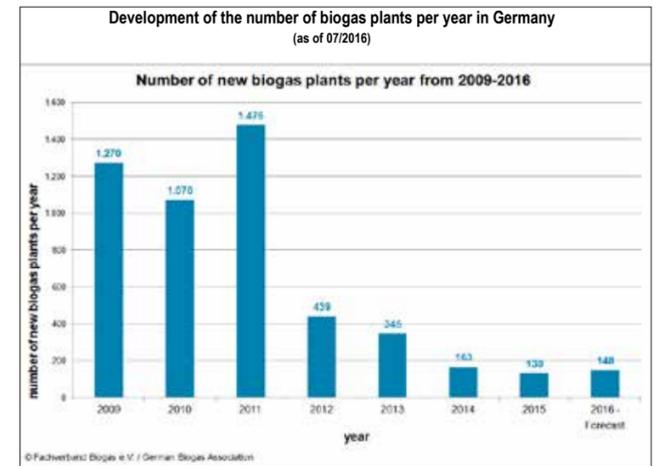
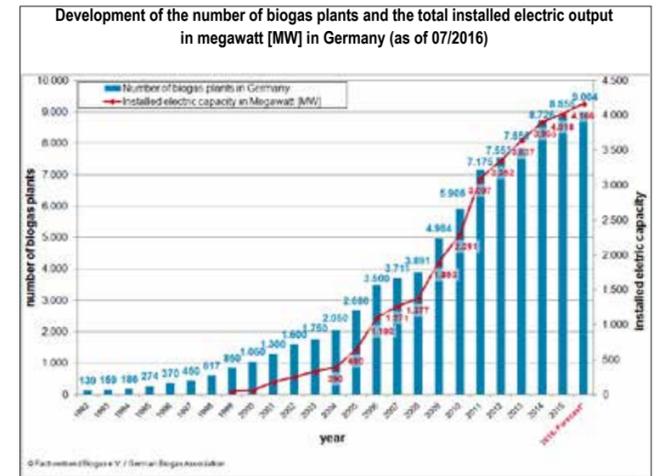
– The current Renewable Energy Sources Act has created extremely poor conditions for the biogas industry in Germany. As a flexible complement to wind and solar plants, biogas power for safe and stable renewable energy supply is essential, said Claudius da Costa Gomez, General Manager of the German Biogas Association.

**4 GW installed capacity**  
The cumulative total installed capacity of 8 856 biogas plants installed over the period 1992 - 2015 amounts to just over 4 GW. About eight million households are supplied with electricity from biogas. In addition to the 23 MW of added electrical output, existing plants

have added storage facilities to increase plant performance by an additional 100 MW.  
When electrical demand is high and/or there is low power generation by wind and solar plants, the biogas plants can boost production. On sunny and windy days, or days of low electrical demand, gas can be stored for future use. Together, this results in additional power grid generation of 123 MW.

**Revised EEG from 2017**  
For 2016, the German Biogas Association predicts around 26 MW of new energy capacity will be added. As in 2015, the association expects the plants to be small manure-based plants, as well as some biomethane grid injection systems all suggesting a slight increase in activity bucking the downward trend.

An underlying factor is the revised EEG that was adopted in July and comes into force 2017. It provides owners and investors with a degree of policy certainty. Instead of fixed remuneration like a feed-in tariff (FiT), the lowest bid wins. However, there are maximum bid prices: For existing installations this is EUR 0.169/kWh and for new plants at EUR 0.1488/kWh.  
The annual cap is set at 150 MW electrical capacity from 2017 to 2019, increasing to 200 MW per year from 2020 to 2022. Even in existing plants where the EEG current FiT is about to expire, continued operation of the plant can be expected through the successful participation in a tender.  
For existing installations small-



er than 150 kW a special rule is in place. Small slurry systems below 75 kW and waste fermentation installations do not have to participate in the tender and still get the fixed remuneration.  
– Biogas has an important function as a storable energy source for reliable provision of electricity, as a heat source, for the creation of nutrient cycles with organic waste and for the regional value. With the

2017 EEG, we hope the current stagnation of the German biogas market can be overcome, so we can see more new investments, maintenance of existing assets, and expanded production that can be made more flexible, ended da Costa Gomez.

*Text: Alan Sherrard  
Illustrations courtesy  
Fachverband Biogas e.V.  
B188/5419/IAS*



## “Piccolo” plant for pig and poultry poop

Germany-headed biogas technology developer and supplier, EnviTec Biogas AG has commissioned its 45<sup>th</sup> biogas plant in Italy. The new 99 kW “piccolo” sized plant has just started to feed into the power grid in the town of Gradisca d’Isonzo in northern Italy. The facility consists of a mixing tank, a digester and two digestate tanks along with a compact combi-

ned heat and power (CHP) unit and is owned by Antonio and Francesco Bressan, two farmers who breed pigs and manufacture animal feed. The plant will use around 13 000 tonnes of pig slurry and 900 tonnes of poultry litter per annum.  
– The Italian government made sweeping changes to the market back in 2013. With a reduced maintenance component in biogas plant input and a higher feed-in tariff for a small compact plant, the Bressan’s investment makes the most of the

benefits of the Renewables Decree, said Lars von Lehmden, Managing Director of EnviTec Anlagenbau GmbH, the construction subsidiary of EnviTec Biogas.  
Deploying a modular container system means plants can be installed and brought online very quickly, and according to the company, is a key reason why it has a prominent position on the Italian market.

*B188/5452/IAS*

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