



Technology Collaboration Programme  
by IEA

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## Newsletter IEA Bioenergy Task 37: 04/2021

### Biogas development

#### **Task 37 Workshop, April 15, 2021: Biomethane - Timely solutions for implementation and use**

Biomethane is a central element of future circular economy systems producing energy on demand. It is possible to use established combustion systems and existing infrastructure, such as the natural gas grid or natural gas storage facilities. Hydrogen may be added to biomethane in existing natural gas infrastructure allowing for renewable and green gases to satisfy hard to abate sectors. Biogas also has a role in electro-fuel systems whereby hydrogen produced from electrolysis of variable renewable electricity may be converted to renewable methane and to liquid fuels such as methanol.

The virtually held workshop organized by Task 37 will take place on April 15<sup>th</sup> from 9.00 to 16.00 CET and is free of charge

**Registration:** [register.biomethane@boku.ac.at](mailto:register.biomethane@boku.ac.at)

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#### **48 biogas plants produce biomethane in a centralized upgrading plant**

With a newly built biogas pipeline, the joint venture "Biogaspartner Bitburg" will bundle the raw biogas deliveries of up to 48 biogas plants from the region. Since May 2020, the gas has been transported in the 45-kilometer-long pipeline to a central processing plant at the Bitburg Airport commercial, service and leisure center. There it is upgraded to natural gas level and fed into the gas grid as biomethane. The plant network has a total potential of around 10,000 cubic meters of raw biogas per hour - which corresponds to an annual volume of around 64 million kilowatt hours. This volume can cover a good third of the annual natural gas requirements of the nearby district town of Bitburg (14,000 inhabitants). Since May 2020, an initial seven plants have been delivering their biogas to the processing plant. The gas mixture is separated by means of Pressure Swing Adsorption (PSA).

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#### **Industrial waste water has a high energy potential**

Industrial waste water, especially from the food industry and partly from the chemical industry, is rich in microbiologically easy degradable organic substances. Anaerobic digestion offers an excellent opportunity to break down this organic load and produce a high-quality, renewable gas. This biogas can be used directly to generate process energy, whether for steam, heat and electricity or fuel. A study by the Swiss Biogas Association commissioned by the Swiss DOE calculated that there is a potential of 660 GWh of biogas from industrial wastewater in Switzerland. Only 74 GWh of this is actually used today in a total of 23 plants, i.e. only around 11 percent of the potential. In the EU, the anaerobic treatment of wastewater in food processing companies is used extensively, especially in France and Germany. This brochure is intended to motivate the management and environmental managers of industrial companies to study the pretreatment of organically contaminated wastewater by means of anaerobic treatment in greater depth. Using examples of very different industrial companies, it is shown that

wastewater treated with different types of plants leads to sustainable success (economically, ecologically and socially). The food, chemical and paper industries are important branches of industry in Switzerland and, with their size, can set an important example for the substitution of fossil process energy by the use of CO<sub>2</sub>-neutral energy. And they can also save money. The brochure is available in [German](#) and [French](#).

### **Vow ASA, ArcelorMittal partner on 'ground-breaking' biogas project**

Vow ASA, a specialist provider of decarbonisation technology and ArcelorMittal, a major steel and mining firm, have partnered to build a biogas plant in Luxembourg that will reduce CO<sub>2</sub> emissions produced during the steelmaking process. The biogas will be made using Vow's patented 'Biogreen' pyrolysis technology, which involves heating sustainable biomass at high temperatures. The gases emitted during this process are then captured and processed into biogas, which will directly replace the use of natural gas in the Rodange plant's rolling mill reheating furnace. By-products such as bio-coal will also be created during the process, and re-used within ArcelorMittal, directly replacing coal.

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### **Former WWTP transformed into bioenergy park in Bundaberg, Australia**

The Bundaberg bioHub industrial park in Queensland, Australia, formerly a decommissioned wastewater treatment plant (WWTP), has opened its doors to prospective bioenergy, food, and fertiliser industry tenants. Bioenergy developer Utilitas Group partnered with Bundaberg Regional Council to purchase the former East Bundaberg WWTP to create an industrial park focused on renewable natural gas (RNG), biomethane, and hydrogen. Utilitas Group and local gas network owner AGIG are jointly assessing the feasibility of green gas from the Bundaberg bioHub going into the Bundaberg gas distribution network via a new connection.

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### **A perfect integrated €11m biomethane plant goes live in France**

The German energy plant manufacturer rolled out the project with Agripower France, a local firm that comprises 40 operations across the agricultural value chain. The plant, near the town of Vire, processes around 70,000 tons of substrates to produce biogas, which is then processed to biomethane. The raw material mix used in the plant is gathered from a 7-kilometre radius of the plant, consisting of inexpensive waste and other by-products from the agriculture and food industry.

Two-thirds of the 200 tons of input substances needed daily consist of animal waste such as cattle and pig manure and liquid slurry. Whey, sludge, and abattoir waste from food operations and a pet food manufacturer belonging to Agrigaz account for another 20%. The rest is made up of maize, grass, whole plant silage, straw, and grass silage. Every hour, 270 standard m<sup>3</sup> of green biomethane are fed into the public gas grid for use as an energy source or as an alternative fuel throughout France. The plant is supplied with exhaust heat from a pet food manufacturer only 500m away, whose production process delivers enough heat for the hygienisation required for some of the substrates. Using heat pumps, the energy from the exhaust heat can be recovered and used to produce heat at a higher temperature level. The 24 heat pumps with a capacity of 50 kW each, all substrates except for the re-growing raw materials can be treated for one hour at 70°C in three hygienisation tanks. By contrast, the digesters do not need to be heated very much, as the hygienised input substances already have the temperature level required for the digestion process.

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### **Record number of homes in North of England receive renewable gas**

A record number of homes in the North of England were fueled by biomethane in 2020. According to figures compiled by Northern Gas Networks (NGN), the amount of biomethane produced increased by

nearly 50% compared to 2019, meaning more homes than ever received renewable gas (50,000 homes equivalent). The rise was due to an increase in the number of biomethane connections at locations across our region including Durham, Leeds, Middlesbrough, and Gateshead. NGN first accepted biomethane into the gas grid in 2014 and since then the quantity of gas has increased year-on-year. In the last 18 months, the number of biomethane producers connected to the grid has increased from 10 to 17, which has boosted production. In June 2020, the UK committed to reaching net-zero emissions by 2050. Currently, around 85% of UK homes are connected to the gas grid, with domestic heat responsible for around 30% of CO2 emissions. Biomethane can play a vital role in helping to cut emissions.

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### **System integration: biogas plant to power wind blade manufacturing facility**

Black Dog Biogas, the owner and operator of an anaerobic digestion (AD) plant near Newport on the Isle of Wight will supply renewable electricity to Vestas, a wind blade manufacturing facility. facility employs more than 600 people and produces 80m-long blades for the installation of offshore wind projects globally, particularly in the UK. Black Dog Biogas generates sufficient power to supply around 80% of Vestas' needs, as well as around 1,200 homes on the Isle of Wight.

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### **Cologne will collect waste with biogas vehicles**

As part of a quiet, low-emission, CO2-neutral transportation logistics system, around 100 commercial biogas vehicles will be in service in the German area of Cologne in the coming years. This was announced by the project partners, the city of Cologne waste management company (AWB), AVG Kompostierung GmbH, GVG Rhein-Erft, REMONDIS Rheinland and RheinEnergie AG. The construction of a new biogas filling station in the north of Cologne has now marked the beginning. Calculated over a 15-year operating time, the project partners estimate that the biogas station will save around 31,000 tons of greenhouse gases. Fine dust emissions will be reduced by almost 95% and noise emissions will also be reduced by 5 decibels compared to conventionally powered vehicles. At AWB, sustainable propulsion technologies have long been the focus. Sweepers with electric or natural gas motors are already used for city cleaning. Currently, electromobility is out of the question in the heavy commercial vehicle sector, as suitable units that are ready for series production are not available on the market.

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