

Newsletter IEA Bioenergy Task 37: 10/2019

Promotion and improvement of biomethane production

Biomethane cultivates its positive externalities

The French biomethane sector is convinced about the positive externalities of biomethane. It therefore promotes the many direct and indirect benefits as well as the economic, agronomic and ecological advantages over the fossil fuels. And the list is long: fight against water pollution, reduction of greenhouse gas emissions, organic fertilizer inputs, soil cover, changes in agricultural practices, etc. Enea Consulting reviewed in a scientific work the externalities associated with biomethane production and concluded that the additional benefits of biomethane - in addition to the energy produced - would amount to 55 to 75 Euros per MWh by 2030. Next to Enea, INRA is studying the LCA of agricultural biomethane on behalf of GRDF. First results are already convincing.

[More](#) (in French only)

Regulations and subsidies of biomethane in France

During a meeting of the biomethane working group of Club Biogaz ATEE, Marie Verney, lawyer at the association, gave an overview on the rather complicated legislation of biomethane injection and compensation in France during a workshop organized by AMORCE comparing the situation in 2018 with 2019. The presentation is in French only.

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Biogas18 - Greening the gas

The Austrian Biogas18 congress, which took place this year in Linz, was all about biomethane. Biomethane plays a special role in the future Austrian energy system due to its cross-sectoral applications. This has also been recognized by the government and given high priority in “#mission2030 Biogas”. The consensus is that there is still considerable potential for expansion, but that there are also many possible applications. Energy storage in the form of biogenic waste from industry and residues from agriculture on the raw materials side and biomethane in the gas network on the logistics side were also highlighted as a special capability. The contributions can be downloaded for free (in German only)

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Gas upgrading with ionic solutions consumes less energy

There are at least four basic methods to upgrade biogas to biomethane. They all use energy either in form of heat and or electricity. Gas scrubbing is currently the most widely used process for processing raw biogas. A research team from the Engler-Bunte-Institut in Karlsruhe, Ionic Liquids Technologies GmbH from Heilbronn and Powerfarm Bioenergie GmbH from Tübingen has now successfully demonstrated the use of ionic liquids as washing media in a biogas plant. In the newly developed a new washing process, where the absorption of CO₂ takes place at almost the same temperature (60-80°C) as the subsequent recovery (regeneration) of the washing liquid. The regeneration process no

longer requires external heat. This saves energy and lowers costs compared to conventional gas treatment concepts.

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Biomethane from P2G in demonstration scale

27 project partners from six European countries are further developing the P2G technology in the Horizon 2020 project STORE&GO. Three different technologies are tested in Germany (Falkenhagen, Brandenburg) with an alkaline electrolyser and an isothermal catalytic P2G technology (1 MW_{el}), in Italy (Troia, Apulia) with a PEM electrolyser and a modular milli-structured catalytic P2G technology (200kW_{el}) and Switzerland (Solothurn) with a PEM electrolyser and a microbial methanisation (700kW_{el} peak power). The latter is a fully integrated plant with connection to a water, heat, gas and electricity grid. Hydrogen is produced from solar energy and directly fed into the gas grid or used in P2G with CO₂ from industry or ambient air.

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The RNG Coalition promotes state and provincial policies for RNG in California

California is one of the USA States with the most ambitious decarbonisation goals by reducing CO₂ emissions completely by 2045. For this reason, there are numerous federal, state and provincial policies that incentivise the production of renewable natural gas (RNG), many of which have come about as a result of the work of associations such as the RNG Coalition which promotes the development, use and diffusion of RNG throughout North America.

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Efficient fine tuning of Power2Gas with trickling filters

The Pirmasens research institute (PFI) having a long experience in biological methanation and Power2Gas technology (P2G), implemented a demonstration plant in the Pirmasens Energy Park. Using the trickle current reactors developed by PFI, the CO₂ content of the biogas from PFI's own biogas plant together with hydrogen is converted into feedable natural gas with up to 99 percent methane content and fed into the natural gas network since the end of 2016. The initial focus here was on further increasing productivity in biological methanation through a newly developed growth medium for the production strains. Recently, the PFI researchers were able to show that the redox potential of the medium has a significant effect on the conversion rates of the bacteria. These findings were incorporated into the development of new media variants to increase cell density and productivity. (in German only)

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