

**Title**

Green Hydrogen from Biogas by Steam Reforming

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**Abstract**

Steam reforming has been used for decades for the large-scale production of hydrogen from natural gas. In the meantime, the process is also economically scalable downwards. The production of hydrogen from biogas faces further technical challenges due to various aspects (CO<sub>2</sub> content, impurities) and has so far only been carried out on a laboratory scale. Large-scale plants have been uninteresting in this sector so far, as the remuneration offered a good model for operating biogas plants and hydrogen was not required on a nationwide or decentralized basis in large quantities. With the upcoming market for hydrogen as a fuel, a lever has now been set which, especially now at the end of many remuneration contracts, provides a new opportunity for the continued operation of biogas plants. Biogas upgrading, steam reforming and the separation of hydrogen from mixed gases are based on proven technologies as individual processes, but an economical combination of the individual steps has not been carried out on a real scale to date. So far available plant technologies are based on the upgrading of biogas to biomethane and the subsequent reforming by means of conventional natural gas reformers.

Content of the presentation is the process of direct steam reforming of biogas with chemical and thermodynamic aspects and the current developments for the construction and operation of a 100 kg/d pilot plant in the BMWK funded project BioH<sub>2</sub>Ref.

General information on the technology and process engineering as well as results and conclusions of the research project are shown.