



GSYF – Equipamentos para Energia, Lda

Production of Fuels from electricity- A Technology Breakthrough

GSYF, Equipamentos para Energia, a Portuguese SME start-up, announces that it has succeeded in the **production of Synthetic Gas (SynGas)** through an innovative electrochemical technology, **GreenSynFuel**, based on electricity and carbon. Tests performed by LNEG and ISEL using experimental electrolysers supplied by GSYF validated this electrochemical process to produce SynGas; the composition of the Gas is suitable to the production of Natural gas and Methanol. (*SynGas is the raw material to produce synthetic hydrocarbons. Depending on the catalyst and operational parameters (temperature and pressure) Methane (Natural Gas), Methanol, Diesel, DME or any other fuel can be obtained*).

The storage of Renewable electrical energy and grid stabilization are well-known restrictions to a larger penetration of this clean energy supply in the electrical basket. Future electrical grid is being planned to integrate adequate storage capabilities to assure grid stabilization, otherwise EU Low Carbon Plan (LCP) targets will be threatened and most probably not reached. **GreenSynFuel** is an electrochemical storage technology that solves the issue through the production of renewable synthetic fuels, similar to biofuels, which can be used in mobility. **GreenSynFuel** technology has the potential to become a technology breakthrough with a major contribution to the intended new energy paradigm based on intensive use of renewable sources. EU LCP targets can be easier achieved or even anticipated.

The technology is being developed by GSYF in partnership with other Portuguese companies and Research Institutions (ACR Energia, LNEG, ISQ, FEUP and ISEL) and is being financed by national funds to innovation, through QREN/COMPETE. After this well succeeded phase the consortium is now focused on the production of Natural Gas and Methanol, and also on the scale-up of the technology to an industrial pilot of 1 kW to field tests (dead line for these tasks is next June). Commercialization of the technology is planned for 2016.

GreenSynFuel technology, patented by GSYF, is an innovative pathway to produce SynGas, converting renewable electrical energy and carbon in hydrocarbons (liquid or gas), through an electrochemical process, at low temperature (<70 °C) and pressure (<1 bar). This is a complete different approach regarding conventional thermic processes to produce SynGas (from biomass or coal), which operate at high temperatures (between 400°C and 800 °C) and pressures (>10 bar). These are highly complex plants which require heavier investments.

GreenSynFuel technology aims at huge and growing markets, embracing electrical energy storage, grids stabilization, synthetic fuels or electrification of isolated off-grid locations, contributing to a maximization of penetration of renewable sources and elimination of the dependence of fossil fuels. Economic forecasts point out the competitiveness of the technology facing current market solutions.

The GreenSynFuel technology will be world presented at EES Munich fair, (Electrical Energy Storage), next 10/12 June (Booth B1.175)

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