



Europe-wide test and demonstration circuit successfully finished

After a 2-year Europe-wide test and demonstration circuit, the PROGRASS mobile demonstration plant hibernated the current winter season 2011/12 at the research farm of the Faculty of Organic Agricultural Sciences (University of Kassel, Germany) close to Witzenhausen (Germany). The trip of the prototype started in 2010 in the Vogelsberg region (Germany), led to Estonia and to Wales, back to the Vogelsberg region in spring of 2011 and ended with a last stop in Estonia in the summer of 2011.



The prototype plant in winter

The Europe-wide tour allowed to demonstrate and research the IFBB-procedure in the field of practical application, even though the plant is still a prototype. The following advantages of this technology could be clearly revealed:

- The press fluid is easily digestible with high methane yields with short retention times;
- Combustion properties of the press cake are improved through decreased amount of minerals – the combustion properties of the produced solid grass fuels are comparable to mid-quality wood chips;
- Grassland management according to Nature conservation legislation was realized

Even though the PROGRASS-project will end in June this year the mobile demonstration plant and the PROGRASS-team stay prepared for further demonstration runs on demand of interested regions.



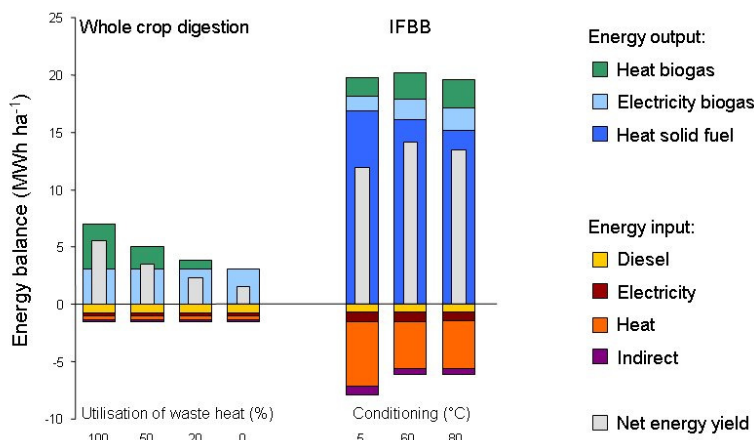
produced grass briquettes

Combustions properties of PROGRASS solid fuels comparable to wood chips

First results of scientific research with the IFBB prototype reveal that pre-treatment and mechanical dehydration lead to significantly improved combustion characteristics of the fuel. Dry matter content of the silage can be increased by 20 percentage points resulting in reduced heat demand for the drying process. Through the pressing procedure most of the nutrients detrimental to combustion can be reduced. In particular, ash softening and corrosion affecting elements like potassium and chlorine are decreased in the press cake. Ash softening temperature can be increased at roundabout 1200°C and also the heating value steps up to more than 18.5 MJ/kg dry matter. In addition, magnesium and sulphur are reduced. First combustion trials indicate that the incineration properties of the PROGRASS solid fuels are comparable to those of wood chips.

Better energy balance compared to “traditional” biogas plants for semi-natural grassland biomass

In the framework of the PROGRASS project extensive analyses of the biomass taken from the different European grassland sites have been carried out in order to calculate the energy balances. Looking at the overall efficiency, the IFBB system (right columns) obtains higher net energy yields compared to whole-crop digestion in conventional biogas plants (left columns), due to mainly thermal use of the fibrous biomass.



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The energy inputs are higher than those of a conventional biogas plant due to the mainly thermal use of the fibre-rich grassland biomass.

Main product is the solid fuel which is both storable and transportable.

Profitability of plant investment and positive socio-economic effects

Investment calculations related to an exemplary IFBB plant (electrical performance: 50 kW_{el}, thermal performance: 1 MW_{th}, investment costs: 1.7 Mio Euro, required grasslands: 500 ha) verify a profitable use of semi-natural grassland within the PROGRASS approach. The internal rate of return shows values of about 7.5 % depending on factors like increase of prices of fuels, yields of the grasslands, costs of substrates, labour costs, transport costs etc.

Regarding socio-economic aspects especially in areas less favourable for agricultural production, a decentralised energy generation using grass from semi-natural grasslands can provide alternative income for farmers in rural areas. In addition, the preservation of typical cultural landscapes – besides maintaining valuable habitats – may lead to a higher tourist attractiveness of the natural scenery.

Going for new regions

In 2012 our team plans to go for new regions that are interested in the PROGRASS approach to produce renewable and biodiversity protecting solid fuels from semi-natural grasslands. In particular regions with the following characteristics would fit:

- availability of extensively used semi-natural and/or nature protected grasslands (e.g. NATURA 2000 sites);
- biomass that is not longer used in traditional ways (e.g. grazing, cutting etc.);
- accessibility of sites with state of the art harvest machinery;
- interest of diverse stakeholders like politicians, regional administration, regional public in promotion of renewable energies;
- importance of biodiversity and open landscape for regional development (e.g. for touristy aspects);
- the availability of a biogas or sewage water plant with exceeding thermal energy would provide the option of an add-on concept for an IFBB plant to existing infrastructure

If you are interested please contact the PROGRASS-team (contact data see below).

Final Conference in Lauterbach, Germany

The final conference is scheduled for June 20th, 2012 in Lauterbach, Germany.

Two years ago, in March 2010, PROGRASS and the mobile demonstration plant were officially inaugurated in a one-day conference. This time the PROGRASS team will present the results of the PROGRASS project. Moreover, an excursion to the PROGRASS sites will be organised.



Inauguration event in Lauterbach, Germany

The PROGRASS-Consortium

- University of Kassel, Department of Grassland Science and Renewable Plant Resources and Department of Farm Management, Germany
- Government of the Vogelsberg Region, Lauterbach, Germany
- Institute of Biological, Environmental and Rural Sciences (IBERS), Aberystwyth, Wales
- Estonian University of Life Sciences, Tartu, Estonia
- Rheinische Friedrich-Wilhelms-Universität, Institute of Animal Science, Bonn, Germany
- blended learning institutions' cooperative blinc eG, Göttingen, Germany
- MAWERA/Viessmann Werke GmbH & Co. KG, Allendorf, Germany
- Hessian Ministry of the Environment, Energy, Agriculture and Consumer Protection, Wiesbaden, Germany
- BUPNET GmbH, Göttingen, Germany

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V E R S I T Ä T



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