bio GASMAX

Biogas as vehicle fuel - Market Expansion to 2020

This paper presents the case for an intensive research and demonstration programme to develop **biogas** as an alternative fuel for transport in Europe.

Background

The European Union is becoming more and more dependent on fossil fuels for its energy supply, and these are mostly imported from outside the EU. The combination of

- ➔ *continuing increases in energy demand*
- ➔ *instability of oil prices and*
- ➔ *emission of greenhouse gases caused by the burning of fossil fuels*

are causing high economic and ecological risks to society.

The European Commission is addressing these problems through a series of initiatives. In the framework of the *Commission's energy policy* a strong focus is on the *transport sector* which is almost *entirely dependent on oil.* A key policy aim in the short term is to increase the use of *motor fuels derived from renewable sources* as a substitute for fossil fuels, thus *reducing greenhouse gas emissions* and complementing initiatives to develop more energy efficient vehicles.

The role of Biofuels

In the Green Paper on the security of energy supply (COM/2000/769) the Commission suggests a target of 20% use of alternative fuels in road transport (including biofuels, natural gas, and hydrogen in the longer term). The specific EU directive on biofuels (2003/30/EC) sets a target of substituting 5,75% of petrol and diesel by biofuels by 2010.

Biofuel can be produced from a wide range of renewable sources. If the ambitious biofuels target is to be met, however, all types *of liquid and gaseous biofuels* must be deployed and *efficient technologies* for production, distribution and use need to be further developed. To assist this process, the European Commission is establishing an initiative called "*Biofuels City Partnership*" to bring together a number of research and demonstration projects dealing with liquid and gaseous biofuels within the context of the 6th Research Framework programme.

Why biogas?

Together with the liquid biofuels, biogas has the potential to *play a meaningful role* in reducing the reliance of the transport sector on fossil fuels yet still maintain individual and societal mobility, particularly in urban areas.

The *key to biogas* is that it is *renewable and sustainable*, within the limits of the very considerable volume and variety of feedstock sources. For *urban areas* these primarily comprise: *sewage sludge* from the water purification process; agro-food waste from the human food-chain and agricultural hinterlands; and municipal *organic waste.* Feedstock of these types is generally not used to produce biogas at the expense of another productive use, rather it is a supplementary. Therefore the use of such feedstock for biogas increases the energy efficient use of what would otherwise be a waste product with few other useful applications.

Another advantage of using biogas in the transport sector is that a wide variety of vehicles are already able to use natural gas (CNG), and this number is expanding. Building on the foundation of existing experience, technologies and CNG infrastructure could realise a *significant market penetration* of biogas in a relative *short timeframe* compared to liquid biofuels, therefore contributing to EC policy targets for biofuels as a whole with consequent benefits of energy security and environmental protection.

A major research project aiming at developing and demonstrating approaches and techniques to enhance the use of biogas in the urban transport sector has been proposed. A brief summary is attached

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Aims

The overall goal of the project is to reduce dependency on oil, reduce greenhouse gases and direct emissions through increased and more efficient production, distribution and use of biogas in the transport sector generated from a wide variety of feedstock available in urban areas and regions in Europe. BIOGASMAX adopts the well-to-wheel approach to identify the potential for efficiency gains and cost optimisation to ensure market expansion. BIOGASMAX anticipates making a strong response to the EU policy objective to replace 20% of petroleum-based fuels in the transport sector with 5 - 8 % biofuel, 10% natural gas, and 2% hydrogen by 2020.

This integrated project demonstrates exciting opportunities to address multifaceted urban problems associated with air pollution, water pollution and waste management. It does so by utilising a positive feedback mechanism, whereby biogas is produced from a variety of waste products that otherwise are difficult and costly to deal with, in order to produce an environmental friendly vehicle fuel.

During the 4-year life of the project, BIOGASMAX aims to:

- ➔ prove the technical reliability, cost-effectiveness, environmental and societal benefits of biogas fuels;
- ➔ perform large-scale demonstrations to optimise industrial processes, experiment and benchmark new and near-to market techniques and expand biogas fleets deploying various types of vehicles;
- ➔ identify and assess ways to remove technical, operational, organisational/institutional barriers, which can inhibit or prevent alternative motor fuels and energy efficient vehicles from entering the market;
- ➔ spread knowledge about experience and results to European cities and stakeholders with emphasis on New Member States (NMS), so as to enhance the market acceptance of biogas as an alternative motor fuel.

Partnership

BIOGASMAX brings together all relevant stakeholders from city and regional authorities, feedstock suppliers, technology providers from industry and SMEs, research partners and fleet operators thus composing a consortium geared to address the relevant issues of the project in the most efficient way. The cities, industrial and research partners committed to BIOGASMAX are among the most innovative in Europe in terms of alternative fuels and energy efficient vehicles, in particular the production of biogas for vehicle fuel.

Case Study Sites

The demonstrations will be undertaken by strong local teams in Lille Métropole Communauté Urbaine (FR), Göteborg (SE), Stockholm (SE), Haarlem (NL), Rome (I), and Zielona Góra (PL). BIOGASMAX involves extensive investment by the partners, is supported by a wide range of actors and focuses on integrated packages of demonstration measures. The project also involves training and dissemination activities in both the eastern and western countries.