



## **PROBIOGAS: Promotion of Biogas for Electricity and Heat Production in EU Countries** **Economic and Environmental Benefits of Biogas from Centralised Co-digestion**

*Project supported by the "Intelligent Energy-Europe" Programme of the European Community*

*July 2007*

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### **1. PROBIOGAS update**

#### **PROBIOGAS reached its final tasks**

The PROBIOGAS project reached its final phase, ending the 30 June 2007.

The project is considered to have a significant impact among the target groups and other biogas interested in Europe, reflected also by the number of public calls and references received during the project period.



A lot of activities were carried out and interesting results were obtained. Among these, the socio-economic, corporate economic and environmental effects of biogas from centralized co-digestion were assessed and monetized for the first time for six case study regions of Europe.

The assessment reports and more information about the project are available at the official web page of the PROBIOGAS coordinator- Bioenergy Department, University of Southern Denmark: [www.sdu.dk/bio](http://www.sdu.dk/bio). The web site will remain active until 30 June 2009.

#### **Dissemination of project results**

**The European Biogas Workshop "The Future of Biogas in Europe- III" was a success.**



The PROBIOGAS project organized a European Biogas Workshop the 14-16 June 2007 in Esbjerg, Denmark. The workshop was the 3<sup>rd</sup> in a series of successful biogas workshops, organized under this name by the Bioenergy Department at the University of Southern Denmark in Esbjerg. This year, the workshop presented, among other things, the main results of the assessment work of the PROBIOGAS project

as well as the evaluations of European biogas experts concerning the present, the main trends and the future of the Biogas in Europe.



Eighty-five persons from twenty-one countries attended the two days of oral sessions of the workshop and sixty of them joined the following day the study trip organized to biogas sites in Jutland, Denmark.



The proceeding report and the oral presentations as well as more information about the workshop and study tour are available at the web page of the Bioenergy Department, University of Southern Denmark: [www.sdu.dk/bio](http://www.sdu.dk/bio)

### **The PROBIOGAS project presented at the 15th European Biomass Conference**

The PROBIOGAS project and the results of the assessment work were the subject of an oral presentation made at the 15th European Biomass Conference held in Berlin in May 2007. The paper presentation can be downloaded at [www.sdu.dk/bio](http://www.sdu.dk/bio)

## **2. Interesting projects and news**

### **Sustainability of biomass**

The Dutch Minister of Environment has presented a letter on the sustainability of biomass. Introduction and implementation of criteria for the sustainability of biomass used for the production of electricity and bio fuels should have priority. These criteria will not affect the use of manure and organic waste in anaerobic digesters. The criteria will be applicable to specially produced energy crops for digestion.

### **Interim arrangement subsidising anaerobic digesters**

In June 2007 it became clear that 57 incentives for anaerobic digestion plants are selected and will be subsidised for the produced electricity. This special arrangement was made after stopping subsidising sustainable electricity in August 2006. Many farmers and project developers complained and the Dutch government decided to spend extra money for stimulating small scale anaerobic digesters (< 2MW electrical power output).

### **New system for financial support of sustainable energy in The Netherlands**

In August 2006 the Dutch government stopped subsidising sustainable electricity. In July 2007 the Dutch Administration decided to subsidise sustainable energy from the beginning of 2008. Apart from electricity produced from wind, solar, biomass (including anaerobic digestion) and combined heat and power generation (CHP), the production of upgraded biogas ("green gas") will be subsidised. This will probably give an impulse for new incentives for anaerobic digestion plants in The Netherlands. SenterNovem will support new developments of anaerobic digestion in The Netherlands and will disseminate the knowledge and lessons learned from the PROBIOGAS project.

### **A new legislation in Spain doubles the electricity fees coming from biogas**

With the aim to minimise CO<sub>2</sub> emissions and to promote renewable energies, in Spain a new legislation has issued (RD 661/2007, published on BOE on 26.5.07), which offers a new bonus for electricity generation using renewable energy, including the use biogas as a fuel. This bonus is guaranteed for 15 years. In fact, this new RD practically doubles the previous fee, for powers below 50 MW and

also for those larger than 50 MW, if they use co-generation or they use energy sources derived from wastes, which opens a large field for biogas technology in Spanish farms. With this new legislation the Spanish government intends to cover 12% of energy consumption in 2010, and to save more than 27 million tonnes of CO<sub>2</sub> this year.

This is very good news for the PROBIOGAS project in Spain, as the initial price foreseen of around 7 EUR/kWh reaches 14 EUR/MWh, which changes dramatically the feasibility of the CAD plant in the Pla d'Urgell case study. Thus, the estimated cash flow of the CAD was around - 400,000 EUR/year in the previous situation, whereas now, it can be estimated around + 600,000 EUR/year. As the overall investment is 6,650,000 EUR, the payback time of the plant is around 10 years. Although this figure is still too high for such a plant, if solutions are sought to use the excess heat, it will be possible to decrease this time and make fully attractive the CAD solution.

### **Opening ceremony of a new biogas unit in Wavre , Wallonia- Belgium**

In the 1<sup>st</sup> of June new biogas production installations were inaugurated in Wavre, in the Province of Brabant Walloon in Belgium. This small size biogas unit is located in the l'Hoste Farm and is the fruit of collaboration between Pr. Patrick Gérin, from the Bioengineering Department, faculty of Biology of the Catholic University of Louvain-la-Neuve (UCL), GreenWatt, a company developing its activities in biogas and CHP technology, and other private investors like Hydro-Chic producing vegetables. Regional authorities have supported the project through financial aids.

It is a new type of biogas plant in the Walloon region as it treats only vegetables wastes and plant residues without addition of manure. The plant operates in a 2-step process where

acidification phase and methanogenic stage occur in separate digesters. The biogas produced is used in a CHP-engine for electricity and heat production. 30% of the heat is used in the process and 70% is used to heat the farm and country lodges. This 2-step process allows a better regulation of the biogas production as it is easier to adjust according substrates availability or energy demand. The system is fully adequate to treat plant residues with acidifying profile, with low nitrogen content but rich in easily degradable carbohydrates. Maize silage, endives and chicory roots have already been tested in the new plant. Encouraging results have shown significant economic and environmental benefits as 1 ton of chicory roots produce biogas for a 50 litres of oil equivalent. According Hydro-chic Company, the process also delivers a good fertiliser for chicory production, and after using the digestate for hydroponics, the residue can be spread on fields for other crops.

As this small pilot-scale unit has demonstrated big potential for vegetable waste treatment and energy production, many food-industries could be interested in applying this process. GreenWatt that has designed the L'Hoste Farm plant plans to develop the concept to semi-industrial size.

### **Agricomethane project & workshop about energy crops for biogas production and digestate use**

Agricomethane project is developed in the framework of Interreg IIIA programme and is based on the collaboration between partners from 3 border regions. This project aims to promote the development of biogas production in farming sector in Luxembourg, in the Walloon Region in Belgium and in Lorraine in France. The project also tends to optimize biogas production in 3 farms from each region and develop activities to demonstrate benefits of renewable energy production in rural zones. On the 26<sup>th</sup> of June, the partners of Agricomethane organised a

workshop that focused on energy crops for biogas production and the use of digestate as a quality fertiliser. Around 40 persons from France, Belgium and Luxembourg have participated in the workshop. The oral presentations were followed by a visit of a Belgian biogas plant where new drying facilities had just been installed. The dryer investment is a profitable solution using the heat produced on site. It also allows an extra incomes from the additional green certificates the plant will receive through the fossil fuel substitution for drying. At first the dryer will be used to dry sawdust that can be sold for animal litter but in the future it could be used the dry digestate.

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### **Need for improved price for electricity from biogas in Denmark**

The whole biogas business in Denmark is keeping its breath as politicians, for some time now, have been negotiating an improved price for electricity from biogas. High priority has recently been given to biogas in Danish energy policy, so it is generally expected that an improved price will eventually be achieved. It is generally expected that improved electricity prices will renew the development of biogas in Denmark, which has been nearly halted for almost a decade, due to low electricity prices and other barriers. Many existing plants are likely to expand their treatment capacity and production. An increase in biogas production of 30% is actually possible according to plant manager reports.

Another severe barrier is the lack of public acceptance of biogas plants, due to fear of odours from the biogas sites. This problem is now being met by standard requirements for odour mitigation equipment in new plants.

One large farm scale plant has been implemented in the northern part of the country, built by Lundsby A/S ([www.lundsby.dk](http://www.lundsby.dk)). The special thing about this plant is that it is connected to a local district heating net.

### **Inauguration of the largest landfill in Europe**



Ano Liossia, Greece, was inaugurated the 19 June 2007 by the Greek Minister of Development.

The Landfill Gas Power Production Plant of 24 MW in



The co-generation plant in Ano Liossia consists of 11 power generation gen-sets with a total installed capacity of 13.8 MW. Start date of the commercial operation was in 2001 and the plant produces around 110,000 MWh per year that are fed into the national grid. The plant utilises the landfill gas produced by the waste, through a collection system of 350 wells.

The abovementioned power plant is currently in expansion, with the installation of 4 additional gen-sets with a total installed capacity of 9.7 MW (4x2.430 kW), in order to exploit the new part of Ano Liossia Sanitary Landfill. For that reason, a new landfill gas collection network was constructed, consisting of around 150 wells.

With the expansion, the co-generation plant in Ano Liossia became the largest in Europe, and one of the largest similar facilities worldwide. The heat produced in this new plant will also serve the nearby leachate treatment plant.



The total budget of this project is about 34 mill. EUR and has been developed from BEAL S.A. (HELECTOR's participation is 50%).

### **IEA-Task 37 workshop in Berlin**

Alongside the 15th European Biomass Conference held in Berlin in May 2007, IEA-Task 37 organized a workshop with in collaboration with the CropGen project, which is an EC co-funded project concerning biogas production from energy crops, under different climatic conditions.

The workshop presented the results of the research work, including early experiences of full-scale application. The abstracts and presentations from the workshop can be downloaded at: [www.iea-biogas.net/publicationspublicberlin.htm](http://www.iea-biogas.net/publicationspublicberlin.htm)

The Task 37 held also its regular business meeting with this occasion. The country reports presented at the meeting can also be downloaded from the IEA website.

## **3. Upcoming events**

### **Workshop on green gas, 27 November 2007**

A workshop will be organized by biowkk.nl in the Netherlands, aiming to present the state of the art gas engines for combustion of biogas, hydrogen gas and synthetically natural gas (SNG). Other main topics will also be:

- Upgrading biogas to natural gas
- Biogas upgrading in Germany
- Gasification of biomass
- Utilisation of CO<sub>2</sub> from biogas

More information is available at [www.biowkk.nl](http://www.biowkk.nl)

### **The 5<sup>th</sup> European Biorefinery Symposium**

The symposium will be organized in April 9<sup>th</sup> – 11<sup>th</sup> 2008, in Flensburg, Germany. The symposium is organised by [Fachhochschule Flensburg](http://www.fh-flensburg.de/) (Germany) and [Aalborg University Esbjerg](http://www.aalborguniversity.dk/) (Denmark).

More information is available at the official website <http://www.biorefinery.fh-flensburg.de/>

## **4. Varia**

### **IEEA alters its name to EACI**

The European Commission has entrusted the Intelligent Energy Executive Agency (IEEA) with new implementation tasks related to the EIP in addition to execution of the IEE II Programme and Marco Polo II Programme.

In order to reflect these additional tasks, the IEEA alters its name and becomes Executive Agency for Competitiveness and Innovation (EACI) to manage Community actions in the fields of entrepreneurship, innovation, including eco-innovation, intelligent energy and sustainable freight transport.

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