Algal treatment of biogas digestate and feedstock production

ALGAEBIOGAS

AlgaeBioGas project is focused to market introduction of algal-bacterial treatment of biogas digestate and feedstock production, an innovative technology which has significant economic and environmental benefits to biogas operators. This approach recycles nutrients and significantly reduces CO2 emissions and energy consumption compared to classical wastewater treatment and solves digestate logistic problems. Demonstration centre has been built at biogas plant in Slovenia and started to operate in July 2014. Algae have a great potential because of their high growth rate, easy production, better utilization of sunlight compared to plants, shorter lifecycles and independence from agricultural land. Biogas plants are rich sources of mineral nutrients, CO2 and heat. By algal recycling we can close material cycles, provide feedstock for bio-refining high value products and decrease competition between biogas and food use of agricultural crops. Within this project we have set-up a demonstration centre and preparing technology, organization and marketing tools to market replication projects. The demonstration centre is not only able to demonstrate the technology in real size, but also provides on-site support for customer’s testing, analysis, evaluation, training and other activities required as part of a complex project. We invite interested companies and individuals to visit the demonstration centre and see the technology in operation.

Benefits

By using algal bacterial treatment of biogas digestate a significant proportion of nutrients and CO2 is recycled into a biogas feedstock. Logistic problems with biogas digestate are solved. Energy consumption and environmental impact of treating liquid biogas digestate is significantly improved.

Results

- Expected benefits for a biogas operator:
  - We can recycle 95% of nutrients in liquid phase of digestate on 3-5 ha of algal bacterial treatment facility;
  - Biomass production in such facility will be 72 – 200 t/y; additionally approximately the same weight of carbon-rich (cellulosic) residues will be used as a biogas substrate;
  - We will recycle 120 – 400 t of CO2 emissions yearly;
  - Biomass production in such plant will replace 10 – 25 ha of corn out of 335 ha if only corn was used as a substrate;
  - Reduced energy consumption for digestate treatment ~140 MWh annually; reduction in CO2 emissions from bacterial treatment of digestate up to 1.100 t CO2 annually; with NOx and N2O emissions significantly reduced.

- Market potential
There are more than 17000 biogas operators in EU; we estimate that some 10% of them are ready for our technology today.

**Project status**
- By M31 we have constructed the 100m² demonstration centre and it has been operating for 11 months now.
- We collect and publish all the data from the demonstration centre. A lot of experience with operation has been collected and we are progressively optimizing operating parameters.
- Initial business planning was done and initial market data was gathered. A comprehensive market and legislation analysis has been completed. First customer visits were very successful and some dissemination activities also resulted in good feedback.
- Up to the month 31 we prepared detailed business plan and partner agreements. We are preparing second installation for Italian customer, starting in Spring 2016.
- Layman`s report was prepared in M31 and is available on web page.
- Data from the demonstration centre regarding output, input and biomass analysis were collected and presented in the report. Final conclusions will be made after all the analysis results are in, since summer is time for optimal operation of demonstration centre.
- Summer and winter algal cultures were identified, isolated and are kept in algal bank of partners.
- LCA analysis was made in M32.

**Partners and coordinator**

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**Contact**

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**Budget**

Overall budget: 925,371,00 € (EU contribution: 50,00 %)

**Key documents**

- Project presentation [4]
In brief

Sector: Greening Business

Duration: 01/09/2013 to 31/08/2016

Contract number: ECO/12/333018

Website: http://algaebiogas.eu/

Tags:
- biodiversity

Videos and Photos

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