From a biogas plant to a biomethane one - an income and award producing facility in Osterby, Germany

Success Story

Picture: Malmberg

Operator

Malmberg Water AB

Location of the project

Osterby, Germany

Contact details

Customer: Biomethan Osterby GmbH & Co. KG

Project results

Physical

- Gas upgrading

Socio-environmental:

- Renewable electricity or heat supply
- Waste reduction
- Reduced pollution

Project outline

Osterby in Germany, Schleswig – Holstein is a small village with a large number of local farmers. 15 farmers are delivering substrates to the biogas plant in Osterby today. Nonetheless, due to it's location in northern part of Germany, close to Denmark, even Danish farmers deliver substrate to the plants. Over the time, the farmers have formed Biomethan Osterby GmbH & Co KG and now operate the biogas plant with an upgrading plant and inject the upgraded gas to E.ON Hanse netz. AG, which is a high pressure net. At the beginning of the operation, maize silage and cow manure were used as feedstock, but as of 2012 larger amounts of corn and beets were digested, too. The first biogas plant was built in 2005 and the second in 2007. The biogas upgrading plant in Osterby started operation in December 2011 and processes 350 Nm3/h gas of natural gas quality. In 2011 demand of green gas was still increasing, therefore the farmers decided to install an upgrading plant on the existing site. Technology and innovation bonus guaranteed by the German Renewable Energy Act (EEG) 2009 was a good motivation and security of their investment.

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Technical data

Year of plant construction:
2011

Year of performed service:
2011

Plant size: Up to 700 Nm3/h; 3 million m3 of biomethane (33 million kWh)

Type of raw material:
Maize silage and cow manure; since 2012 maize and beet added

Utilisation of biogas:
High pressure grid injection

Total investment costs:
€3,200,000

Performed actions

Malmberg performed all main services in-house for the biogas upgrading plant from beginning to the end. Process engineers dimensioned the flows and optimized the plant to the customer's requests. Targeted flows were those of 350 Nm3/h or 700 Nm3/h biomethane in order to meet the incentives criteria. Malmberg technology with Malmberg COMPACT® upgrading platform met these demands perfectly. Quality controls such as pressure testing and x-ray testing were made before shipping the installation to Osterby. The upgrading installation was installed upon arrival to the site. For this delivery, Malmberg also supplied RTO (Regenerative Thermal Oxidation to threat the exhaust air), lightning protection, piping and emergency flare.

After completing the plant, an on-site training was provided to the new plant's staff. However the plant still benefits from back-up support, live monitoring and adjustment of the plant, offered by the provider.

Results of performed service

By investing in a Malmberg upgrading plant, which is considered as a cleantech innovative technology - one of the criteria for EEG 2009 bonus, the new biomethane plant became eligible for the bonus. The incentives were met on 350 Nm3/h biomethane flow with high flexibility due to fluctuation of type and quantity of feedstock over the time. The biomethane plant in Osterby now produces 3 million m3 of biomethane per year (33 million kWh). The total investment costs were €3.2 million.

The Osterby project was later in 2012 awarded the "Biogas partnership of the year" award, an award handed out by German Energy Agency dena since 2008. The "Biogas Partnership of the Year" award will be presented to operators of exemplary biogas grid feeding systems in Germany.