

FINLAND

Facilitating the
supply and use of
renewable sources of
energy

Location

Punkalaidun

Programming period

2014 – 2020

Priority

P5 – Resource-efficient,
Climate-resilient Economy

Measure

M16 - Cooperation

Funding (EUR)

Total budget 85 875
EAFRD 36 067.50
National/Regional 49 807.50

Project duration

2015 – 2016

Project promoter

Punkalaidun municipality

Contact

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Website

<https://biogts.com/fi/refere-nssit/punkalaitumella-biometaania-verkkoon-maakaasuverkon-ulkopuolelta/>

Punkalaidun municipality conducted a feasibility study for setting up a biogas plant producing energy from manure, which resulted in an investment decision.

Summary

Punkalaidun is an agrarian municipality of 2 900 inhabitants. It is located on the best Finnish farming soils in the southwest part of the country. Animal husbandry, especially pig farms, are typical in the area. The growing amounts of slurry has provided a challenge to local producers on how it can be best used.



The idea was thus to establish a biogas plant. Punkalaidun municipality carried out a positive feasibility study, which resulted in an immediate investment decision worth 4 million EUR. The project has a high transferability to other rural areas.

Results

The installation works on site are well underway.

The treatment capacity is 10 000 tonnes of animal manure, crop residues and residues from food industry per year.

The estimated annual output is 1 200 000 Nm³ of biogas with a gross energy content of around 6 400 MWh, equivalent to an annual fuel requirement of 550-600 natural gas vehicles.

Lessons & Recommendations

- ❑ Modern biogas plants based on the dry anaerobic digestion process are the most cost-effective way of handling biodegradable waste from agriculture and reducing emissions resulting from manure management. Treatment in the biogas plant reduces methane and odour emissions resulting from animal manure by as much as 90%.

Context

Biogas production is considered a major opportunity for rural development in the Finnish Bioeconomy Strategy. However only a few modern plants have reached the investment phase yet. The Punkalaidun feasibility study focused on a dry anaerobic digestion process, which is capable of producing biomethane for vehicle fuel use by recycling and upgrading biomasses and biodegradable waste from agriculture and the food industry.

The project context also concerned the growing problem of slurry for local pig farmers. Many farmers didn't have enough of their own or contracted land to spray all the slurry on the fields in line with the CAP environmental regulations. It was also not seen as being cost effective by the farmers. They needed a large local unit capable of handling large amounts of slurry in a profitable way.

Objectives

The objective of the feasibility study was to create an economically profitable model for a biogas plant investment, based on dry anaerobic digestion process. Because of the novelty and innovative feature of the project, much emphasis was put on transferability to other rural areas.

Activities

The project brought together farmers, machine contractors and energy companies, an important step to inform all stakeholders and guarantee the sound operation of the whole production chain. The project coordinator, who was trained by the Tampere Technical University, conducted a survey and gathered all relevant information on dry anaerobic digestion process from domestic and international sources.

In the next stage the raw materials and digestion processes were tested under laboratory conditions. The aim was to find the optimal mixture of solid and liquid waste. The project also compared different devices and their suppliers, as well as made market studies and financial and profitability plans for a variety of different end products, such as fertilisers and biofuels.

In the third stage activities concentrated on public

relations and media work to commit potential private and public investors to the implementation phase.



Main results

The project has now reached the phase when the installation works on site are well underway.

Owners of Punkalaitumen Bioenergiaoyhtiö Ltd are, among others, two energy companies, 20 local agricultural entrepreneurs and the municipality of Punkalaidun.

The treatment capacity is 10 000 tonnes of animal manure, crop residues and residues from food industry per year. The estimated annual output is 1 200 000 Nm³ of biogas with a gross energy content of around 6 400 MWh, equivalent to annual fuel requirement of 550-600 natural gas vehicles.

The biogas plant at Punkalaidun is the first biogas plant outside Finland's natural gas grid, where biomethane will be transported with gas transportation containers from the biogas plant and injected into the natural gas grid. This will enable the efficient distribution of biomethane to customers, in particular for the purpose of vehicle fuel. From the point of view of the operator of the biogas plant, this will ensure a stable demand for the produced biomethane. In addition, SEO (Suomen Energiaosuuskunta, Finnish Energy Cooperative) is investing in a new refuelling station, which will distribute both gas and liquid fuels to the consumers, in the immediate vicinity of the biogas plant.

Key lessons

A modern biogas plant based on the dry anaerobic digestion process is the most cost-effective way of handling biodegradable waste from agriculture and reducing emissions resulting from manure management. Treatment in the biogas plant reduces methane and odour emissions resulting from animal manure by as much as 90%.

Additional sources of information

n/a