



DENMARK

Gosmer Biogas

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The family "Munk Nielsen" wanted to expand their production of pigs and had consequently asked the authorities for permission to expand. However, the requested permission was not given due strict regional requirements on the amount of land applied phosphorus in the spreading areas. Before the permission could be given the family was requested to reduce the annual amount of slurry phosphorus by 3200 kg phosphorus.

The family owns 350 hectares of agricultural land to spread the manure on, but to meet the requirements they had to find another 150 hectares. Therefore, they built a biogas plant from the company Gosmer Biogas, which is a manure-based biogas plant with an associated low-tech solid liquid slurry separation system. The 3200 kg phosphorus could now be removed by the separation and exported to a nearby plant breeder.

By using this simple sedimentation principle, it is possibly to increase the gas output from the manure.

What lessons has been learned

The main reason for the investment in the biogas plant was according to the family to be allowed to expand their pig production. The pig production is the main income source on the farm. Furthermore, the family wanted to increase in the plant value of the slurry nutrients by the digestion process.

An additional benefit has been shown by the positive reception the new pig stable has been given from the neighbors. The investment in the biogas plant has been found to improve the family image. Often enlargement of pig's production is followed by protests from neighbors.

A short description of the process

The Liquid manure 3 – 6 % DM led to the primary digester where the biological process takes place at approx. 40 dg.. The degassed manure is then led to a secondary digester with no stirring at all installed which results in sedimentation. The thick sediment is pumped back to the primary digester, and the liquid is pumped to the end storage. By using this simple sedimentation principle, it is possibly to increase the gas output from the manure.

Key data:

Start of operation:	2009
Manufacturer:	Gosmer Biogas – www.gosmer-biogas.dk
Type of plant:	Manure – based with a simple separation.
Location:	Near the second largest city in Denmark – Aarhus.
Amount of gas produced (m ³ per year):	120.000
Amount of biomass treated (tonnes per year):	9100
Investment costs (EUR):	700.000
Cost and benefit:	because of the synergies which the biogas plant provides in terms of better utilization of fertilizer and an expansion of the pig stables, the payback period is according to the family 20 years.
Payback period (years):	20

Feedstock

Liquid pig manure (tonnes per year):	9100
Liquid cattle manure (tonnes per year):	0
Leftovers (tonnes per year):	0
Other (tonnes per year):	0

Production data

Available area for the output of the biogas fertilizer (hectares):	350,500
Electric power of the gas engine (kW):	30 (2 x 15kW)
Generated thermal energy:	360.000 kWh from engine heat + 130.000kWh from a gasboiler
Utilization of heat:	Heat in Sow stables and in the farmhouse
Generated electric energy (kWh):	150.000
Power consumption (electricity) of the plant itself (kWh):	75.000

Technical plant description

Operating temperature (dg):	40
Average retention time in digester (days):	21
Average expenditure of human labor (persons):	1 hour/day
Size of reception facility (m ³):	60
Size of fermentor (m ³):	430 + 80 (combined separation and digestertank)
Size of end storage tanks (m ³):	8000
CHP (kWh):	2 X 15

The project BioEnergy Farm II wants to inform farmers about the benefits of micro scale digestion and give farmers a view on the feasibility of this technology for their business.

Are you curious about the feasibility of micro scale digestion on your farm?

From September 2015 we offer personal guidance at home! Our biogas experts have software tools to calculate the feasibility of micro scale digestion on your farm. Contact us!



www.BioEnergyFarm.eu



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