



FRANCE

Evalor

Evalor

The described plant was carried out by a pig farmer (300 sows) in order to respond to several issues: To substitute propane used for heating the livestock buildings (12 to 14 t per year) by biogas produced from the liquid manure. For this, he carried out in 2011-2012 a small scale AD plant which biogas feeds a boiler.

The nitrogen application being restricted on his farm (due to the proximity of a reservoir of drinking water and a bay with green algae), the farmer wanted to implement a manure treatment unit allowing to use a part of nitrogen of slurry as a more concentrated and marketable liquid fertilizer (to replace chemical fertilizer).

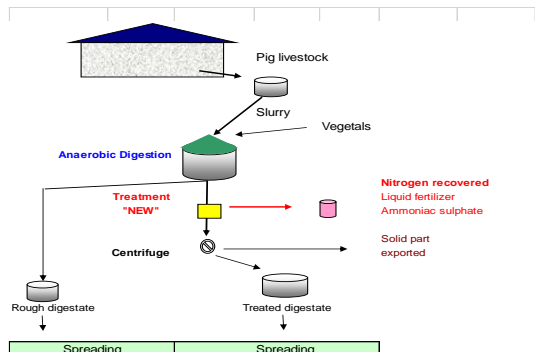
It is based on an ammonia stripping process. The plan has worked since March 2014 but the prototype is still in optimization and evaluation phase. A separating phase designed for extracting phosphorus has worked with slurry since 2012 and with digestate since 2013.

The ammonia extraction from digestate heated at 65 –70°C gives expected results (extraction rate about 60%).

What lessons has been learned

The biogas production from the liquid manure works well and allows to widely cover the heating requirements of the livestock with a bit of vegetal biomass in winter.

- Although the propane saving is consequent there is no profitability because the propane substitution by biogas for livestock's own consumption is not eligible to any subsidies (none green certificate or bonus like this exists for the electricity production from biogas).
- The ammonia extraction from digestate heated at 65 –70°C gives expected results (extraction rate about 60%). The ammoniac sulphate solution produced has a nitrogen concentration of 80 Kg/m³.
- The process is effective but expensive and quite demanding in maintenance.



Key data:

Start of operation:2012
Manufacturer:EVALOR BP 212 22192 PLERIN Cedex WWW. evalor.fr
Type of plant:..... Small scale AD plant
Location:.....EARL de la Fontaine Neuve 22400 St Donan (Côtes d'Armor)
Amount of gas produced (m³ per year):100.000
Amount of biomass treated (tonnes per year):4150
Investment costs (EUR): 170.000
Payback period (years): 12

Feedstock

Liquid pig manure (tonnes per year):..... 4000
Liquid cattle manure (tonnes per year): 0
Leftovers (tonnes per year): 50
Other (tonnes per year):100 (grass silage)

Production data

Available area for the output of the biogas fertilizer (hectares): 250 hectares
Biogas boiler(kW):110
Utilization of heat:Heating of the livestock building +digestate treatment by ammonia stripping
Power consumption (electricity) of the plant itself (kWh):unknown
Nitrogene production: 17 500 Kg N in the rough digestate

Technical plant description

Operating temperature (dg): 38
Average retention time in digester (days):40 - 50
Average expenditure of human labor (persons): ½ hour/day
Size of reception facility (m³): 200
Size of fermentor (m³): 560
Size of end storage tanks (m³): 2600
Ammonia stripping by bubbling and cleaning with sulphuric acid (flow rate of 1m³/h)
Operating temperature: 65 to 70 °C
Rate of ammonia extraction: 55% to 65% according to temperature
Flow rate of the centrifuge: 2.5 m³/h
Rate of phosphorus extraction: 70%
Dry matter content: of the solid phase:..... 35%

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



#BioEnergyFarm

herve.gorius@finistere.chambagri.fr | s.bonhomme@trame.org



Co-funded by the Intelligent Energy Europe
Programme of the European Union