

Case Story

LOCATION/YEAR

Hemmet, Denmark, 2012
(Upgrading plant added in 2015)

PLANT PERFORMANCE

Input capacity

Approx. 73,000 tons/year consisting of pig slurry, cattle manure, cattle dung/deep litter, mink and poultry manure, chopped wheat straw, grass and maize silage, slaughterhouse and fish waste, glycerin and others.

Output capacity

Biomethane: 4 million m³/year

PLOT SURFACE

Approx. 15,500 m² (140 x 110 m)

LEAD TIME

Building (biogas plant)

5 months for construction and 3 months for commissioning.

Total project

24-36 months.

VIDEO

Watch a video from the biogas plant on [Hemmet Bioenergi](#)

Hemmet Bioenergi

CONTEXT/HISTORY

Around the turn of the millennium there was a shift towards biogas plants in Denmark, from building large joint facilities to decentralized farm-based biogas plants.

The Combigas biogas plant in Hemmet, in Western Denmark, is listed as one of the decentralized farm biogas plants that were built according to this philosophy.

The plant was built with help from EUDP (Energy Technology Development and Demonstration Program).

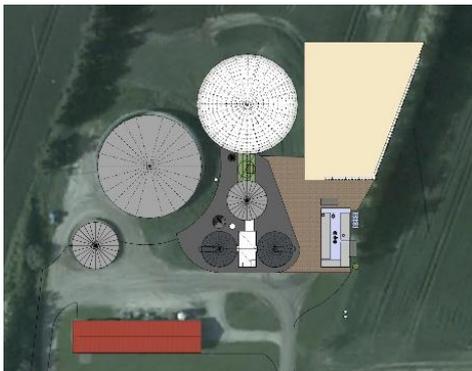
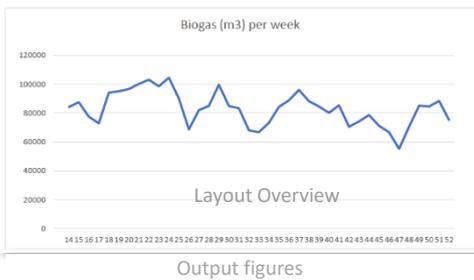
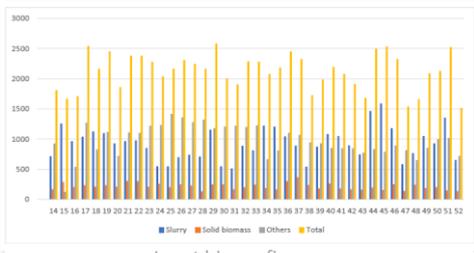


It is used for testing purposes and as a demonstration plant in connection with customer visits.

In the year 2015 a gas upgrading unit was added with a capacity of 11 million m³ of methane gas per year, currently handling gas from three different biogas plants all located within a 6 kilometers radius from the upgrading station.

The upgrading unit purifies the raw biogas, purchased by the National natural gas company for distribution onto the natural gas grid.





APPLIED TECHNOLOGY

The plant utilizes different types of agricultural waste. The calculations are based on standard figures for these products. They may be adjusted, when composition of the input is known.

The biomasses which are suitable are then incorporated, mixed and digested in thermophilic conditions (digestion at 50-53 °C).

The biogas is sent to the upgrading unit.

The plant can produce up to 6,500,000 m3 per year.

Upgrading unit

The upgrading unit, which collects gas from three different plants, is manufactured by Purac/Puregas.

The inlet gas is measured, subsequently purified and distributed onto the natural gas grid.

SCOPE OF DELIVERY

Mix Tank

Net capacity: 800 m3

Primary digester (2 pcs.)

Volume: 1,500 m3 each.

Secondary digester

Volume: 6,000 m3

Other equipment

- Control system for automatic operation of the plant
- Commissioning and performance test.

INVESTMENT COSTS

CAPEX

Supply and installment as described above had a cost of approx. 3,5 million Euro.

OPEX

Approx. 10 % per year.

LESSONS LEARNED

Realization of this kind of projects involves not only sale and implementation of technology but also transfer of knowhow at various levels.

As general experience, allocation of resources for training and education of local workforce, must be considered when it comes to biogas technology and science.

This is done to ensure optimal and sustainable operation of the biogas plant.