



Case 28 Tønder, Denmark: Northern Europe's largest Biogas Plant

Problem to resolve:

Massive cattle rising brings the negative by-effect of large scale production of greenhouse gases and thus significantly contributes to Global warming. Recycling of the manure can reduce this effect.

Response:

The sustainable production of electricity and heat from manure, energy crops and waste has been given a boost with plans for two huge biogas plants in southern Jutland. With a total investment of half a billion kroner (67 million Euro) the plant will become the largest in Denmark. The plant is expected to be joined by another plant with the same size in Aabenraa 40 km away. Behind the plans for the environmental and climate-friendly biogas stands firm ENVO Group and Jose Cartellone of Argentina, who is an investor in both projects.

Approximately 120 Farmers will be delivering manure and organic surplus/waste to the Biogas Plant. The farmers in the area will supply the plant with approximately 700,000 tons of manure annually. About 230,000 tons of other organic materials mainly waste from dairies, slaughterhouses and other industrial companies, as well as sewage sludge and household waste will be included in the production of biogas.

The plant in Tønder will produce almost 65 million cubic meters of biogas a year, which corresponds to the gas consumption of approximately 17,500 households in Denmark. The gas will be upgraded to natural gas quality and sold to the natural gas grid, replacing some of the fossil natural gas from the North Sea. In contrast to the natural gas is biogas CO₂ neutral.





Biogas plant in Tønder

Source: (ENVO)

The raw material for the plant, the organic material does not cost the system anything, since the farmers have great advantages of concluding agreements on supplies of manure and waste. The plant borrows the manure from the farmers and delivers back a better product to the farmers when fertilizer has been degassed. The nitrogen comes back in a form that makes that it is absorbed more efficiently in the crops. 80 to 100 farmers will have contracts on delivery of the 700,000 tons of manure. (A pig for slaughtering generates approx. 0.5 ton manure; a cow 21.5 ton/year including bedding.)

The plant will generate about 80 new jobs at the plant or derived from it. The Danish parliamentary parties signed in March 2014 an agreement on energy policy until 2020. One element of the agreement was that half of manure in Denmark in 2020 shall be used for the production of biogas. If the goal is to be achieved by 2020, Denmark must established 20 new biogas plant of the same size as in Tønder.

Credentials

Principal authors: Michael Boldt, Sweco
 With Annabelle Cleeve (Mott MacDonald)
 Editing: Kosta Mathey and Florian Steinberg.

References

ENVO Denmark <http://envogroup.dk/envo-biogas-toender-as-2>
 Grontmij a/s press release: <http://www.grontmij.dk/DK/Seneste-nyt/Nyheder/Pages/Biogasanlaeg-soenderjylland.aspx>