

Aubetin Farm: Anaerobic Digestion Plant

Development Plan Summary (Dagny, Seine & Marne County, France)

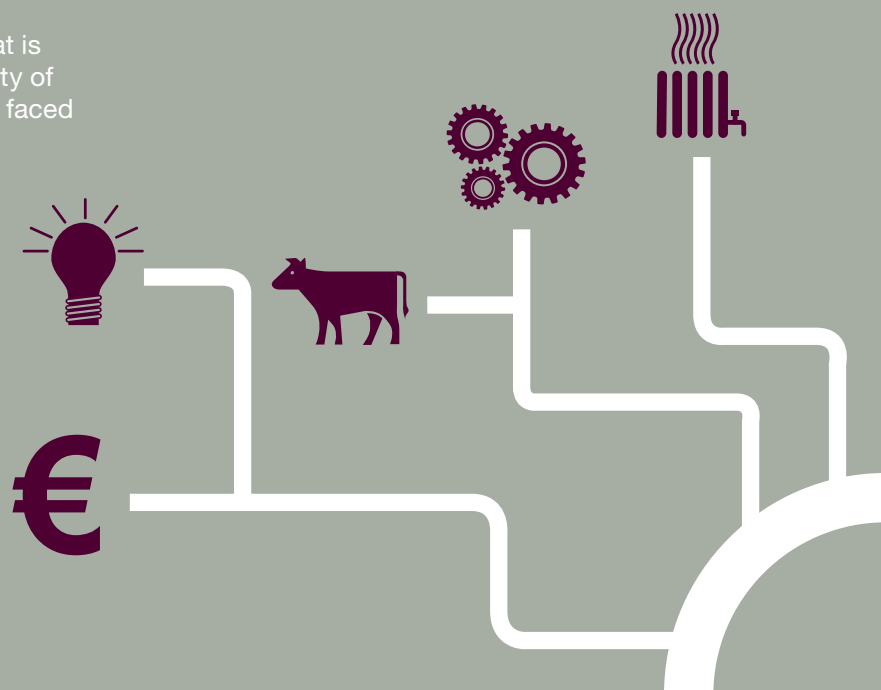
Overview: The Aubetin Farm sought support from the BioenNW project to find a solution to deodorize their pig manure prior to spreading to land, to improve the quality of the manure and produce energy using anaerobic digestion (AD). This would be the first AD plant in the Ile-de-France region and if viable would set a significant precedent for the area.

Project detail

The Aubetin farm is located in Dagny. It is the only pig farm in the Seine & Marne county to both breed and fatten pigs. The farm comprises 280 suckling sows which are exclusively fed cereals grown on the farm. The owners wished to add value to their pig manure (approximately 5,250 tonnes per year) and agricultural residues (approximately 250 tonnes of wheat residue and 280 tonnes per year of silage) by implementing an AD plant to produce biogas which would produce electricity and heat via a combined heat and power (CHP) unit. AD also produces a digestate, a rich fertilizer, which could be spread to land.

The owners do not wish to rely on feedstock that is not produced on their farm due to the uncertainty of securing 15 year contracts. This project may be faced with an initial high level of investment, a costly administrative procedure and the uncertainties linked to being the first project of its kind in the Ile-de-France region.

However, these potential difficulties would be outweighed by the project's benefits, which would include setting a precedent in local AD implementation and increasing the value of pig manure and agricultural residues.



Anaerobic digestion

The AD process is comprised of several steps. The first step is the storing and preparation of feedstock that needs to be grinded. Once fed into the AD system, a mesophilic digestion (37°C) takes place which degrades organic material over an approximately 39 day period and generates biogas. The second step consists of storing the digestate, which is rich in fertilizers. The methanization process produces biogas, rich in hydrogen sulphide (H₂S), which is also highly corrosive.

To decrease the oxygen rate, some air is put in the digester allowing the development of an aerobic bacterial flora which enables to digest the H₂S. The biogas is then stored in a gasometer before being burnt. It is planned to set up a CHP unit to produce heat and electricity. Processing 5,780 tonnes of feedstock per year would generate 322.4 m³ of biogas per day (117,670 m³ of biogas per year). The CHP power is estimated to be 50 kW generating 340 MWh of electricity and 624 MWh of electricity and 624 MWh per year.

Financial & legislation considerations

Significant capital investment is required for the feedstock storage and pre-treatment, digester, enhancement of biogas, engineering and commissioning. Operational costs include

maintenance, costs linked to feedstock and energy, insurance, staffing and so on. Income would be generated via the sale of electricity to the French Electricity Company (EDF) and savings made via the use of the heat produced. The project could also benefit from subsidies from the Environment and Energy Control Agency (ADEME). The total capital investment for this project is estimated to be €500,000.

This AD initiative is compatible with local town planning as it is not within a natural protected area. It is also neither within a protected perimeter of historical monuments, nor near drinking water.

Implementation will be conditional to all relevant regulations being adhered to, including Rural Code, Town Planning Code, Environment Code, etc.

This development plan has been produced through BioenNW – a €7.9m strategic initiative of the European Union INTERREG IVB North West Europe Programme (2011-2015). BioenNW is led by the European Bioenergy Research Institute at Aston University, UK and sees 11 partners working together to deliver small-scale bioenergy schemes throughout North West Europe.



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