



Anaergia



Case Study: Szarvas, Hungary

Mixed waste anaerobic digestion to generate renewable electricity and heat

The largest anaerobic digestion facility in Eastern Europe which generates 4.2MW of renewable electricity from local commercial, industrial and agricultural waste streams

Energy Generation from organic wastes

Project Goal

The Szarvas facility is the largest and most advanced organic waste to renewable energy system in Eastern Europe. The Hungarian based developer, r.e Bioenergie GmbH, established the project to generate financial returns from converting local organic waste into renewable electricity, renewable gas, renewable heat, clean water and natural fertilizer.

The facility was designed to maximize the production of electricity during peak load times in order to follow the time-variable Hungarian feed-in tariffs.

Revenues are generated through the sale of renewable energy, thermal energy, gate fees, and organic fertilizer. The energy recovery efficiency and digestate quality of the solution support over 20% of revenues from renewable heat and organic fertilizer.



Inputs

Industrial & Commercial Substrates	45,000 TPY
Agricultural Substrates	75,000 TPY

Renewable Outputs

Renewable Electricity	4.2 MW
Renewable Heat	4.1 MW
Fertilizer Produced	90,800 T

Process Description

Substrate Reception

Solid substrates are accepted and stored in 6 seamless in-situ concrete silo chambers while local energy crops and crop waste are compressed and stored in air-tight tapaulins. Slurry streams are transported to the facility via pressurized pipe and mobile tankers. The slurries are continuously mixed to ensure homogenization of the substrates.

Anaerobic Digestion

The facility utilizes 4 primary fermenters and 3 secondary fermenters to anaerobically digest the substrates and generate a high quality biogas. The primary and secondary fermenters provide approximately 9,820 cubic meters of biogas storage with built in leak detection systems.

Renewable Energy Production

The biogas produced is dried and purified prior to being converted into electricity using CHP systems. Part of the treated biogas is used to produce 600kW of electricity onsite in an internal combustion engine while the remaining is transported via a 4 km pipeline to a local food processing company to generate 3.6 MW of electricity for onsite operations and sale to the local electrical grid.

Renewable Heat & Fertilizer Sales

High temperature heat recovered from the CHP systems is used to generate steam that is then used to satisfy the base load requirements of two local industrial companies. The low temperature heat recovered from the CHP systems is used to cool meats at a local industrial company by way of thermal condensation in an absorption refrigeration system. The digestate is dewatered and stored in drive-in chambers for sale to local farmers.

