

Willen Biogas

Biogas plant based on food waste

Established in 2014-16

Willen Biogas is located at the Cattlegate Farm in Enfield, North London. The plant processes food waste from the London area, and produces green electricity and bio-fertiliser.

Ownership

Willen Biogas is owned by the investment funds Foresight Environmental Fund and UK Waste Resources and Energy Investment Fund (together 51 %) with both funds managed by Foresight Group LLP and by Adrian Williams, Howard Williams, Brian Williams and Mark Lennon (together 49 %).

Xergi will operate the plant for the owners.

The process

The plant will process 27,000 tons per year of food waste produced by London's households, restaurant and food industry. The plant is equipped with a Cesaro de-packaging facility that separates plastic and other material from the organic fraction before being processed in the biogas plant. Water is added in order to achieve clean fractions from the de-packaging system.

In order to further reduce small inert particles from the organic fraction a flail separator is also incorporated to the de-packaging system.

Technical Data

Power output: 1.5 MW

Digester capacity:

Primary digester: 3,000 m³
Secondary digester: 2,000 m³

De-packaging facility capacity:
142 ts/day

Feeding/pasteurisation modules
3 x FLEXFEED®



The organic pulp is pumped into the FLEXFEED® modules where the waste is pasteurised for one hour at 70°C according to the EU Animal By-Product Regulation and PAS110 (Digestate Standard). The primary digester is operating at ~52°C resulting in a very efficient digester and a high gas yield.



The digestate is separated into a liquid and a solid fraction is further processed in a digestate concentration system where excess hot water from the CHP system is used to evaporate the water from the digestate and concentrate the remaining liquid fraction whilst retaining the nutrient value in the liquid digestate.

The evaporated water is re-circulated back into the biogas plant

where it is used in the de-packaging facility. This will reduce the reliance of valuable fresh water to a minimum.

The produced green electricity from the plant is enough to power 1,750 households.

Adrian Williams said:

"We have been very impressed with Xergi and the commitment their project team gave the Willen project. ...In summary the project ran very well, achieved the timelines and we managed to start producing electricity slightly earlier than anticipated and also remained on budget throughout the build program. We would definitely use Xergi and their project team on our next Anaerobic Digestion project."

