



TNV Thöni Wet Anaerobic Digestion Semi Dry **Aberdeen (UK)** Integration into a renewable energy network

Principal and operator



Plant data

Commissioning: 2020

Input: 80,000 t/a of agri waste and foodwaste

Digester: 3 x TNV (2 primary, 1 secondary)



Plant and process

The facility is a new-build semi-urban site on behalf of Aberdeen City Council at The Event Complex Aberdeen (TECA). The entire site is a green-field 'energy park' including a range of innovative designs and exemplar energy technologies.

The Thöni AD facility receives a range of biowastes. Pre-treated, liquidised food waste is pumped from delivery vehicles directly to holding tanks, while solid waste including crop-wastes are received via an air-controlled reception building. Solids are fed by auto crane from a flat bunker to a shredder / pulper before feeding to the anaerobic digesters. Pre-treated liquids are fed to a pre-heated buffer tank prior to being pumped to the first-stage digester.

The substrate remains in the heated digester for about 65 days. There, biogas is generated by the substrate under anaerobic process conditions. Each digester tank is equipped with the unique Thöni TNV paddle mixer. This heavy-duty design allows for a higher-than-usual dry solids content of the digestion mass. It promotes the release of methane-rich biogas while preventing floating layers and sinking of most potential settling materials. This technique minimises the use of water and liquid product.

At the end of the digestion process, the whole digestate is pumped to the downstream pasteurisation unit and then transferred to the press where it is separated into solid digestate (fibre) and liquid fractions. Liquid digestate is transferred to a storage tank prior to use as a beneficial agricultural fertiliser. The fibre is also a valuable fertiliser / soil improver that can be spread to land. The biogas produced in the digesters is stored in the flexible over-tank gas stores. It is transferred to a biogas upgrader where it is purified. The resulting biomethane is 100% renewable natural gas which is fed to the local gas grid and to the TECA energy system which includes a hydrogen reformer to contribute to powering the city bus fleet. The facility is equipped with an on-site combined heat and power (CHP) unit for self-generation of heat and electricity.

Performance data

Input:
80,000 t/a of biowaste

Digesters:
Primary: 2 x 3.980 m³
Secondary: 1 x 7.630 m³

Output:
Liquid fertiliser for agriculture and
solid fertiliser for land-application

Raw biogas:
1,500 m³/h

Biomethane:
78.8m kWh/a

This equals the annual average
gas consumption of around 8,000
typical UK households

thöni®

www.thoeni.com

Subject to technical change, error and misprints
© Copyright Thöni Industriebetriebe GmbH 2021