



TTV – High solids anaerobic digestion from Thöni **Forsbacka / Gävle (Sweden)**

Customer

Gästrike Ekogas AB

Plant data

Commissioning: 2017

Input: 25,000 t/a kitchen waste, biowaste, fats, green waste

Digester: TTV 2,250



Plant and Process

On arrival at site, the input material is deposited directly in the reception area. The waste is then transported and shredded via a pre-treatment unit. The organic material is moved directly to the storage unit/feeder unit alongside the nearby fat storage unit for intermediate storage of liquid inputs. This is the start of fully automated utilization of organic waste, which is automatically conveyed to the digestion unit by the feeder unit.

The organic waste goes into a mixing unit (dosing device) which assures the homogenization and humidification of the material. Thereafter, the substrate is fed by means of a piston pump via heat exchanger into the digester.

The digestion process is an anaerobic, thermophilic and completely biological process, so-called dry digestion or High Solids Anaerobic Digestion (HSAD). Temperature in the digester is about 55 °C. Residence time at this site is approximately 36 days. Homogenization and uniformity is guaranteed by the given residence time, the curved bottom of the digester and patented paddle-shaft: governing the plug flow process while preventing sedimentation or creation of floating layers.

At the end of the anaerobic process, digestate is removed from the digester and pumped to the dewatering system. A proportion of the liquid digestate is recirculated in the digestion process and used for humidifying the fresh input material. The remaining part of the liquid digestate is stored in tanks with gas membrane and used as agricultural fertilizer. The solid fraction undergoes a further aerobic composting process in enclosed composting units to produce a high quality compost.

The biogas produced in the digester is processed into 99,9% bio-methane in a biogas treatment plant. As there is no local gas grid, bio-methane is filled into portable containers and used in local gas filling stations.

Performance

Input:

25,000 t/a kitchen waste, biowaste, fats, green waste

Output:

High quality fertilizer (liquid):

13,500 t/a

High quality fertilizer (solid):

3,500 t/a

Raw gas:

4,400,000 m³/a

Bio-methane:

27,300,000 kWh/a