



TTV - High solids anaerobic digestion from Thöni

RMB Frankfurt (Germany)

Anaerobic digestion in an urban area

Customer

RMB Frankfurt

Plant data

Commissioning: 2017

Input: 22.000 t/a Bioabfall

Digester: TTV 1.300



Plant and process

On arrival at site, the input material is deposited in a flat bottomed bunker in the reception hall. From there the biowaste is transported by means of a wheel-loader to the pre-treatment unit (consisting of a shredder, a metal separator and drum screen) where residuals such as plastics, stones, metals etc. are removed. Afterwards the separated organic material is conveyed via belt conveyors to the storage units. This is the start of fully automated utilization of organic waste, which is automatically conveyed to the digester by the feeder unit.

From storage units the biowaste goes via a fully automated conveying unit to a mixing unit (dosing device) which assures the homogenisation of the material. Thereafter, the substrate is fed by means of piston pumps via pipe work 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. Homogenization as well as hygienization are guaranteed by the given residence time, the curved base of the digester and the patented paddle-shaft. The design governs the plug flow process while preventing sedimentation or creation of floating layers.

The biogas is processed into bio-methane in a biogas upgrading plant and then fed into the local gas grid. A small part of the biogas is converted to thermal and electric power in a cogeneration unit (CHP). The heat is used for the process heating of the digesters.

At the end of the digestion process, digestate is removed from the digester and pumped via a piston pump to the screw presses where it is dewatered. A proportion of the liquid is recirculated in the digestion process and used for humidifying fresh input material. The remaining part is removed by tanker trucks and is used as fertilizer. The solid fraction undergoes a further aerobic composting process in enclosed composting units.

Performance

Input:
22.000 t/a biowaste

Output:
High quality fertilizer liquid:
approx. 7.700 t/a

High quality fertilizer solid:
approx. 11.000 t/a

Raw biogas:
approx. 2.500.000 m³/a

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