



TTV - Thöni High Solids Anaerobic Digestion Bad Rappenau (Germany) Integration into existing composting processes

Principal and operator



Plant data

Commissioned: 2018

Input: 20,000 t/a biowaste

Digester: TTV 1,850



Plant and Process

The composting plant was initially operated in 1995 and, while still operating, expanded in 2017/2018 from an annual input of 10,000 tonnes to 20,000 tonnes with an upstream digestion plant.

After delivery, the biowaste is temporarily stored in a receiving hall and from there fed via wheel loader to the pre-treatment line. Here, the biowaste is shredded and freed of contaminants such as plastics, metal pieces and so on.

Following that, the pre-treated material is directed to an intake bunker before it is fed via an external mixer, in which the biowaste is homogenised then, with a piston pump, fed via a heat exchanger into the digester.

On average, the substrate remains in the heated digester for 21 days. There, biogas is generated by the substrate under thermophilic anaerobic process conditions. A slowly rotating agitator within the digester homogenises the digestion-substrate and promotes the release of methane-rich biogas.

At the end of the digestion process, the whole digestate is pumped via a piston pump to the trommel screen with the subsequent screw press and separated into solid digestate and press water. Part of the press water is used directly to moisten the input material for the digester and is dosed back into the agitator as inoculum. The remainder is fed into two storage tanks and is used for agriculture. The solid digestate is subsequently processed into valuable compost in two tunnel-filling halls.

The biogas produced in the digester is stored in two gas storage facilities, biologically desulphurised and subsequently converted into electricity in the combined heat and power (CHP) unit. The electricity is fed into the electrical grid. The heat is fed into the long-distance heating system of Bauer Holzenergie.

Performance data

Input:
20,000 t/a of biowaste

Output:
Liquid quality fertiliser:
7,000 t/a for agriculture

Solid quality fertiliser:
6,000 t/a for substrate production

Raw biogas:
about 2,800,000 m³/a

Expected electricity yield:
6,100,000 kWh/a

This equals the annual electricity requirements of more than 1,000 households

Heat (external Output):
4,000,000 kWh/a

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