



TTV KÖLN-NIEHL

DE

TTV THÖNI HIGH SOLIDS ANAEROBIC DIGESTION



Plant data

Customer:
AVG Köln GmbH



Plant data

Commissioning:
2019

Input:
20,000 t/a of biowaste

Digester:
TTV1450 (concrete)



PLANT AND PROCESS

The existing composting facility of the AVG group's waste treatment park in Cologne-Niehl was expanded to include a digestion stage.

To this end, the separately collected biowaste is delivered and stored in a closed reception hall. The biowaste is then transported by a wheel loader to the treatment plant (consisting of a shredder, bag opener, metal separator and star screen), where contaminants such as stones, metals, plastics, etc. are removed. The processed material then enters the intermediate storage tank. From there, the substrate is transferred via a conveyor belt to an external mixer system, where the fresh substrate is biologically inoculated and then fed into the digester via a substrate heat exchanger at an already ideal operating temperature.

The anaerobic digestion takes place in a TTV plug flow digester. The digestion is based on an anaerobic, thermophilic and completely biological process, the so-called continuous high solid anaerobic digestion (cHSAD). The material is passed through the digester by means of a "plug" – supported by a slowly rotating agitator – at a

temperature of 55°C (thermophilic). The special design of the agitator reliably prevents the formation of sinking and floating layers and promotes a high and uniform gas yield. Hygienisation is achieved through the appropriately defined residence time of the material in the digester. The temperature, the filling levels in the digester, the gas production and the gas pressure are continuously monitored.

At the end, part of the digestate is dewatered by means of a press and separated into a solid and a liquid fraction, the remaining partial flow goes directly into the rotting process. A large part of the liquid digestate is fed back into the anaerobic digestion process. The solid digestate is mixed with fresh organic waste and then processed into valuable compost in the composting plant.

The raw biogas produced in the digester is processed and refined to biomethane natural gas quality in an upgrading plant and fed into the public natural gas grid of Rheinenergie.