

Press release

Innovation project TerraNova® Ultra funded by the German Federal Ministry of Research

Phosphorus recovery and production of additional biogas for power generation by carbonization of sewage sludge

(Dusseldorf / Leipzig / Duisburg)

The TerraNova® Ultra process replaces thermal drying processes with a much more energy-efficient ultra-dewatering of sewage sludge. A semi-technical demonstration plant at the Ruhrverband sewage treatment plant in Duisburg-Kasslerfeld will in future also recover the phosphorus and contribute to the production of additional digester gas.

As part of the "CarBioPhos" project funded by the Federal Ministry of Education and Research, TerraNova Energy GmbH (TNE) and the German Biomass Research Center gGmbH (DBFZ) are jointly developing and testing the Hydrothermal Carbonization of sewage sludge. This technology, which has already been used on a large scale as "TerraNova® Ultra" in China, has so far reduced waste disposal volumes by up to 80%, replacing thermal drying processes. Since TerraNova® Ultra separates most of the sludge water purely mechanically, high energy and CO₂-savings can be achieved compared to conventional water evaporation.

As part of the CarBioPhos project, the TerraNova® Ultra process is to be supplemented by two additional components by 2020:

By adding acid within the process, the phosphorus contained in the sewage sludge can be leached and recovered via the separated sludge water by adsorption, precipitation or crystallization. On this basis, TNE develops the economic production of a tradable secondary phosphor product and implements it in a demonstration plant. The Ruhrverband, one of the largest waste water operators in Germany, provides a suitable location for the project at the wastewater treatment plant Duisburg-Kasslerfeld.

The remaining, low-phosphorus residual water is well suited to biogas production due to the high content of biodegradable organic components. Over a period of 12 months, the DBFZ carries out continuous pilot plant trials in both mesophilic and thermophilic conditions at the Leipzig site in order to optimize conversion rates and methane production and to demonstrate the long-term stability of biogas production.

In a final energy balance, it is examined to what extent the own energy demand of the process can be covered by the additionally produced biogas and the waste heat resulting from the subsequent power generation.



General information:

In the TerraNova® Ultra process, sewage sludge or other water-rich biomass is carbonized at about 200°C under pressure and exclusion of air, which accelerates natural coal generation to a few hours. The resulting coal can be utilized as a regenerative, storable source of energy. The water contained in the input material is separated very energy efficient to reduce the mass and also allows the recovery of nutrients such as phosphorus or nitrogen and the production of biogas.

Contact:

TerraNova Energy GmbH
Dipl. Ing. Marc Buttman,
Königsberger Straße 100
D-40231 Düsseldorf
info@terranova-energy.com
www.terranova-energy.com