

DEMON Sludge Liquor Treatment Apeldoorn (NL)



Location

Netherlands Apeldoorn

Clients

Waterschap Veluwe
(Waterboard Veluwe)

Period

2008 - 2010

Partner(s)

Logisticon Water Treatment b.v.

Grontmij has introduced the DEMON process for sludge liquor treatment at the wastewater treatment plant (WWTP) Apeldoorn. DEMON, short for De-amMONnification, is a process that partly converts ammonia to nitrite and then converts the remaining ammonia and nitrite into nitrogen gas. The process uses only 40% of energy compared to conventional biological treatment systems and does not require an external carbon source like methanol. The DEMON plant at Apeldoorn has a capacity of 1270 m³/day and 1600 kg/day of nitrogen.

At WWTP Apeldoorn co-digestion of indigenous and industrial sludge is used to generate energy. In the digestion process ammonia is released, resulting in high strength ammonia liquors coming out of the dewatering process. Following a tender procedure, the client Waterschap Veluwe has selected the DEMON process as preferred process for sludge liquor treatment. The contract was awarded on the basis of low energy cost and low total cost of ownership,

The DEMON process was developed by Innsbruck University (A). In the first step of the process, part of the ammonia is oxidised to nitrite by nitrifying bacteria. A second group of bacteria, the deammonifying bacteria, has the ability to use nitrite and the remaining part of the ammonia to produce nitrogen gas. The DEMON process allows both nitrifying and deammonifying bacteria to co-exist in one single reactor volume, despite the completely different growth demands of these species. For DEMON Apeldoorn no additional dosing of a carbon source (such as methanol) or alkalinity (such as caustic soda) is required for the process. The construction of the DEMON in Apeldoorn is the first introduction of the process in the Netherlands.

Grontmij, in a joint venture with Logisticon Water Treatment b.v., has designed and built the DEMON system under a turn key contract, which included guarantees on process performance and operating costs.

www.grontmij.nl