

ELIQUO | STULZ

Case Study

*Full energy self-sufficient WWTP with
nutrient recovery*



WATER BOARD VALLEI EN VELUWE

Water board Vallei en Veluwe is, amongst others, responsible for the treatment of wastewater in the deltas of the rivers IJssel and Nederrijn. Therefore the Water Board is operating and maintaining 81 pumping stations and 16 wastewater treatment plants and is treating sewage of 1,471,000 PE.

PROJECT

All sludge produced by the treatment of wastewater of the communities Amersfoort, Soest, Nijkerk and Woudenberg are centrally digested at the Amersfoort WWTP. The process of digestion is enhanced with Thermal Pressure Hydrolysis (TPH), in order to increase the biogas yield and production of Green Electricity. The entire WWTP and sludge facilities perform energy autonomous. Furthermore, at full capacity, a surplus of approx. 2,000,000 kWh/a maybe supplied to the national power grid. This is sufficient to provide 600 households with Green Electricity.

The digestion and sludge treatment processes also produce waste streams that are rich of nutrients like phosphorus and nitrogen. The project employed the Pearl^{®*)} nutrient recovery technology to produce an environmentally responsible fertiliser called Crystal Green^{®*)}. This fertiliser is certified in Europe in the category with the highest quality fertilisers.



LysoTherm[®]



^{*)} Proprietary technology of Ostara Nutrient Recovery Technology Inc.

REALISATION

Design, realisation and process performance guarantees were integrally contracted (UAV-gc). System Orientated Contract Management (SOCM) was applied to validate quality and employers requirements during the entire project. The project was realised through a multi technology concept utilising LysoTherm® TPH technology, Pearl®^{*)} nutrient recovery technology and Demon®^{**)} nitrogen reject water treatment.

The new facility may annually process up to 12,225 tons of dry solids and then produces 11 million kWh electricity and 900 tons Crystal Green® ready to use fertiliser. The applied LysoTherm® system was fully fabricated at ELIQUO's own factories.

All biogas is produced converted into electricity by means of a CHP system (3 x 500 kW_{el} / 550 kW_{th}). The thermal heat produced is substantially sufficient to provide the TPH system with all necessary high grade heat. Non utilised heat is available to energise future low temperature sludge drying processes.

SOLUTIONS

- Mechanical thickening
- WASSTRIP®^{*)} phosphate stripping process
- Modified belt filter presses (12 % DS)
- LysoTherm® 3 x 80 m³ thermal pressure hydrolysis
- CHP 3 x 500 kW_{el} / 500 kW_{th}
- Pearl®^{*)} - to recover phosphorus as Crystal Green®^{*)} fertiliser



Crystal Green®

Result

The Amersfoort WWTP was converted into a full energy self-sufficient facility for treatment of wastewater and centralised processing of sludges. Furthermore, produced surplus heat is available for future sludge drying.

Scope

Turn-key execution of the project by ELIQUO WATER & ENERGY BV, Barneveld, NL, a sister company of ELIQUO STULZ.

ELIQUO STULZ supplied the patented LysoTherm® system. ELIQUO WATER & ENERGY and ELIQUO STULZ are members of the ELIQUO WATER GROUP.

Construction period

November 2014 – March 2016

Contract value

Approx. EUR 10.5 million

^{*)} Proprietary technology of Ostara Nutrient Recovery Technologies Inc.
^{**)} Patented system of Demon GmbH



WWTP Amersfoort – an innovative energy and nutrient
factory in The Netherlands

LysoTherm®
Effective and economical disintegration of
sludge

Version 2018/1

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