ELIQUO WATER & ENERGY

Case Study

Innovative energy and nutrient factory at Amersfoort Waste Water Treatment Plant

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 sludges 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 will perform energy autonomous. Furthermore, a surplus of approx. 2,000,000 kWh, which will not be used by the treatment processes, will be supplied to the national power grid. This is substantially sufficient to provide 600 households with green electricity during the year.

The digestion and sludge treatment processes will also produce waste streams that are rich of nutrients like phosphorus and nitrogen. The project will employ the Pearl® *) nutrient recovery technology to produce an environmentally responsible fertilizer called Crystal Green® *). This fertilizer is European Certified in the category with the highest quality fertilizers.

LysoTherm®

*) Proprietary technology of Ostara Nutrient Recovery Technology Inc.

REALIZATION

Design, realization and process performance guarantees are integrally contracted (UAV-gc). System Orientated Contract Management (SOCM) is applied to validate quality and employers requirements during the entire project. The project is realized through a multi technology concept utilizing LysoTherm® TPH technology, Pearl® *) nutrient recovery technology and Demon® **) nitrogen reject water treatment.

The new facility will annually process 12,225 ton of dry solids and produce 11 million kWh electricity and 900 tons Crystal Green® ready to use fertilizer. The applied LysoTherm® system is fully fabricated at ELIQUO's own factories.

All produced biogases are converted into electricity by means of a CHP system (3 x 500 kWel / 550 kWth). The thermal heat produced is substantially sufficient to provide the TPH system with all necessary high grade heat. Non utilized heat is available to energize future low temperature sludge drying processes.

SOLUTIONS

- Mechanical thickening
- WASSTRIP® *) phosphate striping process
- Modified belt filter presses (12 % DS)
- LysoTherm® 3 x 80 m³ thermal pressure hydrolysis
- CHP 3 x 500 kWel / 500 kWth
- Pearl® *) - to recovery phosphorus as Crystal Green® *) fertilizer

*) Proprietary technology of Ostara Nutrient Recovery Technology Inc.
**) Patented system of Demon GmbH

Crystal Green®

Result

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

Scope

Turn-key execution of the project by ELIQUO WATER & ENERGY BV, Barneveld, The Netherlands.

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

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

LysoTherm®

Effective and economical disintegration of sludge

Version 002

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