

Energy and resource management facility: Tomorrow's wastewater treatment plant - a totally new design concept

Energi- och resurshållningsanläggning: Morgondagens reningsverk - ett komplett nytt designkoncept för reningsverken



Collaboration partners

Foundation for the Swedish Environmental Research Institute (SIVL), Kalmar Vatten AB, EnviDan, Läckby Water

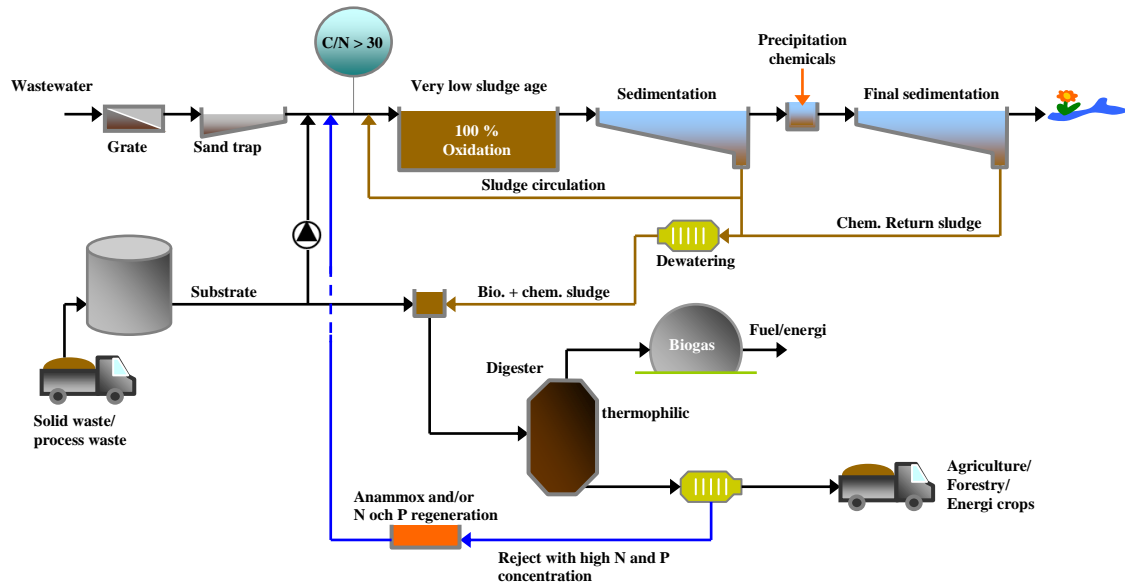
Summary

A working group consisting of VA-professionals (the Kalmar-initiative) proposes a new strategy for municipal wastewater treatment that focuses on an increased microbial conversion of organic and inorganic pollutants into valuable resources, i.e. recycling of nutrients, and an increased utilization and production of energy.

In order to reach these goals the design is based on following concept:

- Design of the incoming wastewater to the high COD/N ratio (e.g. Fixed garbage!).
- Selections of the fastest bacteria in the activated sludge (100% biological nitrogen reduction without the use of the slow-growing bacteria for nitrification/denitrification, but the use of a rapid and stable heterotrophic biological assimilation. 100% biological phosphorous reduction without the use of the chemicals.)

- Increased sludge production with high-energy content.
- Central treatment of supernatant (e.g. with anammox and / or regeneration of N and P)



Description

An Energy & Resource Management plant consists of an aeration tank, sedimentation tank, a digester and extra tanks for chemical treatment and removal of excess nitrogen if necessary.

Goal

The pre-study aims to investigate whether a conventional wastewater treatment plant can be run with high organic load, short sludge age and nutrient removal by 100% biological assimilation.

Expected benefit

The proposed project will lead to the following benefits if successful implemented:

- Treatment plants will produce more energy (through production of biogas from sludge digestion) than it consumed to treat wastewater.
- The plant will have a stable and safe operation.
- Low or no usage of chemicals.

The study will show whether it is possible to maintain a stable reduction rate of COD, N and P with biological assimilation. Moreover, certain key parameters will be determined.

Contact person

Christian Baresel (IVL), christian.baresel@ivl.se, +46-8-598 56 406.