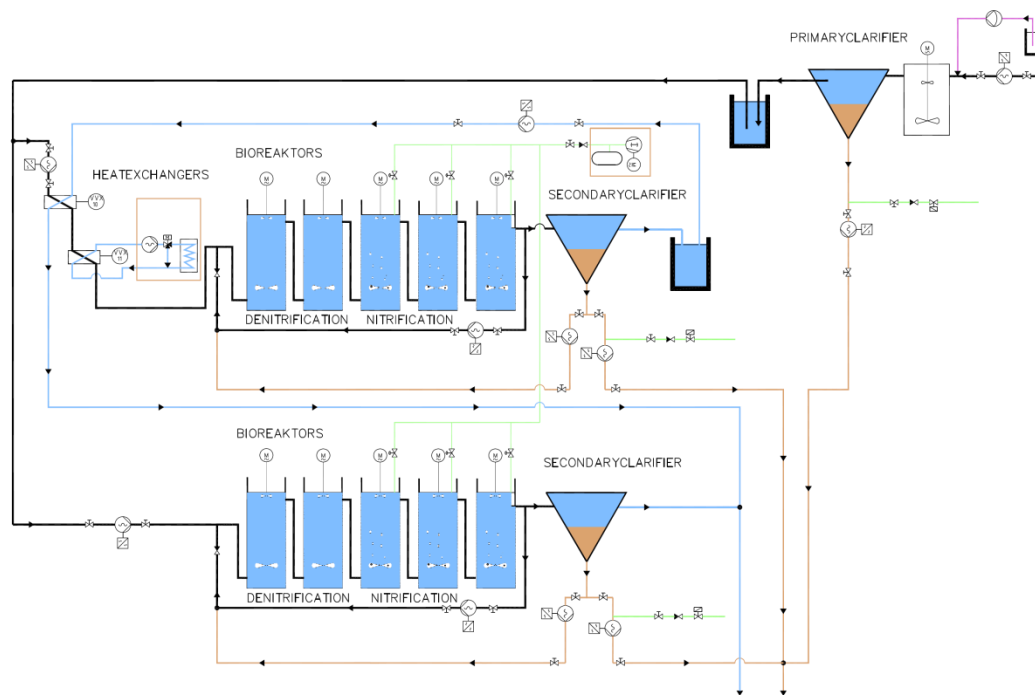


ITEST - Increased Technology and Efficiency in Sewage Treatment



Collaboration partners

Oskarshamn Municipality, Emerson Process Management AB, Jayway Innovation AB, Hammarby Sjöstadswerk

Summary

The proposed project will demonstrate new methods to improve the treatment efficiency in biological wastewater treatment while at the same time saving electrical energy.

The test plant at Hammarby Sjöstadswerket aims to demonstrate how a stabilized temperature, which can be achieved by using waste heat, can improve the treatment efficiency. The project is partly financed within the EU LIFE+ programme, with Oskarshamn municipality as project beneficiary.

Description

The basic idea is to use heat, e.g. from combined heat and power plants, in order to not only warm up the incoming water, but also to stabilise the treatment temperature. Pre-studies and calculations indicate that a stabilised process at e.g. 20 °C will improve the treatment efficiency, especially for

nitrogen (N), and possibly for other specific unwanted organic compounds. Other improvements are the possibility to use the excess heat for pre-warming sludge for anaerobic digestion, and possibly to increase the carbon dioxide content in the air for nitrification.

The preferred source of heat for warming the water is the backflow from district heating. Thus, the temperature is lowered even more before returning to the combined heat and power plant, allowing improving the electricity yield at the power plant. If no such heat is available, also biogas from sludge digestion can be used.

The technology is demonstrated and optimized with a pilot plant at Hammarby Sjöstadsverk. The demonstration is planned to be one year before equipment is moved to Oskarshamn as proof before a full-scale installation. In parallel with the demonstration, the results will be evaluated technically and economically, also for optimization of the operation.

Goal

- Demonstrate improved municipal waste water treatment (improved N, COD and specific compounds removal)
- Demonstrate improved waste water treatment control and operation (stable process over the year)
- Improved power efficiency in waste water treatment
- Improved power yield potential in combined heat and power plants (in full-scale application).

Expected benefit

The pre-studies tests and calculations indicate that the proposed method will improve wastewater treatment efficiency for one treatment plant by:

- Better water quality after municipal wastewater treatment (especially reaching a maximum of 10 mg/l for nitrogen in the treated water during the whole year).
- less power consumption for waste-water treatment (a reduction of 10-30 per cent)
- higher power yield in combined heat and power plants
- reduced carbon dioxide emissions as a consequence of an overall increased power efficiency
- cost efficiency of the necessary investment due to power savings.

The solution is applicable to many new and existing wastewater treatment plants in Europe and elsewhere giving a large potential for reduced environmental impact. The largest effect is expected for treatment plants with colder water during wintertime, when both stable and higher temperature will show effect, but there are also positive effects expected only stabilising the temperature.

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Please check also the project webpage: <http://www.itestlife.eu/>

