

Project factsheet application BEVER System

The BEVER System

For purifying wastewater, the BEVER system makes use of the activated sludge process, a common principle which is used worldwide. By this process the organic pollution is degraded biologically by means of microorganisms in the water.

The installation is constructed vertically with a surface aerator which creates a vertical circulation by intermittent aeration. This vertical circulation also makes denitrification possible. The system itself signalizes the incoming amount of wastewater and automatically adjusts the oxygen input during the purification process; this means that the BEVER system has a continuous purification process with a discontinuous control. In this way, the wastewater treatment system can perform properly with changing seasonable loads such as occur in the recreational sector.

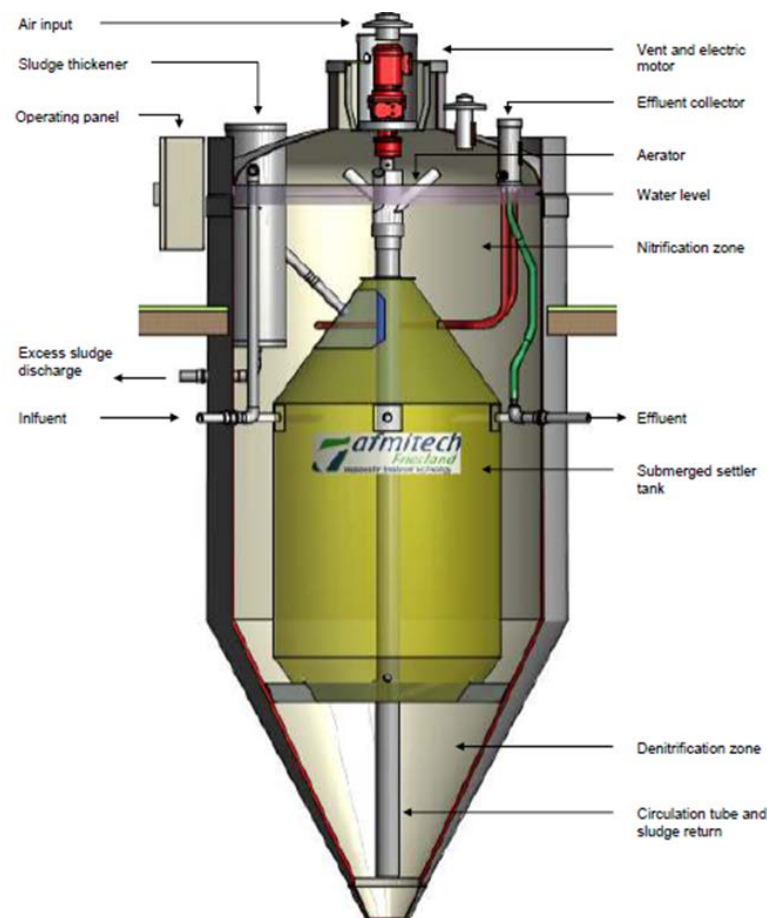


Figure 1, Outline BEVER waste water treatment tank

The excess growth of sludge is automatically thickened and periodically drained to the excess sludge sump. In this way the system keeps the concentration of sludge in the aeration compartment stable and prevents the wastewater treatment tank from becoming outgrown with sludge. The actual treatment process takes place in the wastewater treatment tank, but to regulate the inflow of wastewater to the tank, a buffer pump sump is used. This buffer pump sump prevents that too much wastewater comes into the wastewater treatment tank at once.

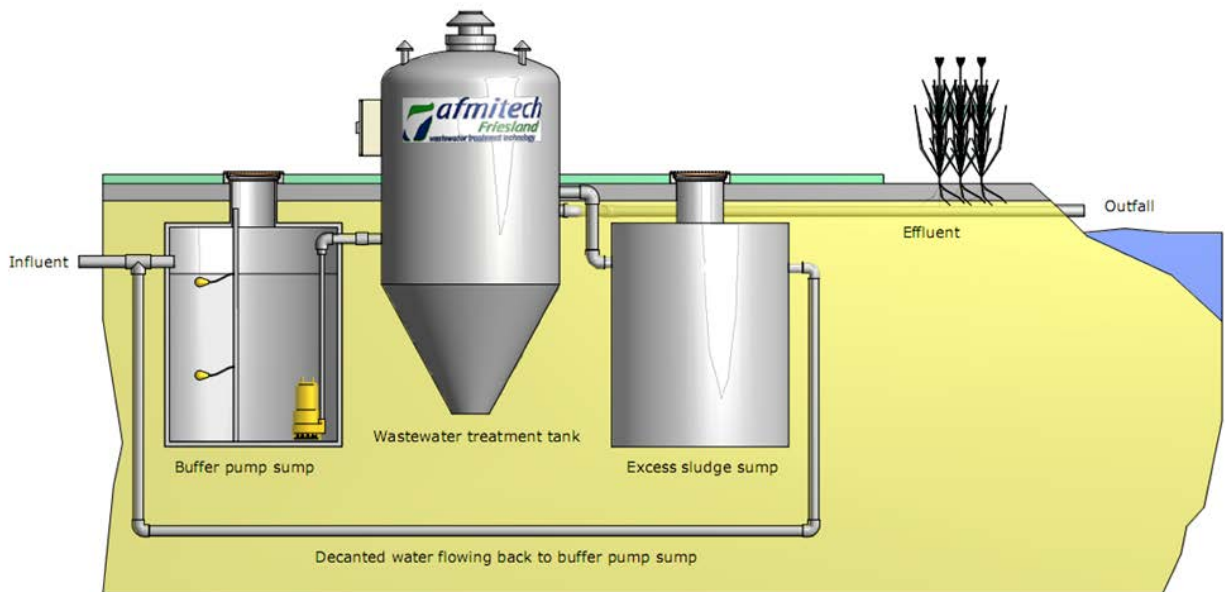


Figure 2, Schema BEVER waste water treatment system

To drain the excess sludge from the wastewater treatment tank, an excess sludge sump is used. The wastewater treatment tank is placed partly above ground, making sure that the effluent can always be drained to the lowest point. The buffer pump sump and the excess sludge sump both are completely placed underground.

Except in The Netherlands, the BEVER system was successfully implemented in many other countries like in Panama (treatment of flush water from egg processing), Mozambique (treatment of faecal sludge), Belgium (domestic wastewater treatment from group accommodation), Romania (domestic wastewater treatment) etc.



Figure 3, BEVER treatment system in operation

Test programme

- 1) *Start-up phase.* The pilot plant will be start-up with a low F/M ratio (sludge load) from about 0,10 kg COD/kg MLSS. The influent flow to start with will therefore be about 0,75 m³/day or 75 l/h. This corresponds with a COD load of about 4 kg COD/day and about 45 p.e. (population equivalent). The intention is to start with filling the AT with seed sludge (at least 2 g MLSS/l in the AT) from for example a WWTP for domestic waste water in the neighbourhood. The F/M ratio will first be more than 0.10. It can be expected that it will take about 3 – 4 weeks to have enough adapted sludge to approach a F/M of 0.10. Then, based on the results and experiences, it can be decided to start phase 2.
- 2) *Standard operation phase.* During this test phase the plant will be run at the conditions it can be expected the results will be optimal. The F/M ratio will be 0,20 kg COD/kg MLSS. To run the plant at this F/M ratio a waste water flow of 2,0 m³ per day, or 200 l/h is required. This corresponds with a COD load of about 10,75 kg COD/day and about 120 p.e.
- 3) *Phase to determine the maximum COD load.* During the third test phase it will find out the maximum COD load that can be treated in a reasonable way. Therefore a F/M ratio of about 0,30 kg COD/kg MLSS will be tried out. A waste water flow up to about 3.2 m³/day or 320 l/h should be possible. This corresponds with a COD load of about 16,8 kg COD/day and about 180 p.e.

The planning is that the experiment will start at least end August/begin September. During the experiments the results and experiences will periodically be published in the SHKALB newsletter.

Contact

When you have questions and/or want to share your ideas about the discussed topics, please contact us.

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