

Master thesis proposal: Novel technique for extraction of dissolved biogas from anaerobic digesters

Proposal

Biogas production is done at larger wastewater treatment plants all over the world. The produced biogas is a climate-friendly energy source used as vehicle fuel or to produce green electricity, thereby replacing fossil fuels. However, in order to make the biogas process work it is traditionally heated up to 37 °C which demands a lot of energy. The biogas processes of the future are hopefully operated at the ambient temperature of the wastewater (15-20 °C) which would save much energy. Such test-installation is already in place at Sjöstadsverket (photo below). One hindrance to implementation of such low-temperature processes is the increased solubility of biogas in the process water at lower temperatures (according to Henry's law). The biogas dissolved in the process water is released to the atmosphere where the methane acts as a powerful greenhouse gas, which negates the positive impact on the climate from the biogas production!

In order to solve this problem, the Swedish Environmental Research Institute will evaluate a novel technology together with Lund University and Aachen University (Germany). In preliminary trials up to 97% of the dissolved biogas has been extracted and the technology now needs to be evaluated in full scale at Sjöstadsverket wastewater treatment plant for the biogas reactor in the photo.

The aim of the master thesis will be evaluate the technology by means of efficiency in extraction of dissolved methane. The master thesis will include sampling and operation of the equipment together with personnel from the Swedish Environmental Research Institute.

