

Exjobb/Master thesis

Title

Operation and evaluation of oscillating gas injection in anaerobic digestion

Introduction

Within an EU funded research project named R3Water (www.r3water.eu), twelve innovative wastewater treatment technologies are tested and demonstrated at different wastewater treatment plants around Europe. The project is coordinated by IVL Swedish Environmental Research Institute (www.ivl.se).

Hammarby Sjöstadsvverk (www.hammarbysjostadsverk.se) is an R&D facility with focus on water treatment issues, owned and operated by IVL Swedish Environmental Research Institute and KTH Royal Institute of Technology. At Hammarby Sjöstadsvverk, six of the innovative wastewater treatment technologies included in R3Water are tested and demonstrated.

Work description

In this master thesis project, the student is to study the potential of one of the technologies participating in the project, i.e. intermittent injection of CO₂ through a fluidic oscillator, into the anaerobic digester to effect an increase in biogas production. The fluidic oscillator is a low cost, energy efficient method for generating microbubbles. These CO₂ microbubbles are hypothesised to effect an increase in biogas production by a) stripping of methane from the sludge and b) lysing a proportion of the microbial content of the digester, thereby creating an abundance of hydrolyzed material for the remaining microbial population to feed upon.

The student is to operate two parallel pilot scale anaerobic digesters (one as reference, one as experimental reactor) and evaluate the effect of CO₂ microbubbles on the amount and quality of biogas produced compared to the control. In addition, the volatile solids removal from both reactors is to be compared.

All reporting are to be in English.

Duration of master thesis project: January 2017-June 2017

Location: Hammarby Sjöstadsvverk, Stockholm, Sweden

Contact

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