



## The treatment of anaerobic digester supernatant by combined partial ammonium oxidation and denitrification

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### ABSTRACT

Although the most common method of municipal reject water management is treating in the main flow of a wastewater treatment plant, an alternative method is purifying it separately in a side-stream. This helps to reduce the load of nitrogen and carbon entering the sewage treatment system. This paper reports the results of the application of the SBR for the treatment of anaerobic sludge digester supernatant. At a reduced dissolved oxygen (DO) concentration of 0.7 mg O<sub>2</sub>/l in the aeration phase, application of mixing phases and pH regulation at the beginning of the SBR cycle (pH 8) allowed to obtain a suitable Anammox influent (50/50 ammonium:nitrite). Applying low oxygen concentrations and a one-hour long mixing phase enabled heterotrophic denitrification in the reactor. The partial use of organic compounds in this process resulted in a COD/N ratio in the effluent of ca. 1, which is favourable for the Anammox influent.

*Keywords:* Anaerobic sludge digester supernatant; SBR; Partial nitrification; Denitrification; Anammox

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