Desalination and Water Treatment
www.deswater.com
18 (2010) 235–238
June
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doi: 10.5004/dwt.2010.1778

Membrane fouling and physical characteristics of sludge in MBR system

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Received 3 June 2009; Accepted 24 December 2009

ABSTRACT

The objective of this paper is (i) to investigate correlations between MBR membrane fouling and MBR sludge physical properties, and (ii) to develop the parameters for control membrane fouling especially physical properties in term of dewatering parameters. The experiments are performed in a submerged membrane bioreactor, in sub-critical flux conditions. The physical sludge characteristic is studied for two running periods, characterized by different organic loads (VLR) and/or solid retention times (SRT). The physical sludge characteristics (SMP, SCOD, CST, SRF, viscosity and SVI) are quantified and correlated with the fouling rate. The soluble fraction is the major parameter affecting physical sludge characteristics, with the polymeric linkage. The CST can be a reliable parameter to predict the extent of second stage membrane fouling rate in MBR filtration and can be useful for monitoring the MBR system.

Keywords: Sludge characteristic; Dewaterability; Membrane fouling; CST

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