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A low energy gravity-driven membrane bioreactor system for grey water treatment: permeability and removal performance of organics

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Abstract

Synthetic grey water was treated with a low-pressure gravity-driven membrane bioreactor (GDMBR) system. The system was operated without any direct shear at the membrane surface and without any cleaning or flushing. In order to reduce energy consumption, one reactor was operated without aeration and the results were compared with an aerated reactor. Although the dissolved oxygen content was low (0.4-0.6 mg/L) in the non-aerated system, a stable permeability was observed at a level of around 20 L/m²hbar (flux of 1 L/m²h). The fouling resistance was dominated by the bio-fouling layer, which could be removed hydraulically. In comparison to the aerated system, the bio-fouling layer grown

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