

Pattanapong Tichara 2009: Study of Performance of Highly Concentrated Synthetic Wastewater Treatment by Membrane Bioreactor System. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Associate Professor Chatdanai Jiradacha, Ph.D. 106 pages.

The purpose of this paper is study of performance of wastewater treatment system by membrane bioreactor (MBR). The research use the membrane filter pore size 0.5 microns. Control HRT 2 days, 1 day and 0.63 day. Flow rate 10, 20 and 32 liters a day. And Organic Loading are 1.33 kg-BOD/m<sup>3</sup>-day, 2.62 kg-BOD/m<sup>3</sup>-day and 4.14 kg-BOD/m<sup>3</sup>-day respectively. The results indicated that BOD treating efficiency are 99.79%, 99.61% and 99.54%. COD treating efficiency are 95.84%, 93.49% and 94.10%. SS treating efficiency are 98.88%, 98.24% and 98.36%. And TKN treating efficiency are 91.20%, 75.13% and 74.47% respectively.

Membrane fouling and cleaning of; HRT 2 days could be cleaned for 14 days a time, HRT 1 day could be cleaned for 7 days a time and HRT 0.63 day could be cleaned for 2 days a time.

This research indicated that MBR system can be treated highly concentrated synthetic wastewater to high performance efficiency. However, declining of HRT to 0.63 day or organic loading up to 4.14 kg-BOD/m<sup>3</sup>-day the membrane has fast fouling and will be often cleaned.

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Thesis Advisor's signature

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