

3936071 PHET/M : MAJOR : ENVIRONMENTAL TECHNOLOGY;

M.Sc (ENVIRONMENTAL TECHNOLOGY)

KEY WORD : SEQUENCING BATCH REACTOR/IDLE PERIOD /REAERATION

WAREE PIMPETCH : EFFICIENCY OF SBR SYSTEM WITHOUT REAERATION IN PROLONGED IDLE PERIOD FOR DOMESTIC WASTEWATER. THESIS ADVISOR : NIPAPUN KUNGSKULNITI Dr.P.H.(Env. Health), SUVIT SHUMNUMSIRIVATH M.Eng (Env.&Water Resources Eng.), UDOMSAK KONGMUANG M.Eng (Env. Eng.) 108 p. ISBN 974-661-247-6

The objective of this study is to determine the removal efficiency of the SBR system without reaeration in the prolonged idle period in comparison to a system with reaeration. The SBR system efficiency in removing COD, TKN, SS, and BOD is investigated. The experiment was divided into 2 parts. Each part tested 2 SBR units, one with and one without reaeration in the idle period. The MLSS concentrations were 2,400-2,600 mg/l for part I and 1,400-1,600 mg/l for part II. Raw wastewater from Rajvithi Hospital was used in the experiment.

The efficiencies of the system without reaeration for part I and part II were 92.27% and 91.67% for COD removal, 96.22% and 94.31% for TKN removal, 99.33% and 98.82% for SS removal and 97.38% and 97.17% for BOD removal, respectively. The efficiencies of the SBR system with reaeration for part I and part II were 94.33% and 92.49% for COD removal, 96.81% and 94.63% for TKN removal, 99.16% and 98.68% for SS removal and 98.07% and 97.45% for BOD removal, respectively.

The statistical analysis at 0.05 level of significance showed that the efficiency of the system without reaeration to remove COD and BOD was significantly lower than that of the system with reaeration for Part I. However, the COD, TKN, SS, and BOD removal efficiencies of the systems for part II, either with or without reaeration in the idle period, were not different. Importantly, the effluent characteristics of all systems were below the effluent standards. It can be concluded that the appropriate MLSS concentration for operating the SBR without reaeration in the prolonged idle period should be in the range of 1,400-1,600 mg/l because it not only achieves similar removal efficiency as the system with reaeration but also reduces the power consumption.