

Performance of Integrated
Anaerobic Baffled Reactor –
Sequencing Batch Reactor System
on Treatment of Raw Palm Oil Mill
Effluent

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CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in references and acknowledgements, and the original work contained herein have not been undertaken or done by specified source or persons. I also certify that all information sources or literature included in the study are indicated in this report

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TRONOH, PERAK

SEPTEMBER 2012

CERTIFICATION OF APPROVAL

**Performance of Integrated Anaerobic Baffled Reactor – Sequencing
Batch Reactor in Treatment of Raw Palm Oil Mill Effluent**

By

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Approved by,

.....

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ABSTRACT

Palm oil industry is one of the leading oil industries in Malaysia; with the rapid growth it has cause tremendous increase in environmental pollution. Most palm oil industries are usually located near rivers from which water is abstracted for their milling operation. Palm oil mill effluent (POME) is a highly polluting wastewater that pollutes the environment if discharged directly due to its high chemical oxygen demand (COD) and biochemical oxygen demand (BOD) concentration of 67,500 mg/L and 29,500 mg/L, respectively. There are conventional methods applied by palm oil mill that require large carbon footprint, long HRT and fail to meet Malaysian Department of Environment (DOE) discharge limit. Thus, this research aimed to investigate the performance of integrated anaerobic baffled reactor – sequencing batch reactor system of POME. Result shows that it insufficient to rely only on anaerobic system, thus aerobic treatment is introduced and combined to produce requirement meeting discharge. Hence, the integrated anaerobic-aerobic system aims in treating POME to a standard that meet requirements of DOE and overcome the shortcomings of the conventional system.

Keywords: palm oil mill effluent, anaerobic baffled reactor, sequencing batch reactor.

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ABBREVIATIONS AND NOMENCLATURES

ABR	Anaerobic Baffled Reactor
COD	Chemical Oxygen Demand
BOD	Biological Oxygen Demand
F/M	Food to Microorganism Ratio
DOE	Department of Environmental
HRT	Hydraulic Retention Time
POME	Palm Oil Mill Effluent
MLSS	Mixed Liquor Suspended Solids
MLVSS	Mixed Liquor Volatile Suspended Solids
SBR	Sequencing Batch Reactor

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