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

AQILAH BINTI ABD HALIM

B. ENG (HONS) CIVIL DEPARTMENT

CIVIL ENGINEERING

UNIVERSITI TEKNOLOGI PETRONAS

September 2012

CERTIFICATION OF ORGINALITY

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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(AqilahBintiAbdHalim)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

SEPTEMBER 2012

CERTIFICATION OF APPROVAL

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By

AqilahBintiAbdHalim

A project dissertation submitted to the

Civil Engineering Programme

UniversitiTeknologi PETRONAS

In partial fulfilment of the requirement for the

BACHELOR OF ENGINEERING (Hons)

(CIVIL ENGINEERING)

Approved by,

…….

(Dr AmirhosseinMalakahmad)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

SEPTEMBER 2012

ACKNOWLEDGEMENT

In the name of Allah S.W.T, the Most Merciful and the Most Compassionate.

Alhamdulillah all praises to Allah S.W.T., to whom with His mercy provided me the opportunity to complete this Final Year Project entitled Performance of Integrated ABR–SBR System in Treatment of Raw Palm Oil Mill Effluent. This final year project is prepared for Civil Engineering Department, Universiti Teknologi PETRONAS, Tronoh, Perak.

Firstly, my utmost appreciation to Dr Amirhossein Malakahmad, my FYP supervisor whose great effort in guiding me through two semester sessions of May 2012 and Sept 2012 helped in the completion of this project. His guidance, commitment and advice have helped overcome times of difficulty during the implementation of the project.

I would also like to seize this opportunity to thank Mr Zaaba, Mr Khairul Anuar and Ms Yusnawati for their guidance and their helping hand in making this project a success. Accolades also to all the lecturers, technicians and colleagues who had directly or indirectly contributed to the betterment of the project.

Last but not least, my gratitude towards my parent and siblings, whom have provided me their unconditional and undivided love and support to me throughout my studies at UTP.

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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