

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 the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

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ABSTRACT

As the title in this project suggests, this project is mainly about using plasma gasification to produce gaseous fuels from waste biomass. The waste biomass referred here is the waste biomass that comes from oil palm plantation. Being one of the world largest producer of palm oil, Malaysia generates a huge quantity of oil palm biomass. In oil palm plantation, only 10% is the finished products; palm oil and palm kernel oil. The remaining 90% (empty fruit bunches, fibers, fronds, trunks, kernels, palm oil mill effluent) was discarded as waste, and either burned in the open air or left to settle in waste ponds. This waste could be converted to useful gaseous fuels using proper system/process.

The objectives of this project are to do research on plasma gasification and investigate whether plasma gasification is a feasible choice to produce gaseous fuels from waste biomass that comes from oil palm plantation. The project is feasible so a small-scale/ lab scale of the system is made. This system performs the process of plasma gasification.

For the methodology, this project are completed in a 3-phase method; Extensive Literature Review, Design and Prototyping, and Experiment and Data Compilation. In the early stages of this project, literature reviews are done extensively. All details and information regarding plasma gasification and oil palm waste biomass were compiled. The type of waste biomass chosen for this project is Empty Fruit Bunch (EFB). Next, the Design and Prototyping phase. In this stage, the selection of plasma generator's type is done first before designing and constructing it. It is very important to select the most feasible type of plasma generator. In the last phase, experiments are conducted and the results are validated using FTIR analysis and CHNS analysis. From there, the analysis will help determine whether plasma gasification can be used to produce gaseous fuels from oil palm's empty fruit bunch.

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Regards,

Mohd Azmi Bin Mohd Dzaki

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ABBREVIATIONS

EFB	Empty Fruit Bunch
FTIR	Fourier Transform Infrared Spectroscopy
CHNS	Carbon, Hydrogen, Nitrogen and Sulphur