

# **Performance Evaluation of Various Biomasses in a Gasifier Based Cook Stove**

by

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Dissertation submitted in partial fulfillment of  
the requirement for the  
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# **CERTIFICATION OF APPROVAL**

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A project dissertation submitted to the  
Mechanical Engineering Programme  
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July 2010

## **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**

Biomass constitutes the biggest sources of energy in rural Asia. However, its utilization in the domestic sector is mostly inefficient and polluting which results in indoor air pollution and resource wastage. Traditional cook stoves predominantly used in the households for domestic cooking have been major contributor to the ill effects related in respiratory and other health problem. Improved cook stoves programs implemented in the developing world attempt to address these problems. Biomass gasification appears to have significant potential in Asia for domestic cooking applications. Gasifier-based cook stove were fuel efficient and emission efficient in comparison to traditional cook stove. The objective of this project is to study the performance of various type of biomass in a biomass gasifier based cook stove. All types of biomass sample were analyzed in order to study their chemical properties. Three types of analysis were used which were ultimate analysis, proximate analysis and calorific value test. To study the performance of each sample, the water boiling test had been performed. From the result obtained, it was concluded that the oil palm fronds was the best type of biomass for this chemaco gasifer cook stove. The higher the carbon content and the calorific value in a biomass, the lesser the time taken to boil the water.

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