

**DEVELOPMENT OF AUTOMATED STOVE USING FUEL BRIQUETTE
FROM BIOFILTER CARBONIZED RICE HUSK (CRH)**

**RAINEIL A. CACABILOS
KATHLEEN M. RACOMA**

An Undergraduate Thesis Submitted to the Faculty of the Department of Agricultural and
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**BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS
ENGINEERING
(AB Machinery and Power Engineering)**

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ACCEPTANCE SHEET

This undergraduate thesis entitled “**DEVELOPMENT OF AUTOMATED STOVE USING FUEL BRIQUETTE FROM BIOFILTER CARBONIZED RICE HUSK (CRH)**,” prepared and submitted by **RINEIL A. CACABILOS** and **KATHLEEN M. RACOMA**, in partial fulfillment of the requirements for the degree of **BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS ENGINEERING (AB MACHINERY AND POWER ENGINEERING)**, is hereby accepted:


JOHN VINCENT A. NATE, M.Sc.
Member, Advisory Committee


WENDY C. MATEO, Ph.D.
Member, Advisory Committee

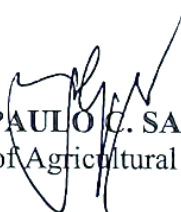
Date Signed

Date Signed


ROLDAN T. QUITOS, M.Sc.
Chair, Advisory Committee

Date Signed

Accepted as partial fulfillment of the requirements for the degree of **BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS ENGINEERING (AB Machinery and Power Engineering)**:


JOHN PAULO C. SACDALAN, Ph.D.
Head, Department of Agricultural and Biosystems Engineering

Date Signed


ROY SEARCA JOSE P. DELA CRUZ, Ph.D.
Acting Dean, College of Engineering

Date Signed

BIOGRAPHICAL SKETCH

Rainiel A. Cacabilos, born on July 16, 2001, in Science City of Munoz, Nueva Ecija, is currently residing at Poblacion West, Science City of Munoz, Nueva Ecija. He is the middle child of Mr. Manuel Cacabilos and Mrs. Raquel Cacabilos. He finished his elementary education in 2013 at Munoz Central School and secondary education at Munoz National High School in 2019.

Kathleen M. Racoma, born on August 2, 2001, in Guimba, Nueva Ecija, is currently residing at Pacac, Guimba, Nueva Ecija. She is the middle child of Mr. Rufino D. Racoma and Mrs. Liberty M. Racoma. She finished her elementary education in 2013 at Pacac Elementary School and her secondary education at Our Lady of the Sacred Heart College of Guimba, Inc. in 2019.

They are both currently pursuing their bachelor's degree in Agricultural and Biosystems Engineering at Central Luzon State University (CLSU). The motivation for their undergraduate thesis, titled "Development Of Automated Stove Using Fuel Briquette From Biofilter Carbonized Rice Husk (CRH)", emerged from their desire to explore deeper into their chosen field, which reflects their dedication to rigorous research and the pursuit of knowledge. Together, their combined efforts mark a substantial step toward a more efficient future as key contributors.

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ABSTRACT

CACABILOS, RAINEIL A. AND RACOMA, KATHLEEN M., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **JULY 2024**, **DEVELOPMENT OF AUTOMATED STOVE USING FUEL BRIQUETTE FROM BIOFILTER CARBONIZED RICE HUSK (CRH)**

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This study explores the use of carbonized rice husks (CRH) for wastewater treatment and as a fuel source, incorporating filtered fats as binders to create CRH briquettes. An automated stove was developed and tested under different fan settings (low, medium, high) and feeding intervals (1-minute, 2-minute, 3-minute), with each condition undergoing three trials with three replicates. Evaluating the automated briquette stove's efficiency in terms of fuel consumption rate and thermal efficiency revealed varying rates across fan speeds: highest at high fan speed (3.38 kg/hr), followed by mid fan speed (3.11 kg/hr), and lowest at low fan speed (1.96 kg/hr). All treatments showed significant differences at a $p = 0.05$ significance level, indicating increased fuel consumption with higher fan speeds. To minimize fuel use, the lowest fan speed is recommended. Thermal efficiency remained consistent across different settings. The study concludes that the automated stove effectively enhances the utilization of biofilter carbonized rice husk briquettes as a sustainable fuel source.

Keywords: automated briquette stove, Carbonized Rice Husk (CRH) briquette, fuel consumption rate

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