

**COMPREHENSIVE SEMESTRAL REPORT ON FIELD PRACTICE
AT CENTER FOR RENEWABLE ENERGY
AND TECHNOLOGY (CREaTe)**

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the Requirements for the Degree of

**BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS
ENGINEERING
(Agricultural Power, Energy and Machinery Engineering)**

JULY 2024

ACCEPTANCE SHEET

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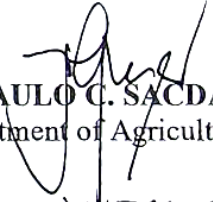
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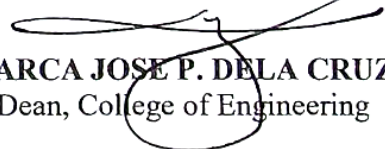

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The author, Syrell Kent M. Martinez was born on July 11, 1998 in San Jose City, Nueva Ecija and was raised in Makati City, Manila. He is the eldest among the two (2) children of Ysmael P. Martinez and he has a younger sister named is Kate Hyacinth M. Martinez. The author completed his primary education in 2010 at West Rembo Elementary School. He attended his first year high school at Fort Bonifacio High School in Makati City, but due to unpleasant circumstances, he moved to St. Joseph School located at San Jose, Nueva Ecija in 2012 to continue his secondary education. After graduating from high school in 2015, he took the Philippine Military Academy (PMA) entrance exam at Fort Del Pilar in Baguio City, but unfortunately failed. In the same year, he took the entrance exam in Central Luzon State University (CLSU) and passed the CLSU-CAT. After passing the exam, he took the program of Bachelor of Science in Agricultural and Biosystems Engineering with a major in Agricultural Power, Energy and Machinery Engineering. As part of his course, he took his On-the-Job training at the Center for Renewable Energy and Technology (CREaTe) in Central Luzon State University, Nueva Ecija.

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To his friends and co-OJTs' who helped and supported him with his study, especially in recording the gathered data, data analysis, and installing of the test equipment necessary for his study.

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ABSTRACT

MARTINEZ, SYRELL KENT M., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **July 2024, COMPREHENSIVE SEMESTRAL REPORT ON FIELD PRACTICE AT CENTER FOR RENEWABLE ENERGY AND TECHNOLOGY (CREaTe)**

Adviser: MARLON T. DELOS SANTOS M.Sc.

Performance evaluation of water wheel turbine using DC generator. The exercise demonstrates the operation of renewable energy, particularly hydroelectric power. It instructs on how to operate test apparatus correctly in order to assess the water wheel turbine with a DC generator. It illustrates the variables that impact the generation of electricity.

Performance evaluation of various-sized centrifugal pumps as hydro turbines. A hydro turbine can be converted from a centrifugal pump to produce energy. One way to accomplish that is to switch the centrifugal pump's flow direction. The two centrifugal pump sizes used in the exercise are the 3" and 4" sizes. Different pump was tested as a hydro turbine to determine how well it performs when producing power by converting a DC generator to AC in order to turn on lights.

The biomass shredder's design, construction, and performance evaluation. The machine was constructed using carefully chosen and reasonably priced materials. The biomass shredder was designed to be low-cost, effective, and able to be connected to a renewable energy source using a low-horsepower electric motor.

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