

**DESIGN AND CONSTRUCTION OF STRAIGHT BLADED MICRO  
VERTICAL AXIS WIND TURBINE**

**Design Project**

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# DESIGN AND CONSTRUCTION OF STRAIGHT BLADED MICRO VERTICAL AXIS WIND TURBINE

Undergraduate Design Project  
Submitted to the Faculty of the  
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Bachelor of Science in Electrical Engineering



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*Design and construction of straight bladed  
micro vertical axis wind turbine  
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## ABSTRACT

**CIÑO, JIO CZARIO G. and PINILE, GLADYS ANNE B. Design and Construction of Straight Bladed Micro Vertical Axis Wind Turbine.** Undergraduate Design Project. Bachelor of Science in Electrical Engineering. Cavite State University, Indang, Cavite. April 2015. Adviser: Engr. Ronald P. Peña.

The study was conducted from September 2014 to February 2015 at General Malvar, Batangas and Indang, Cavite to design and construct a straight bladed micro vertical axis wind turbine for Cavite State University (CvSU), Indang, Cavite. Specifically, the study aimed to: 1. identify the specification of local wind parameters; 2. design and construct a straight bladed vertical axis wind turbine and identify the suitable generator to be used; 3. test and evaluate the system through voltage output, current output and power output; and 4. conduct a cost benefit estimation. The study covered the design and construction of the straight bladed micro vertical axis wind turbine, which includes the wind turbine blades. The project was installed and evaluated at the roof deck of Engineering Science (ES) building, CvSU, Indang, Cavite.

The parameters such as wind speed, voltage, current, power output and efficiency were measured. It was found out that the straight bladed design is suited for the university for it has low starting wind speed, 3m/s. The results of the evaluation showed the power output and efficiency of the system in different wind speeds.

Based on the results of the study, the proponents highly recommended other researchers to focus their interest on the development of renewable sources of energy which can sooner or later help the economy. The total cost of the study amounted to P38,100.

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An undergraduate design project presented to the faculty of the Department of Computer and Electronics Engineering, College of Engineering and Information Technology, Cavite State University, Indang, Cavite in partial fulfilment of the requirements for the degree of Bachelor of Science in Electrical Engineering with Contribution No. CEIT-2014-15-122. Prepared under the supervision of Engr. Ronald P. Peña.

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## **INTRODUCTION**

Due to severe energy crisis the world is facing, the creation and consumption of energy has become a vital issue. Energy production and consumption are directly related to humans everyday life, and issues of energy research are tremendously important and highly sensitive. Being aware to global warming problems, humans are tend to rely more on renewable energy. As 21<sup>st</sup> century begins, nation have realized that some of energy sources are limited and bring possible danger to environment. Cleaner and more abundant alternative energy sources are needed.

One such renewable energy source is wind energy, and among those various renewable energy, wind provides an alternative but environmental friendly energy source that does not affect the atmosphere. Harvesting energy from wind had been popular in all places. Wind turbine design mostly focuses in Horizontal Axis Wind Turbine (HAWT). As time goes by, by continuous development of wind turbine, Vertical Axis Wind