DESIGN AND DEVELOPMENT OF A SWING SET GENERATOR

Design Project

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Undergraduate Design Project
Submitted to the Faculty of the
College of Engineering and Information Technology
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In partial fulfillment
of the requirements for the degree
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ABSTRACT

AURIGUE, PAOLO JEHECO F. and ESPINELI, CARL SHERWIN S. Design and Development of Swing Set Generator. Undergraduate Design Project. Bachelor of Science in Electrical Engineering. Cavite State University, Indang, Cavite. April 2015. Adviser Engr. Ronald R. Peña.

The study was conducted from October 2014 to January 2015 at Malvar, Batangas and Brgy. Bancod, Indang, Cavite to design and develop a swing set generator using pendulum motion. Specially, it aimed to: 1. design and construct the swing set; 2. determine the theoretical computations for the swing set power generator; 3. assembly the swing set generator on voltage with and without load, current and power; and 5. conduct cost computation.

The study covered the development and construction of the swing set power generation system, which includes a generator, a 31.2cm diameter pulley, a 5.6cm diameter pulley, one battery system, one inverter, and a charge controller.

Test and evaluation were done with different weights of the riders on the swing. The project was evaluated for a duration of 60 seconds per trial and parameters such as number of swing motions, rotational speed, voltage, current, power output and efficiency were measured. Results of the evaluation showed how the output of the system was affected by the different weights of its rider.

The total cost of the study was P 26,085.

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DESIGN AND EVALUATION OF A SWING SET GENERATOR

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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 fulfillment of the requirements for the degree of Bachelor of Science in Electrical Engineering with Contribution No. CEIT-2014-15-130. Prepared under the supervision of Engr. Ronald P. Peña.

INTRODUCTION

Electricity is very important. It has always been a great factor in making man's life easier. It is always hard to imagine a day without electricity, but in some places, and sometimes there are circumstances that electricity was inevitably unavailable that's why generators were invented. An electric generator is a machine that converts rotary mechanical energy into electrical energy. A generator forces electric current to flow through an external circuit. The mechanical energy may be applied by a turbine steam engine, water falling through a turbine or waterwheel, an internal combustion engine, a wind turbine, compressed air, or any other source of mechanical energy. One example of an alternative source of mechanical energy is the back and forth motion of a swing which demonstrates the physics of a pendulum. A simple pendulum is consist of a relatively massive object hung by a string from a fixed support. It typically hangs vertically in its equilibrium position. The massive object is affectionately referred to as the pendulum