DESIGN AND DEVELOPMENT OF SOLAR TRACKER

Design Project

MERBEN B. TUVILLO
CESAR GABRIEL M. PEREZ

College of Engineering and Information Technology
CAVITE STATE UNIVERSITY
Indang, Cavite

March 2010

DESIGN AND DEVELOPMENT OF SOLAR TRACKER

Undergraduate Thesis
Submitted to the Faculty of the
Cavite State University
Indang, Cavite

In partial fulfillment
of the requirements for the degree of
Bachelor of Science Electronics and Communications Engineering

MERBEN B. TUVILLO
CESAR GABRIEL M. PEREZ

March 2010

ABSTRACT

Perez, Cesar Gabriel M. and Merben B. Tuvillo. Design and Development of Solar Tracker. Undergraduate Design Project, Bachelor of Science in Electronics and Communications Engineering. Cavite State University, Indang, Cavite. March 2006. Adviser: Engr. Michael T. Costa

The Design and Development of Solar Tracker was conducted at Saint Anthony Village Salitran 3, Dasmariñas, Cavite. The general objective of the study was to design and develop a solar tracker that would track the sun as it move.

The project was composed of a single circuit; the Solar Tracker. The Solar Tracker was composed of solar panel, photo sensors, limit switches, motor and 12v lead acid battery. The Solar Panel absorbs sunrays convert the sunrays into electricity and will charge the battery that supplies the circuitry. The limit switches serves as the limiter to the rotational movement of the solar panel. The motor moves in a clockwise or a counter clockwise rotational direction. The photo sensors serve as the triggering device of the motor.

The design project was evaluated by comparing the two batteries that was charged from a solar tracker and a stationary solar panel. The batteries were discharged at the same time before charging for 3 hours. After it was charged, the batteries were connected to the same load and measure how long it can supply the load. The result was that a battery charged from a solar tracker was more efficient than a battery charged from a stationary solar panel.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

DESIGN AND DEVELOPMENT OF SOLAR TRACKER[1/]

Perez, Cesar Gabriel M.

Tuvillo, Merben B.

[1/]An undergraduate thesis submitted to 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 Electronics and Communication and Engineering.Contribution No. BSECE-2009-10-005 prepared under the supervision of Engr. Michael T. Costa

INTRODUCTION

Renewable energy solutions are becoming increasingly popular. Photovoltaic (solar) systems are but one example. Maximizing power output from a solar system is desirable to increase efficiency. In order to maximize power output from the solar panels, one needs to keep the panels aligned with the sun. As such, a means of tracking the sun is required. This is a far more cost effective solution than purchasing additional solar panels. It has been estimated that the yield from solar panels can be increased by 30 to 60 percent by utilizing a tracking system instead of a stationary array. This project develops an automatic tracking system which will keep the solar panels aligned with the sun in order to maximize efficiency.