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FACULTY OF ENGINEERING

DEPARTMENT OF ELECTRICAL ENGINEERING

AUTOMATED SINGLE AXIS ACTIVE SUN-TRACKING SOLAR PANEL USING A CLOCK TIMER

BY

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REG.NO: BU/UP/2020/0859

SUPERVISOR: MR. MUGWANYA PATRICK

A PROJECT PROPOSAL SUBMITTED TO THE DEPARTMENT OF ELECTRICAL ENGINEERING IN PARTIAL FULFILLMENT FOR THE AWARD OF

DIPLOMA IN ELECTRICAL ENGINEERING OF BUSITEMA UNIVERSITY.

ACKNOWLEDGEMENT

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Many fellow students offered help in form of advice and information and it is also greatly recognized.

Special thanks to my family for their never ending financial and advisory support. May God reward them abundantly.

Above all, I acknowledge the Almighty God for the gift of life, wisdom and guidance. For without Him, I would not have been able to accomplish this project report.

DECLARATION

I KIPROTICH ISAAC BU/UP/2020/0859 declare that this report is original and has not been published or submitted before to any university or higher institution of learning.

Sign…….

Date…….

DEDICATION

I dedicate this report to my Great God, beloved parents, friends, lecturers and all the classmates for their contributions towards the journey of achieving my diploma in electrical engineering.

Sign: ……

Date: …….

SATISFACTION

This is to satisfy that this project was our own handwork (written and constructed by the students listed above and has been prepared in accordance with regulation governing the writing and presentation of projects at BUSITEMA UNIVERSITY, FACULTY OF ENGINEERING, DEPARTMENT OF COMPUTER ENGINEERING.

Signature..... P.P Bamugonzaad Patrick.

Date....30th-01-2023.....

Supervisor: Mr. Mugwanya Patrick

LIST OF ABBREVIATIONS AND ACRONYMs

DAQ……...Data Acquisition Card

RC……. Radio Controlled

DC……Direct

Abstract

During the study of the project, I was exposed to hands on facilities majorly in the E-learning centre which is in accordance to university's mission and vision.

I was given chance to research about my project where i comprehended the content and i came up with the final idea of the project.

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1.0 Introduction

1.1 BACKGROUND

Today, 70% of the population in Uganda rural areas experience a dramatic situation where the electric supply is very low and irregular, and in some cases, completely absent from many villages in the country. The country suffers from unequal energy distribution, with power cuts of 2 to 3 hours in major cities, and in rural areas from 6 to 10 hours during the hot season (May to June). Up to 50% of households in Uganda have no access to modern lighting and the electric grid has not reached remote places of the countryside, with some areas lacking electricity in the 95% of the region.

There are some solutions like solar electricity from solar panels. Although many assume that renewable energy is too expensive for the poor but if it is combined with affordable financing mechanisms, it can be fully implemented and makes this type of clean electricity (and many others like portable rechargeable lamps) a viable option for millions in Uganda. Both renewable and non-renewable resources are being used for production of electricity to meet the needs. But non-renewable resources are under the stage of extinction so it is better to choose the renewable resources.

1.1.2 why this project

The main objective of this project is to track the solar energy efficiently and using the same for the house hold applications like glowing Small Bulb, Mobile Phone Charging etc., Commercial made solar trackers to any solar panel array help in increasing the time of the panels facing the sun and allow them to produce their maximum power. Unfortunately, they can be expensive to buy. I decided to make my own solar tracker to see if i could reduce the cost. I did not want to re- invent the wheel but wanted to make it more affordable. I started out small and came up with the idea of solar tracking using time instead of using a device that would sense where the sun is and moving the panel towards it. The objective of this project is to control the position of a solar panel in accordance with the motion of sun. Thus, my objective is efficient utilization of the solar energy for development of nation and clean environment.

Some common types of solar panels fittings used in Uganda

1.1.1.1Fitted installation solar panels trackers,

These are tilted in at one angle of incidence to maximize the production of power.

4.3 references

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4.3.1Table 1: Captured Panel voltage with proposed tracking system.

S.NO	TIME	PANELVOLTAGE (V)
1	8.00 AM	9.0
2	9.00 AM	12.5