



FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT ELECTRICAL ENGINEERING
DIPLOMA IN ELECTRONICS AND ELECTRICAL ENGINEERING
FINAL YEAR PROJECT REPORT
A DUAL AXIS SOLAR TRACKING MECHANISM WITH REFLECTORS

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**FINAL YEAR PROJECT REPORT SUBMITTED TO THE
DEPARTMENT OF ELECTRONICS AND ELECTRICAL ENGINEERING AS A
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF
A DIPLOMA IN ELECTRONICS AND ELECTRICAL ENGINEERING**

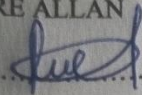
(June 2025)

DECLARATION

I hereby declare that all the written material contained in the report is an account of my own efforts and has never been submitted to any university or institution for an academic award.

Name: BWIRE ALLAN

Signature.....



DATE.....

24/11/2025

APPROVAL

This is to certify that the project titled "Dual Axis Solar Tracking System with Reflectors" has been done under my supervision and is now ready for examination.

MS. LUCY NABWIRE:

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Date..... *29/11/25*

MR. FRANK MBABAALI

Signature..... *Frank Mbabaali*

Date..... 07/07/2025

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

DEDICATION

I dedicated all my efforts and struggles to our dear parents, without them I am meaningless, I also dedicate this report to the entire Busitema university for providing the better and convenient platform for our studies and other co-curricular activities which we acquired from the university, I humbly thank them for their support during our studies, may the Almighty God bless you all abundantly.

ACKNOWLEDGEMENT

First of all, I would want to thank the Almighty God who has blessed me with wisdom, knowledge and courage to achieve what I had promised and provided me opportunity to fulfill my ambition.

Secondly, I am very grateful and I would like to express my deepest gratitude to our mentors for their help, guidance, their support, continuous encouragement and the confidence they have entrusted upon me, their constant encouragement and the motivation which they inculcated during the course of my work, helped me look forward to the timely completion of my project with more enthusiasm and boost confidence within myself.

Furthermore, I would like to pay my sincere appreciation and innumerable thanks to Head of Department Electrical Engineering, whose guidance, constructive comments, support and advice has enabled me to gain profound understanding throughout this period. I would also like to express my sincere thanks to all the members of the department, who have helped me at times and in many ways and made this whole effort demanding process pleasant.

Finally, I would like to thank my supervisors **MR. FRANK MBABAALI and MS. LUCY NABWIRE** who trusted me and gave me opportunities to prove myself and also, they polished me well by assigning tasks which helped to gain professional knowledge and enhanced my learning by letting me participate in professional conferences and gave me confidence.

In the last, I would like to express my acknowledgement to my parents for the everlasting love, dreams and sacrifices they made throughout their lives to make me see this. I could not find the appropriate words to properly describe my appreciation for their endless devotion, support and faith in my abilities in achieving the goal.

ABSTRACT

Fossil fuels have been facing tracker systems with reflectors. Our aim is to design a dual axis solar tracker system with reflectors. The sun is tracked by the tracker and its position is changed in such a way that it maximizes power output. On the top side of reduction with passing time and generation of power is becoming a bigger challenge. Talking about renewable sources, the conversion of solar energy into electrical energy by using photovoltaic panels is prioritized. In this project, photovoltaic conversion panels are expected to be used in an automatic microcontroller based solar panels are the reflectors and, in this case, we are to use Polished Aluminum Sheets to reflect more rays on to the solar panels thereby increasing energy output. The solar panel is moved by two geared DC motors so that the sun's light is able to remain aligned with the solar panel. The operation of the device is based on a DC motor which is intelligently controlled by the dedicated drive until that moves a mini photovoltaic panel, the presence of the two simple but efficient light sensors receive signals by the microcontroller. The performance and characteristics of the solar tracker device are experimentally analyzed.

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