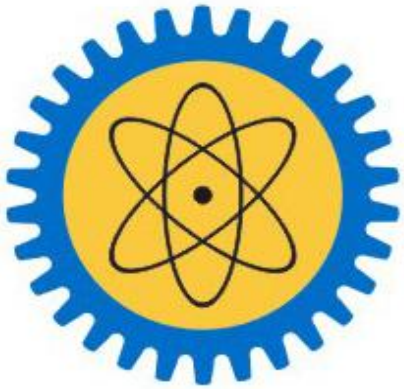

BUSITEMA UNIVERSITY

Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF MINING AND WATER RESOURCES ENGINEERING

FINAL YEAR PROJECT REPORT

DESIGN AND SIMULATION OF AN INTEGRATED FLOATING PLATFORM FOR PV SOLAR MODULES.

By

OPUS ANTHONY

BU/UP/2017/1537

SUPERVISOR: Assoc Prof. Babu Musinguzi

CO-SUPERVISOR: Mr. Oketcho Yoronimo

A final year project submitted to the Department of Mining and Water Resources Engineering as a partial fulfilment of the requirement for the award of a Bachelor of Science degree in Water Resources Engineering.

MARCH 2022

ABSTRACT.

This report gives an overview of the various activities conducted during the design, simulation and construction of an integrated floating platform for PV solar modules taking Habuleke small irrigation scheme as the case study area. The research was inspired by the increased threats posed by solar installation on arable land that is mostly preferred for agriculture and the costs of solar installation on land.

The main objective of the study was to design and simulate the floating platform for the PV modules and assess its compatibility with the fastening mechanism of the solar modules i.e., bolts. The specific objectives involved the design of the system components of the floating platform, simulation of the system performance on Ansys software, construction of the physical model and to carry out the economic analysis of the project.

The methods used in the design of the system include the Archimedes principle, law of floatation, declination angle method for solar mounting among others.

The findings were, the floating solar system was economical and offered more benefits like reduction in the rate of evaporation on the water body. FPVs are a promising technology for electricity generation most especially in difficult geographical locations.

Conclusively, the project explores the available material for floating PV solar modules using Polyvinyl Chloride pipes however more research ought to be done to explore more efficient and long-lasting materials for floating PV solar modules.

DECLARATION

I OPUS ANTHONY, BU/UP/2017/1537 hereby declare that, this report is the work of my hands and this research has never been presented by any person or institution for an academic award.

SIGNATURE: …….

DATE: …….

DEDICATION.

I would like to dedicate this project to my Parents and sponsors FAWE(U) for the unending support they accorded to me through my learning years not forgetting all Ugandans who don’t have access to clean and affordable energy.

ACKNOWLEDGEMENT.
My gratitude goes to Almighty God for bestowing unto me the gift of life, strength and grace to finish my project.

I also owe a tremendous debt of gratitude to my supervisors Assoc. Prof Wilson Babu Musinguzi and Mr. Oketcho Yoronimo for the guidance and support they accorded to me as I did this project.

Furthermore, I would like to thank Mr. Omutuju Emmanuel an engineer at MWE and my colleagues who contributed in one way or another during this period.

Finally, my sincere gratitude goes to my family and friends for the unfailing support, encouragement and guidance that kept me up and doing.

APPROVAL

This is to certify that this final year project report was written under the guidance of my supervisor(s) on the topic **"Design and simulation of an integrated floating platform for PV solar Modules"** and now it is ready for submission to the department of water resources and mining engineering, Busitema University.

Assoc. Prof. Wilson Babu Musinguzi

Signature……

Date……

Mr. Oketcho Yoronimo.

Signature…….

Date……

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FPVs Floating Photovoltaic solar Systems.

RENAC Renewable Academy.

EVA Encapsulant