



FACULTY OF ENGINEERING

DEPARTMENT OF WATER RESOURCES AND MINING ENGINEERING

FINAL YEAR PROJECT

**RE-DESIGNING AND CONSTRUCTION OF A SEMI-AUTOMATED SOLAR PANEL
DUSTING SYSTEM.**

(Case study: Busitema University Solar Plant)

BY

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Abstract

Solar energy is the most abundant source of renewable energy. Constant soling and wind storm further reduce the efficiency of production of solar energy because the soil particles accumulate the solar photo voltaic cells and this limits the number of solar radiations striking solar PV cell. Therefore, it is essential to have regular and proper cleaning of panel. In most of the parts the cleaning is done manually. This type of cleaning is not uniform and it may cause health issues to the workers, and also solar Photovoltaic cells are prone to damage. This can be solved by automating the setup solar panel cleaning system with/without water. The aim of this project is to Re-design and construct a solar panel cleaning system for removal of dust to effectively clean the solar panels and increase solar panel efficiency. It will use soft yet powerful cylindrical brush which is rotated by a shaft connected to a motor and also with a squeegee on the other side next to brush to remove water and dirt after the brush has cleaned. In this system, it enhances multiple solar cleaning and it is also movable from one place to another. The project intends to increase the efficiency of solar panel by removing all kinds of dust particles at the Busitema University Solar Plant.

DECLARATION

I **MUKAMA BRIAN** declare that this report is a result of my own research and has never been submitted to any institution of higher learning for any academic award.

I stand to account for all this information contained in this report.

BU/UP/2020/0330

MUKAMA BRIAN

Signature

Date

APPROVAL

This research proposal submitted as a partial fulfillment for the award of Bachelor Degree in Water Resources Engineering of Busitema University, with our approval as the academic supervisor(s).

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Acknowledgement

I express my sincere gratitude to the Almighty GOD, many thanks to my cherished friends and family for their unending emotional support, encouragement, and prayers as well as for helping me with this effort.

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Without forgetting our class of water resources engineers for the great support.

Dedication

I dedicate this proposal report to everyone who contributed to my success and making it possible for me to come up with such an amazing piece of report.

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4. The solar panel gave an over increase in efficiency of 30% after cleaning.

The prototype can be constructed easily and cheaply since the materials used are readily available and cost of the system is affordable since the initial investment can be recovered within few months. The developed system can increase efficiency of the solar panel; it also reduces the cost of manual labor since it can clean in few hours.

Recommendations

Although the final prototype of the automated solar cleaning system was considered was accomplished still improvements can be made. Due to the time the design was unable to incorporate all of the ideas into the final product and thus the following should be incorporated into increase the performance of the prototype;

The system can be made to be height adjusting and so able to clean solar panels of varying heights.

Silicon brushes can be used where it gives max life of cleaning.

It can also be controlled by using remote controllers for necessary cleaning actions.

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