

FACULTY OF ENGINEERING
DEPARTMENT OF ELECTRICAL ENGINEERING
BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING
FINAL YEAR PROJECT REPORT
TITLE: SMART SOLAR MONITORING SYSTEM

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A PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF ELECTRICAL
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AWARD OF A BACHELORS OF SCICENCE IN ELECTRICAL ENGINEERING

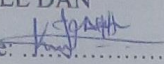
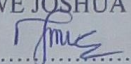
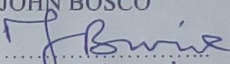
DECLARATION

I KABOOLE DAN, students of Busitema University, hereby declare that the presented project report is uniquely prepared by me after thorough research work at Busitema University. I also confirm that this project report has been written by me and has never been submitted to any academic institution.

SIGNATURE.....
DATE 21st/06/2024

APPROVAL

This is to certify that this project report has been compiled by KABOOLE DAN (Registration Numbers, **BU/UP/2020/1216**) under the supervision and guidance of the University supervisors. It is now ready for submission to the Department of Electrical Engineering.

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DEDICATION

I dedicate my project work to my family and many friends. A special feeling of gratitude to my loving parents Mr. Mwisaka Siraj and Mrs. Lofisa Wakhatenge, whose words of encouragement and push for tenacity ring in my ears. My sisters and brothers have never left my side and are very special.

ABSTRACT

The project presents an arrangement to detect the conditions or parameters that can cause a fault in a solar panel(s) in different places looking at the different faults and the diverse ways of detection and prevention of possible fault outbreaks. The project system used a microcontroller and different sensors to achieve this requirement.

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CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Solar energy is widely available throughout the world can contribute to minimize the dependence on energy imports. In 90 min, enough sunlight strikes the earth to provide the entire planet's energy need for one year. Solar PV entails no greenhouse gas emissions during operations and does not emit other pollutants also. According to the International Energy Agency (IEA), Renewable is the fastest growing source of electricity, in which wind and solar PV are technologically mature and economically affordable. But still there is increase in world's demand for energy.

At present, the solar photovoltaic (PV) energy is one of the pivotal renewable energy sources. The solar energy is becoming a potential solution towards sustainable energy supply, thus there is need for carrying out smart solar monitoring to ensure efficient utilization of solar energy, analysis, and optimization of solar panel performance. [1]

Smart Solar Monitoring System is a combination of Hardware and Software which provide the complete solution and improves the performance of the solar PV.

A predictive maintenance which includes localization and definition of related faults and failures in a PV system is very important. In what follows, concentration has been given on the most widely used ones. Remote monitoring and control of PV system based on Zigbee technology is proven inefficient in large scale because it can't face up huge distance.

Remote monitoring systems have to fetch, analyze, transmit, manage and feedback the remote information, by utilizing the most advanced science and technology field of communication technology and other areas. [2]

It also merges comprehensive usage of instrumentation, electronic technology and computer software.

Prevalent monitoring solar system approaches present, poses some problems like low automation and poor real-time. These problems can be averted with an efficient remote environment information monitoring and controlling system. This system should include automatic diagnosis techniques the PV station. [3]

3.5 References

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