

THE DESIGN AND CONSTRUCTION OF SIMPLE HOME

INVERTER

BY

OKAL PETER

BU/UG/2018/4112

A PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF PHYSICS

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD

OF THE DEGREE OF BACHELOR OF SCIENCE AND EDUCATION OF

BUSITEMA UNIVERSITY

MAY, 2022

## DECLARATION:

I OKAL PETER, hereby declare that this project report of is my own work and has not been copied or adopted from any other work submitted before any board of examiners for award of degree in Bachelor of science Education or any other qualification.


Signed..... *Okal Peter* .....

Date ..... *25<sup>th</sup> / MAY / 2022* .....

OKAL PETER

**APPROVAL**

This project has been produced under my supervision and submitted with my approval.

Signed..........

Date..........

Mr. Owali Joseph Anthony

## **DEDICATION**

This project work is dedicated to Almighty God, the Alpha and Omega, and also to my parents, Mrs. Aiyo Susan and Doctor Okwii lecturer of Makerere University my grandfather for their financial support they rendered towards the success and completion of this project.

To my uncle on side of my father Pastor OKAL STEPHEN together with AMMII ministries where fellowship for their spiritual guidance and prayers towards my success, Mr. Ochom Ben D.O.S of Wiggins s,s ,papa Esele Anthony .They have in one or other contributed much to see that attain academic excellence.

**MAY GOD BLESS YOU ABUNDANTLY.**

## **ACKNOWLEDGEMENT**

My happiness goes to the Almighty God, alpha and omega the beginning and end Wisdom giver who enabled me to understand and overcome the challenges faced on my academic pursuit.

I sincerely appreciate the support and advice of my supervisor Mr. Owalu Joseph Anthony. Whose supervisory technical advice and guidance have contributed to the successful implementation of this project?

I also express my sincere appreciation to my entire families, Mrs. Aiyo Susan, Mr. Ogwang Tofil retired head teacher Wiggins s,s, Mr. Eraju D/Teacher Mukura Memorial s,s Ngora, Mrs. Lawal Abisola, physics laboratory attendants of Nagongera campus Busitema university and lecturer's for their courage and support toward the success of my academic career. Last but not the least, the credit on my success should be ascribed to my loving mother Mrs. Apoo Dinah and all that have contributed positively to my request.

## TABLE OF CONTENTS

Contents	Pages
Declaration.....	i
Approval.....	ii
Dedication .....	iii
Acknowledgement.....	iv
<b>CHAPTER ONE: INTRODUCTION</b>	
1.1 Background of the study.....	1
1.2 Problem Statement.....	2
1.3 Aim and objective.....	2
1.4 Significance of the project.....	2
1.5 Scope of the Project.....	2
<b>CHAPTER TWO: LITERATURE REVIEW</b>	
2.1 Introduction.....	3
2.2 Inverters and Application.....	4
2.3 Inverter and Type.....	5-6
2.4 Inverter and Design.....	7-8
2.5 Transistors and Type.....	8-12
2.5.1 Application of transistors.....	13
2.6 Resistors.....	14
2.6.1 Resistors connection.....	15
2.6.2 Calculation of the resistance.....	15

2.7 Type of Resistors and application.....	16
2.8Transformer.....	17
2.8.1 Electric Transformer and winding.....	18
2.8.2Transformers and application.....	19-20
<b>CHAPTER THREE: CONSTRUCTION AND METHODOLOGY</b>	
3.1 introduction.....	20
3.2Design and calculation and in inverter.....	20
3.2.1Construction of inverters.....	21
3.2.2Item required to make an inverter at home.....	22
3.3 Testing.....	22-23
3.4 Bills and estimation.....	24
3.5 problem encountered .....	25
<b>CHAPTER FOUR: CONCLUSION AND RECOMMENDATION</b>	
4.1conclusion.....	25
4.2 Recommendations.....	25
4.3APPENDICES	
List of acronyms used.....	26
References.....	27

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the study**

Electricity supply is one the economic infrastructural facilities that are indispensable to a nation's economic development. The efficiency of the supply of electricity will not only influence returns on investment on existing enterprises, it also plays a major role in the creation of an economic environment which influences decisions on potential investment.

The electricity which is the main source of power for our domestic consumption, industrial development, center of learning and medical centers should really be rehabilitated into enhancement of productivity.

However power failure has resulted in people buying generators for their own daily activity. Other businesses are also not functioning due to absence of constant power supply in villages. These are the reasons that necessitate the designing and construction of inverter that can deliver maximum output power to the load. As society grows from simple to complex, mankind began to spread all over the earth and so it becomes necessary to enjoy power using inverter. There are number of small business that have been closed simply because of power problem and cannot be over emphasized, so mankind need inverter seriously in other to restore technology development, businesses, communications, learning center and medical centers. However, the background of the study lies within the reason why and the construction of inverter should be forwarded and factor that enhance inverter marketability.

Finally, the success of this study will be beneficial to the society at large. Mass production of simple home inverters will lead to improve standard of living of the populace and the nation will move forward in its pursuit of technological development.

### **1.2 Problem Statement**

As a result of lack of reliable and affordable power in villages, sensitive appliances are not in use since most of them uses A.C power supply Then, this project is to provide affordable and reliable power supply of to power home with enough light, power for charging phone, use other appliances which uses A.C power which is not available in rural areas.



## References

1. ABS Alaskan. (2006): DC to AC Power Inverters.  
Retrieved from <http://www.absak.com/basic/inverters.html>.
2. Clayton Hall Mark (1986): —IC Cookbook (Pin Configuration of all ICs) Published by M.C.-Gram Book Company.
3. EGG Data Book (1999): Edition General Data Sheet for all the Components.
4. Jacob Milkman (1979): —Micro Electronics Published by Mc Gram-Hill Book Company.
5. Metha V.K. (2003): —Principles of Electronics Published by S. Chand and Company Ltd.
6. Robert L. Boyestad and Louis Nashelsky (2002): —Electronics Device and Circuit Theory (Eighth Edition) Published by Prentice Hall.
7. R.J. Maddock and MD Calcutt (1994): —Electronics A Course for Engineers Published by Longman
8. J. C. Osuwa and C. F. Peter, “Construction and Implementation of 1 KVA Inverter”.
9. Olusegun O. Omitola, Segun O. Olatinwo and Taiwo R. Oyedare, “Design and Construction of 1KW (1000VA) Power Inverter”
10. S. Bednarek, B. Szafran, and J. Adamowski, “Solution of the Poisson Schrodinger problem for a single-electron transistor”, Phys. Rev. B, Vol. 61, pp. 4461-4464, 2000.
11. H. K. Gummel and H. C. Poon, “An integral charge control model of bipolar transistors,” Bell Syst. Tech. J., vol. 49, pp. 827–852, May–June 1970.
12. G. Wang and G. C. M. Meijer, “The temperature characteristics of bipolar transistors fabricated in CMOS technology,” Sens. Actuators A, vol. 87, pp. 81–89, Sept. 2000.