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FAULTY OF ENGINEERING

DEPARTMENT OF COMPUTER AND ELECTRICAL ENGINEERING

DIPLOMA IN ELECTRONICS AND ELECTRICAL ENGINEERING

FINAL PROJECT REPORT:

AUTOMATIC UNDERGROUND BROKEN LINE AC FAULT DETECTOR

PARTICIPANTS

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ACKNOWLEDGEMENT.

We acknowledge with great pleasure the department of computer and electrical engineering for the continued support towards the development of this project proposal.

Great thanks to our supervisor **Mr. BUTIME ERIC** for his guidance, class mates and friends for their practical help and prayers during the synthesis of the work. May the Almighty God bless you in all your endeavors.

DECLARATION

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

We wish to extend our sincere appreciation to the almighty God for letting us finish our presentation Successfully.

It is indeed with a great sense of pleasure and immense sense of gratitude that I acknowledge the help of our supervisor Mr. Butime Eric Katarwa.

secondly, we also want to express our deepest thanks to Mr. Aluyye (**HEAD OF DEPARTMENT**), and other members in the department.

DEDICATION

We dedicate all our efforts and struggles of the educational life to our dear parents. without them we are meaningless. we also dedicate this report to entire Busitema University for providing the better and convenient platform for our studies and other co-circular activities which we acquired from the university. we humbly thank for their support during our studies may the Almighty our Lord bless you all abundantly.

ABSTRACT

During the study of the project, we were exposed to hands on facilities majorly in the E-learning center which is in accordance to university's mission and vision.

We were given chance to research about our project where we comprehended the content and we came up with the final idea of the project.

In this project, we are aimed at detecting an underground broken line AC fault, since many people find it difficult tracing where probably the fault exist in a line in case it occurs.

This will offer a cheaper and a portable alternative in detecting faults for a shorter and long distance lines since we just move the detector on top of the line and we shall be able to solve many challenges related to detecting faults in the electrical field.

I would recommend one to use this kind of technology since it is cheaper and affordable that anyone can afford.

In conclusion therefore, our project will be beneficial to many electricians in the world.

APPROVAL

The project research was done under the guidance of the instructors and supervision of my supervisor from the Department of Computer Engineering and therefore I forward it to department with the approval of the supervisor: **Mr. Butime Eric katarwa**.

Name.....

Signature.....

Date.....

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CHAPTER ONE

1.0 INTRODUCTION.

1.1 background

- A fault in electrical equipment is defined as a defect in its electrical circuit due to which the current is diverted from the intended path. There are several reasons why the sheathing material may degrade, including excessive heat or cold, chemicals, weather conditions, and abrasion of the sheath. All of these factors can ultimately cause electrical failure as the insulated cores are no longer protected by the sheathing as originally designed.
- There are different types of existing methods for different faults which make it safe and efficient to locate the faults without damaging the cable. Nevertheless, following are the electrical supply faults that occur in underground cables

- **Open-circuit fault –**

A break in the conductor of a cable is called open-circuit fault. This type of fault is checked with the help of a device called 'megger'. In this type of fault, the 3 conductors of the 3-core cable at the far end are shorted, and then connected to the ground. The megger is then used to read the resistance between each conductor and the ground. If the megger indicates 0 resistances in the circuit of the conductor, it means it is not broken. But if the megger measures infinite resistance, it means that the conductor is broken which needs to be replaced.

- **Short-circuit fault –**

When an insulator fails, it is due to the 2 conductors of a multi-core cable coming in contact with each other electrically, which indicates short-circuit failure. For this again, a megger is used. In this type, the 2 terminals of the megger are connected to any 2 conductors. Fault is indicated when the megger gives zero reading between the electricity conductors. The Same process can be repeated by taking other 2 conductors at a time.