



**FACULTY OF ENGINEERING**

**DEPARTMENT OF MINING AND WATER RESOURCES ENGINEERING**

**FINAL YEAR PROJECT REPORT**

**DESIGN AND CONSTRUCTION OF SOLAR POWERED DESALINATION SYSTEM  
FOR SALTY BOREHOLE WATER**

**(CASE STUDY: BUWOYA VILLAGE NAMAYINGO DISTRICT)**

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A final year project report submitted to the Department of Water Resources and Mining Engineering as a partial fulfillment of the requirements for the award of a Bachelor of Science Degree in Water Resources Engineering.

## ABSTRACT

Saline water treatment has become increasingly important for drinking water supplies. The aim of this study was to evaluate the effectiveness and design of solar powered electrocoagulation system with combined aluminum electrodes in removing the various types of salts from water samples collected at boreholes of Buwoya village in Namayingo district, taking into consideration a household of five people. The targeted type of salt include, total dissolved solids, chlorides, sodium, potassium, sulphates and hydrogen carbonates since there are responsible for causing salinity in water

A bench scale consisting of the combined electrocoagulation configurations with static electrodes was implemented under solar power connections. The effects of factors such as reaction time, pH, temperature, inter electrode distance were observed to achieve a higher removal efficiency

Since developing countries also tend to be poor, its people need low-cost, easy to operate and use and easily accessible desalination system. Design of various components was done using relevant formulae and equations

It can be concluded that solar powered electrocoagulation is the best method with low costs involved

**Keywords. Static electrodes, electrode consumption, solar power and electrocoagulation**

**DECLARATION**

I **WAMALWA JOB**, hereby declare to the best of my knowledge that this project report is an outcome of my own efforts and it has never been presented to any institution of learning for an academic award

Signature.....

Date...../...../.....

**APPROVAL**

This final research report has been submitted to the Faculty of Engineering for examination with approval of my supervisor

**NAME: JOSEPH DDUMBA LWANYAGA**

SIGNATURE.....

## DEDICATION

This report is dedicated to Almighty God for his blessings upon everything I do and my beloved parents **Mr. Wamalwa Protus** and **Mrs. Wamalwa Oliver** for their selfless support in my academics and welfare

## ACKNOWLEDGEMENT

Firstly, I would like to thank Almighty God for his unspeakable grace, protection during the compilation of this research report

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Lastly, I thank all my classmates for their guidance, support and morale towards achieving all these

## LIST OF ACROYNMS

CWF	Ceramic Water Filters
WHO	World Health Organization
EC	Electrocoagulation
UNICEF	United Nations Children’s Fund
UWASNET	Uganda Water And Sanitation Network
EPA	Environmental Protection Agency
MWE	Ministry of Water and Environment
APHA	American Public Health Association
M	Molarity
NTU	Nephelometric Turbidity Unit

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