



**FACULTY OF ENGINEERING
DEPARTMENT OF WATER RESOURCES AND MINING ENGINEERING.
FINAL YEAR PROJECT**

DESIGN AND CONSTRUCTION OF A POWDERED CHLORINE MIXER.

CASE STUDY: TORORO MUNICIPALITY, TORORO DISTRICT

BY

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*Report submitted in partial fulfillment of the requirements for the award of a
Bachelor of Science in water resources Engineering.*

ABSTRACT

Water is a vital natural resource which forms the basis of all life, while water is readily available in developed countries, in developing countries more than 1.2 billion people do not have access to a safe and adequate water supply. For water to be made safe, chlorine has to be added to it so as to disinfect it, if it is powdered, then it has to fast be liquified before use. However, the manual mixing mechanism used portray challenges to the workers and water consumers, the effects of chlorine have been felt by very many people involved in mixing powdered chlorine with water (manual mixing).

The main objective of this project was to design and construct a powdered chlorine mixer for easing the chlorination process in Water works village in Tororo and the specific objectives were; To design the components of the machine, to construct & assemble the components of the machine, to test the machine and to carry out economic analysis or the prototype.

Literature review discusses; properties, forms and desired characteristics of chlorine, available mixing mechanisms, motor selection for use, economic analysis, water treatment review, brief history of chlorine mixers, how chlorine mixing is done in Tororo and the proposed system.

Methods used in data collection included desk study, oral interview, consultations and discussions. The design sketch was done using AutoCAD and the machine was constructed.

Therefore, this research was done for the purpose of designing and constructing a powdered chlorine mixer and with the help of this chlorine mixing machine the time gap is reduced, efficiency of chlorine mixer is increased and labour costs are reduced.

Keywords: chlorine mixer, chlorine, manual mixing, powdered chlorine and water.

DECLARATION

I AKOTOL JULIUS PATRICK, declare that this project report is an outcome of my original work and has not been presented to any institution of learning for any academic award.

Signature:

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Date:

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APPROVAL

This final report has been submitted with approval of my supervisor.

SUPERVISOR: Mr. Thomas Makumbi

Signature.....

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

CO-SUPERVISOR: Mr. Joseph Lwanyaga Ddumba

Signature.....

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

DEDICATION

This report is dedicated to my beloved mother and father Mrs. Aboth Kevin and Mr. Owora Peter respectively in appreciation for the selfless care and tireless support provided to me since childhood, and for the spirit of hard work, courage and determination instilled into me, which attributes I cherished with firmness and have indeed made me what I am today.

ACKNOWLEDGMENT

I thank the almighty God upon his mercy, grace, wisdom and protection he has given me.

Great thanks go to Busitema University staff for the provision of a supportive learning environment.

I am also indebted to my supervisors **Mr. Thomas Makumbi**, and **Mr. Lwanyaga Joseph** for the resourceful advice, encouragement and motivation, throughout this study Work.

Finally, I would like to give my heartfelt thanks to my friends for their unwavering and unseasonal support and encouragement of any kind that they gave to me. God's blessings to all.

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LIST OF ACRONYMS

CDC	Center of Disease Control
WHO	World Health Organisation
SDGs	Sustainable Development Goals
UCI	Uganda Cancer Institute
HAAS	Halo Acetic Acids
NWSC	National Water and Sewerage Corporation
THMs	Tri-Halo Methane's
CBA	Cost Benefit Analysis
GI	Galvanized Iron
PMDC	permanent magnet direct current
UM	universal motors
AC	Alternating currents