

DEPARTMENT OF MINING AND WATER RESOURCES ENGINEERING

BSc. WATER RESOURCES ENGINEERING

FINAL YEAR PROJECT REPORT.

**REDESIGNING AND RECONSTRUCTION OF A CYLINDRICAL
WATER TANK CLEANING SYSTEM.**

CASE STUDY: BUSITEMA UNIVERSITY-MAIN CAMPUS.

BY

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ABSTRACT

This paper proposes to redesign and develop a machinery for cleaning cylindrical water tanks (plastic, steel and concrete). Storage of water offers a reliable water supply system in resident places, commercial, industrial, medical and educational and many others. However, the water quality in storage tanks deteriorates due to untimely (prolonged period interval) of cleaning tanks because of the manual cleaning methods used involving individuals entering them which makes the work tedious and labor-intensive. Water in storage tank is contaminated by corroded metallic pipe (GI pipes) deposits, certain bacteria, algae and others which makes water unpotable for drinking and results into sickness or diseases such as typhoid, cholera, dysentery, skin diseases and among others to people consuming it. Therefore, it's very important to regularly clean and maintain the water tank status to prevent the spreading of the diseases. Since most people in developing countries like Uganda have limited access to expensive cylindrical water cleaning machines or system makes them relay on manual methods which affect them physically and healthy and these tiresome methods make them ignore their tanks taking long time without cleaning which affect their water quality and consequently affecting their health.

The cylindrical water tank cleaning system which is designed is mobile working on battery power charged by solar, enabling it to work in different places including where hydropower is not connected, a geared D.C motor to rotate a heigh adjustable hollow shaft with negligible vibrations, The height adjustable shaft enables it to clean a range of water tanks (1000-8,000 litres) height, an extendable parallelogram mechanism supporting rotating brushes to enable the system clean tanks of different diametres, a geared DC motor run by a rechargeable battery. As the motor runs, its vertical shaft coupled with sprocket and chain drive transfer power to a vertical hollow shaft and the brushes. As the brushes rotates, they scrub the internal tank wall as also sprinkler mechanism designed on a vertical hollow shaft rinses the sediment deposits, algae from tank walls, the sprinkler mechanism is supplied by a DC water pump. The sludge and wastewater from the floor of the tank is discharged by the turbulence created by the bottom rotating brushes through the tank outlet or wash out outlet. The objective of this machine is to reduce the overall time and effort invested in the cleaning of water tanks and encourage the timely or regular tank cleaning.

DECLARATION

I the undersigned, declare that this thesis proposal is my original work, except where due acknowledgement has been made. I declare that this work has never been submitted to this University or any other institution for funding/ for partial fulfilment for any award.

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Signature:

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Date

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SUPERVISOR (S) /APPROVAL

This research thesis proposal submitted as partial fulfilment for the award of Bachelor's Degree in Water Resources Engineering of Busitema University, with my approval as the academic supervisor(s)

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Academic Qualifications.....

Faculty of Engineering.

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Signature.....

...../...../.2022

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LIST OF ACRONYMS

Table 0:1 Table of acronyms.

ACRONYMS	MEANING
Hesfb	High Education Student Financing Board.
WTP	Water Treatment Plant
GI	Galvanized Iron
WHO	World Health Organization
Et	And others (on citations).
BU, BUMC	Busitema University, Busitema University-Main Campus
HEP	Hydroelectric Power
DC, AC	Direct Current, Alternating Current.
FOE	Faculty of engineering.

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