
**BUSITEMA UNIVERSITY
FACULTY OF ENGINEERING
DEPARTMENT OF WATER RESOURCES AND MINING
ENGINEERING**

**WATER RESOURCES ENGINEERING PROGRAMME
FINAL YEAR PROJECT PROPOSAL
A MOUNTED STATIONARY BIKE ROPE PUMP FOR OMAGORO
VILLAGE, SOROTI DISTRICT**

BY

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A final year project proposal 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

The needs of water in Omagoro village are increasingly becoming versatile. For example, apart from using water for domestic purposes, water is also needed in farms for irrigation due to climatic changes that does not make rainfall support crop growing throughout the year.

The only available water sources are the borehole, stream flow and an open well. Due to congestion and pump breakdown in the borehole as being the only source for safe drinking water, most people have resorted to using the stream flow and the open well to fetch non- potable water. However, during dry season, the stream normally dries up and the borehole also delivers a low output(yield) causing acute shortage of water hence leaving the lives of people of this village in danger.

This study proposes the development of a mounted stationary bike water pump operated by pedals to help solve the water lifting and pumping problems in Omagoro village. Included is the useful information relevant to the research topic while clearly showing the problem of interest for the intended research. It as well shows how this study will help reduce the water access problem through the fulfilment of a number of objectives and activities.

The main source of information is the existing literatures written by other scholars that have been involved with design of water pumps of similar nature and magnitude giving an account of the existing models with emphasis on their draw backs, operation modes, testing and economic analysis with reference to the proposed pump prototype.

Finally, the study goes through the step by step procedures which will lead to the achievement of the intended main objective, the necessary funds needed in form of a proposed budget and the period of time with-in which the main purpose of the study is to be achieved presented in form of a time-activity chart.

DECLARATION

I Kizito Sam Otim, hereby declare to the best of my knowledge, that this project proposal report is an outcome of my original work and that it has not 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.

MAIN SUPERVISOR: MR. MASERUKA BENEDICTO

Signature.....

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

CO-SUPERVISOR: MR. WANGI MARIO GODFREY

Signature.....

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

DEDICATION

This report is dedicated to my beloved parents Mr. Charles Erongu & Mrs. Melda Agono in appreciation for their selfless care and unflinching support provided to me since childhood, and for the spirit of hard work, courage and determination instilled into me, which attributes I have cherished with firmness and which have indeed made me what I am today.

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I am grateful to my sisters and friends in and out of the university for their unseasonal support of any kind. God bless All.

ACRONYMS.

CAD	-	Computer Aided Drawing
HP	-	Horse Power
NPV	-	Net Positive Value.
NSPH	-	Net Positive Suction Head
PVC	-	Polyvinyl Chloride
Rpm	-	Revolutions per minute

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1 CHAPTER ONE

1.1 Introduction

This chapter briefly gives the general information relevant to the research topic whilst clearly showing the problem of interest for the intended research. It as well shows how this study will help reduce the problem through the fulfilment of a number of objectives and activities listed therein.

1.0.1 Background

No resource is more vital to humanity than water. Yet supplies of safe water are shrinking as demand for it is on the rise. Today, 70 percent of the earth's surface is covered by hundreds of major bodies of water with less than thirty percent is fresh water, the rest is seawater(Bruinsma, 2009). The most abundant and available source of fresh water is underground water supplies or wellsprings known as aquifers(Maupin *et al.*, 2010).

In general, Africa has about 9% of the world's fresh water resources with 11% of the world population. (UNEP, 2008). The population increase is coupled with an increase in the water needs among other basic needs. Uganda's population has grown to 34.5 million from 33.8 million in 2010 hence much pressure on availing of enough safe water as a basic need. ¹ Some people do rain-water harvesting where by water is kept in surface, above ground or underground tanks to cater for the future use.

(Hatfield, Sauer and Prueger, 2001) noted that poor management of the available water resources is the most cause of water scarcity as this has affected around 2.8 billion people in the world. However, the available methods used for abstraction of this water include by means of natural slopes, pumps and pressurized pipelines. Pumps can be operated by electric, petrol or diesel motors in addition to natural resources like wind and solar energy(Hepbasli, 2008)

According to (Arriaga, Cañizares and Kazerani, 2013), the suitability of a particular type of power source for pumps to be used calls for its capital cost, simplicity and cost of operation, maintenance and repair. A commonly used device to pump up water, from hand dug wells or boreholes, is a piston pump, which has a reciprocating movement. These pumps give pulsating flows, have a high cost of installation and maintenance, more prone to vandalism and also require skilled labour for installation and maintenance.

¹ New Vision published on 11th of October 2012

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