BUSITEMA UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

AN AUTOMATIC EMPTYING AND INCINERATION SYSTEM FOR SANITARY PADS

BY

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Project report submitted to the department of computer engineering as a partial fulfillment of the requirements for the award of a bachelor's degree in computer engineering

May, 2019

ACKNOWLEDGEMENT

I give glory to God and the Holy Spirit for the great help and guidance throughout this project. My Supervisor, Mr. Lusiba Badru who has continuously guided me throughout this project. He has been a parent to me and provided where necessary. May God bless you Sir. Finally, great thanks to my father Mr. Okumu Charles, mother Mrs. Amagusho Comfort my brothers, sisters and friends who have provided financially, materially, spiritually until the completion of this project, may God bless them abundantly.

DEDICATION

I dedicate this report to God, the Holy Spirit, my supervisor, Mr. Lusiba Badru and my beloved parents Mr. Okumu Charles and Mrs. Amagusho Comfort. Your contribution to my education has been wonderful, encouraging and promising a bright future in my life.

DECLARATION

I AKINYI LYDIA NASICHONGI BU/UP/2015/325 declare that this project report is original and has not been published or submitted before to any university or higher institution of learning.

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APPROVAL

This is to certify that the project report entitled ***"An Automatic Emptying and Incineration System for Sanitary Pads"*** has been done under my supervision and is submitted to the examiners with my approval

Signature .....

Date: 30/05/2019

MR. LUSIBA BADRU

Department of Computer Engineering

LIST OF ACRONYMS

PLC	Programmable Logic Controller
RFID	Radio Frequency Identification
SMS	Short Message Service
VOC	Volatile Organic Compounds
DC	Direct Current
PWM	Pulse Width Modulation
AC	Alternating current

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ABSTRACT

The purpose of this research is to automatically empty the sanitary bins and incinerate the sanitary pads. In most institutions, the used sanitary pads are always handled by the waste pickers hence rendering them vulnerable health-wise to most diseases due to the pathogens that thrive in the used sanitary pads since most of them do not use nose masks when handling the pads. According to WHO, blood and blood products, as well as various types of body fluids are capable of transmitting pathogens when brought into direct contact with the lining of the mouth and nose, the eyes, and areas of the skin containing cuts and abrasions. And exposure to the used sanitary pads results into several infections including skin infections, respiratory ailments. Hepatitis, Tetanus, E. coli and Salmonella, would be a very real possibility to these waste pickers. It aims to prevent cleaners from handling the sanitary pads to the incineration point and those pads that might be left stagnant for a long time without being incinerated. Many kinds of approaches like literature studies, research and consultations were conducted to develop the prototype of the system. Arduino, ultrasonic sensor, servo motor, conveyer belt, DC motor, electric coil, and relay board are the hardware tools that were used to monitor and control the power consumption. The system is mainly built using Embedded systems Hardware. The system is designed with an ultrasonic sensor for detecting the level of pads in the sanitary bin and a servo motor to open the lower lid of the bin so that the pads flow out of the bin to the incineration point to be incinerated with the help of a conveyer belt. The result is a system prototype that is capable to empty the sanitary bins and incinerate the sanitary bins hence preventing the cleaners from handling the sanitary pads.

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CHAPTER ONE
INTRODUCTION

This chapter consists of the background of the study, problem statement, objectives of the study, justification and the scope.

1.1 BACKGROUND OF STUDY

Disposable pads are the most commonly used sanitary pads in most institutions due to the comfort they provide and being affordable by most women[1]. Since wrong methods of disposing sanitary napkins still exist, this results into a large number of menstrual wastes in the country thereby creating a source to several diseases and infections,[2]

The government mentions schemes to install dedicated incinerators in schools but given the poor track-record that we have in maintaining technology in effective working condition, it is safe to say that most of the sanitary napkins used will continue to find their way, in increasing numbers, into the solid waste collection system[3].

This means that these increasing numbers of used sanitary napkins will be handled by other waste pickers, this means that waste pickers are already vulnerable health-wise to most diseases like Water borne, air born have exposure[4].

The napkin is usually in use for a period of time and become a breeding ground for harmful bacteria or germs when it comes time to dispose of them.

According to the World Health Organization, blood and blood products, as well as various types of body fluids may be capable of transmitting pathogens when brought into direct contact with the mucosal lining of the mouth and nose, the eyes, and areas of the skin containing cuts and abrasions.[5]

In this situation, soiled sanitary napkins and diapers are not just offensive to handle, but can actually be dangerous to the health, and direct contact with them can lead to infections. Hepatitis/ Tetanus/ E.coli/ Salmonella/ Staphyllococus, would be a very real possibility to these waste pickers[3].

According to the Centers for Disease Control and Prevention (CDC) (USA), both Hepatitis B and C can thrive in blood-soaked materials and in residue on restroom fixtures left behind by infected individuals.[3],[6]. The virus is extremely hardy and it can survive in a drop of blood or bodily fluid or even on a dry surface for weeks and still be capable of causing infection[4],[7]. Hepatitis C may survive on environmental surfaces at room temperature for up to four days[3]. The viruses

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