



**BUSITEMA
UNIVERSITY**
Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF WATER RESOURCES AND MINING ENGINEERING

WATER RESOURCES ENGINEERING PROGRAMME

FINAL YEAR PROJECT REPORT

PROJECT TITLE

**DESIGN AND CONSTRUCTION OF A SOLAR POWERED COMPRESSED EARTH
BRICK MAKING MACHINE**

BY

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A final year project proposal report submitted to the Department of water resources and mining engineering in partial fulfilment for the award of the Bachelor of Science in water resources engineering of Busitema University.

ABSTRACT

Brick/block is a very important material in the construction industry, a brick is required for every construction activity bit shelter & housing, hydraulic structures (for example in the masonry dam construction) and in so many other fields. The production of good quality, most efficient, and affordable bricks is paramount to solve housing problems in developing countries like Uganda (Premkumar et al., 2020). This is still seemingly hard to obtain due to the high cost of brick production in developing countries. Fortunately, many naturally occurring substances, such as clay, sand, wood, and rocks are over 90% available in these rural areas and can be employed to cut down costs on materials. However, the cost of sophisticated modern brick Moulding machines ranges between \$2,500 and \$3,000 (Mogaji, 2011) and there daily operation cost is generally high due to the use of electricity (costly units 1500ugx) or fuels to run the machine motors. While there are cheaper manually operated machine options on the market, these are very laborious and hectic to use. Thus, the solar powered Compressed Earth Brick (CEB) making machine employs solar energy to hydraulically compress the soil mixture. This machine overcomes the laborious effort and low productivity of manually compressed earth bricks. This also technology mitigates the challenge of environment pollution caused by fired brick kilns. The constructed compressive earth brick (CEB) making machine can produce on average a total of 240 bricks per day (8 hours). The cost of production of the machine was 2.08 million UGX only. Whereas, the most common high-tech motorized CEB machine(Hydra form®) with an average capacity of about 3,000 bricks per day costs about six million shillings(Yakubu & Umar, 2015).Thus this machine is relatively cheaper for small scale enterprises.

DECLARATION

I **NABULYA REHEMAH** declare that this final year project report is a result of my own efforts and tremendous work done during the research period and it has never been submitted to Busitema University or any other institution of higher learning for any academic award.

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Lastly, I thank all those who were involved directly or indirectly during my project proposal writing.

May the good Lord reward you all

APPROVAL

This report has been submitted for examination with the approval of my University supervisor

NAME: MR MASERUKA BENDICTO

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Table of Contents

CHAPTER ONE; INTRODUCTION.....	1
1.1 Background of the Study.....	1
1.2 Problem Statement	3
1.3 Objectives of the Study	3
1.3.1 Main objective	3
1.3.2 Specific objectives	3
1.4 Justification of the Study.....	3
1.5 Scope of the Study.....	4
1.5.1 Conceptual scope	4
1.5.2 Time scope.....	4
CHAPTER TWO; LITERATURE REVIEW	5
2.1 Brick making Technology.....	5
2.2 Processes employed in brick making	5
2.2.1 Preparation of bricks	6
2.2.2 Moulding of bricks.....	6
2.3 Drying of Bricks.....	6
2.3.1 Firing of bricks.....	7
2.4 Types of Bricks	7
2.4.1 Fired bricks	7
2.4.2 Chemically set bricks.....	8
2.4.3 Compressed earth bricks.....	8
2.5 Need to Compact the stabilized soil.....	9
2.6 Compression mode.....	9
2.7 Type of compression press.....	9
2.8 Overview of the Brick Making Machines.....	9
2.8.1 Classification of brick making machines	10
2.8.2 Manually operated brick making machine.....	10
2.8.3 Semi-Automated brick making machine	10
2.8.4 Fully Automated brick making machine.....	10
2.9 Fully automated verses semi-automated brick making machines.....	11
2.10 Hydraulic machines.....	11

2.11	Analysis of soils used for the manufacture of bricks	12
2.11.1	The ideal soil.....	12
2.11.2	Soil analysis	12
CHAPTER THREE; METHODOLOGY OF THE STUDY		14
3.1	Introduction	14
3.2	Conceptual Diagram.....	14
3.3	Functions of the major Components of the machine.....	15
3.3.1	Mould box.....	15
3.3.2	Hooper.....	15
3.3.3	Feeder (feed box)	16
3.3.4	Compressor cylinders.....	16
3.3.5	Compacting head (pressing box)	16
3.3.6	Operational mechanism	16
3.4	Specific objective one: design the solar powered brick making machine components .	17
3.4.1	Design calculations	17
3.4.2	The molding chamber (MC) design.....	17
3.4.3	Mould dimensions.....	18
3.4.4	Feeder design	18
3.4.5	Hooper design	19
3.4.6	Design of guide rods	19
3.4.7	Pump design.....	20
3.4.8	Determination of pump displacement.....	20
3.4.9	Determination of pump power	20
3.4.10	Determination of the drive power	21
3.4.11	Machine frame design.....	21
3.4.12	Hydraulic circuit	23
3.5	Sizing of the solar PV system	23
3.5.1	Sizing of the battery bank	23
3.5.2	Selecting a charge controller.....	24
	Connection of modules	24
3.6	Objective two: construction of the system prototype.....	25
3.6.1	Material selection.....	25

3.7	Specific objective three: Testing system performance.....	25
3.8	Specific objective four; Carrying out an economic analysis.....	26
3.8.1	Life Cycle Cost Calculation Formula	26
CHAPTER FOUR; RESULTS AND DISCUSSIONS.....		27
4.1	Pressure required to compress earth into a brick.....	27
4.2	Design of the stamping hydraulic plunger (cylinder).....	27
4.2.1	Design of the inner diameter of the cylinder	27
4.2.2	Design of the wall thickness	28
4.2.3	Design of the outer diameter of cylinder	28
4.2.4	Design of the hydraulic press cylinder piston.....	28
4.2.5	Design of the piston rod diameter.....	28
4.2.6	Maximum tangential stress in a hydraulic cylinder	28
4.3	Design of the pump.	28
4.3.1	Selection.....	28
4.3.2	determination of the pump flow rate.....	29
4.3.3	designing for the pump prime mover power requirement.	29
4.4	Sizing of the solar power.....	30
4.4.1	load estimation	30
4.4.2	Sizing of the battery bank	30
4.4.3	Total number of batteries in parallel.....	30
4.4.4	Number of batteries in series	30
4.4.5	Sizing of the voltage controller.....	30
4.4.6	Sizing of the solar array	30
4.4.7	Connection of the modules	31
4.4.8	A system that will run full time (8 hrs.).....	31
4.5	Design of machine components	32
4.5.1	Mould dimensions.....	32
4.5.2	feed box dimensions	33
4.5.3	design of hopper.....	35
Production rate		35
4.5.4	Efficiency of the machine	35
4.6	Compressive strength of brick under dry conditions	35

4.7	The cost analysis	36
4.7.1	Overhead costs	36
4.7.2	Cost of the project.....	37
4.8	Simulation analysis of the machine components	37
4.8.1	Analysis of Molding Box Assembly.....	38
4.8.2	Analysis of the pressing box	42
4.8.3	Analysis of the ejection box.....	43
CONCLUSIONS AND RECOMMENDATIONS		46
5.1	CONCLUSIONS	46
5.2	RECOMMENDATIONS	46
APPENDIX.....		49

LIST OF FIGURES

Figure 2-1 showing earth compressed bricks.....	9
Figure 2-2 showing an fully automatic brick machine	11
Figure 3-1 showing the machine concept diagram	14
Figure 3-2 shows list of the machine components.....	15
Figure 3-3 shows the machine frame 2D and 3D drawings.....	22
Figure 3-4 showing the machine design hydraulic circuit	23
Figure 4-1 :2D Isometric Projection View of Moulding Chamber.....	33
Figure 4-2 shows the 2D Isometric Projection View of Feeder.....	34
Figure 4-3 analysis results for the mould box.....	38
Figure 4-4 modified analysis results of mould box (lateral side)	40
Figure 4-5 analysis results of mould box (longitudinal sides).....	40
Figure 5-1 shows a fully dimensioned brick machine	49
Figure 5-2 shows the machine pressing box	50
Figure 5-3 shows the dimensioned ejection box.....	51
Figure 5-4 shows the hopper dimensions and design	52

LIST OF ACRONYMS

CEB – compressed earth brick

ISSB-interlocking stabilized soil bricks

PV-photovoltaic

GNP- gross national product