



**BUSITEMA
UNIVERSITY**
Pursuing Excellence

**FACULTY OF ENGINEERING
DEPARTMENT OF CHEMICAL & PROCESS ENGINEERING**

BSc. AGRO-PROCESSING ENGINEERING

**DESIGN & CONSTRUCTION OF A SOLAR POWERED FRESH EGG VACUUM
DRYER**

By

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the BSc. In Agro- Processing Engineering of Busitema University.*

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Declaration

I SIMALI HABERT declare that the work presented here is out of my own research except where due references are made. It has not been partially or wholly submitted for any academic award to any institution of higher learning any award whatsoever.

SIGN..... *Zandera*



Approval

This is to certify that this research proposal has been carried out under my supervision and that it is ready for submission to the department.

SUPERVISOR NAME: MS. KABASA MARY SALLY

SIGN.....

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Table of Contents

Declaration.....	i
Approval.....	ii
ACKNOWLEDGEMENT.....	iii
Contents.....	iv
List of figures.....	vi
List of tables.....	vi
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background.....	1
1.2 Problem Statement.....	3
1.3 OBJECTIVES.....	3
1.3.1 Main objective.....	3
To design and construct a solar powered fresh egg vacuum dryer machine.....	3
1.3.2 Specific objectives.....	3
1.4 Justification.....	3
1.5 Significance of the study.....	4
1.6 scope of the study.....	4
1.6.1 Conceptual Scope.....	4
1.6.2 Time Scope.....	4
CHAPTER TWO: LITERATURE REVIEW.....	5
2.1Egg Production and Value Addition in Uganda.....	5
2.1.1Egg producing Areas of Uganda.....	5
2.1.2Harvest, Storage and Transport.....	5
2.1.3Egg Based Value Addition in Uganda.....	6
2.2 Nutritional Values of Eggs.....	6
2.3Structure and composition of an egg.....	7
2.3.1Structure of an egg.....	7
2.3.2Chemical composition of a hen egg.....	8
2.4Eggs processing and preservation.....	8
2.5Food drying theory and psychometry.....	10
2.5.1 Drying.....	10
2.5.2 Drying principle.....	11

2.5.3	Psychometry.....	12
2.5.4	Egg / food drying technologies.....	13
equipment.....		14
2.5.5	Existing work done and research on drying of food stuff.....	17
2.6	The link between the existing work and the current needs.....	19
CHAPTER THREE:	METHODOLOGY.....	20
3.1.	To design and size components of the solar powered fresh egg vacuum dryer.....	20
3.1.1	Design considerations.....	20
3.1.2	Dryer Description.....	20
3.1.3	Design of the various parts of the vacuum chamber.....	20
3.1.4	Critical Buckling Pressure.....	21
3.1.5	Conceptual Diagram.....	23
3.1.6	Working Principle.....	23
3.1.7	Material selection.....	24
3.1.8	Design Analysis.....	24
	This is also power of the solar panel.....	25
	From 1 kJ = 0.277777778 watt hour.....	25
	Heat loss Ql through the chamber:.....	25
3.2	Fabrication and assembly of different components.....	26
3.2.1	Fabrication of the different components of the tray dryer.....	26
3.2.2	Assembly of the different parts of the machine to construct the prototype.....	26
3.3.	To test the performance of the prototype.....	27
3.3.1	Determination of drying rate.....	27
3.3.2	Determination of the Drying efficiency of the fresh egg vacuum dryer.....	27
3.4.	To carry out economic evaluation of the prototype.....	27
3.4.1	Evaluation Procedure.....	27
4.0	CHAPTER FOUR.....	30
4.1	Results.....	30
4.1.1	Design results.....	30
	Discussions.....	31
	Economic viability of the system.....	32
5.	CONCLUSION AND RECOMMENDATIONS.....	33

5.1 Conclusions:.....	33
5.2 Recommendations:.....	33
5.3 References.....	34

List of figures

Figure 1: Schematic drawing of the structure of a hen's egg (source: Forsythe, 1957)	7
Figure 2: Flow diagram of whole egg processing into powder. (Source: linden & Lorient 1999).....	9
Figure 3: Relationship between moisture content and relative humidity.....	12
Figure 4: Typical psychrometric chart.....	13
Figure 5: The drying process	14
Figure 6: Small freeze dryer on market	15
Figure 7: The vacuum oven	17

List of tables

Table 1: Nutritional content of an egg	7
Table 2: Proximate composition of fresh whole egg, frozen and egg powder whole egg on dry basis. Source:(Kaewmanee, Benjakul, and Visessanguan 2009).....	8
Table 3: Different materials and their properties.....	24
Table 4: Some of the fabrication activities to be undertaken.....	26
Table 5: Assembly Methodology and Technology to be used.....	26
Table 6: Estimated budget.....	28

CHAPTER ONE: INTRODUCTION

1.1 Background.

The total poultry population in Uganda was projected to be about 32.6 million birds for 2006/7 compared to 23.5 million in 2002. Of this, about 80% is comprised of free-range indigenous breeds whilst the remaining 20% is commercial types mainly composed of exotics (Production and Division 2008). Chicken form the main poultry type, but turkeys, ducks, geese, pigeons and ostriches are also kept in some areas. The Eastern Region had the highest numbers of free-range birds (representing about 37.3%) followed by the central region. On the other hand, the central region had the highest percentage of exotic poultry numbers.(Production and Division 2008)

An egg (ovum) is one of the most important and useful poultry products in East Africa (Ruxton et, al. 2010). It's a source of food and income. Egg products in Uganda among others include: "Rolex", cakes, bread, egg liquor. Eggs are a rich source of protein and several essential nutrients, particularly vitamin D, vitamin B12, selenium and choline. Emerging evidence suggests that eating eggs is associated with satiety, weight management and better diet quality. In addition, antioxidants found in egg yolk may help prevent age-related muscular degeneration. The secondary analysis showed that regular egg consumers with a low red and processed meat (RPM) intake ate healthier diets and had a better micro-nutrient status than those who did not eat eggs but who had a high RPM intake. It was concluded that egg consumption, at a range of intakes, was associated with nutrition and health benefits.(Ruxton et, al. 2010).

Egg processing and value addition in Uganda is unsound and limited to hotels, restaurants, bakeries and other small-scale food processing units. These use eggs for either direct consumption or as an ingredient in other products in its fresh form. Since the eggshell is the natural packing material for the egg contents, it is of great interest to obtain a high shell strength in order to resist all impacts an egg is subjected to during the production chain. Most of the egg breakage losses occur during transportation. Besides packing material, a lot of factors influence breakage of eggs during transportation such as truck suspension, traffic density, road conditions, location of the egg package on the truck and atmospheric conditions and possibly also driver attitude in both driving and handling of the egg packages.(Mertens et al. 2006).

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