



**BUSITEMA  
UNIVERSITY**  
*Pursuing Excellence*

FACULTY OF ENGINEERING

DEPARTMENT OF CHEMICAL AND PROCESS ENGINEERING

FINAL YEAR PROJECT REPORT

*DESIGN AND CONSTRUCTION OF A NOVEL ROUND THE CLOCK SOLAR CROP DRYER  
WITH WATER RECOVERY:*

PART 4: THE DRYING CHAMBER

BY

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**A final year project proposal report submitted in partial fulfillment of the requirements for the award of a bachelor of science agro -processing engineering.**

## Abstract.

This study introduces a round the clock solar crop dryer for a farmer or entrepreneur who can afford a relatively expensive dryer going into crop storage and marketing. It involves detailed design of five different subsystem requiring different areas of knowledge. This particular part of the main objective handles the drying chamber together with its trays. the chamber is designed to facilitate removal. It is an indirect batch and tray dryer requiring 3m<sup>2</sup> collector and the drying chamber takes 1.5m<sup>2</sup> of the collector, both the collector and the drying chamber are manufactured as one assembly. For places with an equatorial climate, the system as predicted to be adequate for a start, moisture removal with limits 75Kg, this changes from 25% to 12% moisture content. This system uses solar collector for the day time and a heat pump for the night and cloudy weathers which is powered by a photovoltaic system. With such a system drying is achieved round the clock and prevents moisture reabsorption. The interior chamber is designed to meet the national food hygiene standards as required by UNBS on good manufacturing principles. The chamber is appropriately insulated to minimize heat transfers to the outside while the outer casing is designed to meet the requirements imposed by the team member handling industrial design. It is therefore concluded that this dryer system is so helpful in reducing food waste hence having a constant food supply round the year.

*Key words: crop dryer, solar collector, heat pump, moisture content, chamber*

**DECLARATION:**

I NALUMANSI DOREEN declare that all that is written in this report is my work done for my proposed final year project.

**Signature:** ..... **Date:** .....

## **PPROVAL**

This is to certify that all the data in this report has been compiled by NALUMANSI DOREEN giving details of work/activities she participated in proposal at BUSITEMA UNIVERSITY under the supervision of.

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Signature.....

Date.....

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