

**FACULTY OF ENGINEERING
DEPARTMENT OF CHEMICAL AND PROCESS ENGINEERING FINAL
YEAR PROJECT REPORT**

**DESIGN AND CONSTRUCTION OF A MOTORIZED SOLAR POWERED FEED
PELLETIZER**

SUPERVISOR: PROF KANT KAYARUSOKE

GROUP MEMBERS






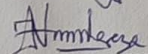
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*Engineering as partial fulfillment of the requirement for the award of Bachelors of science in
Agro Processing Engineering.”*

DECLARATION


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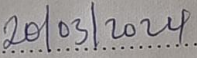
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This report on **Design and Construction of Motorized Solar Powered Feed Pelletizer** has been written under the supervision of;

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DEDICATION

We dedicate this report to all the individuals who have played a significant role in its realization and success. To our families, whose unwavering support and encouragement have been the foundation of our journey. Your encouragement and faith in our abilities have constantly motivated us to strive for excellence.

To our supervisor and dear lecturers, whose guidance and expertise have been invaluable throughout the course of our study, your mentorship and insightful feedback have shaped our understanding and pushed us to achieve new heights.

Lastly, we would like to express our sincere appreciation to our University, Busitema University Main campus for resource provision; for example, Internet resource that enabled us to successfully conduct our research for this project report.

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LIST OF ACRONYMS

PV – Photovoltaic

DC – Direct Current

HEP - Hydro Electric Power

ILIRI – International Livestock Research Institute **ABSTRACT**

This Final Project Report offers a thorough design development and assessment of A MOTORIZED SOLAR-POWERED FEED PELLETING MACHINE. The assessment of the viability and possible advantages of using solar energy to power a feed pelleting machine in the agricultural industry, livestock farming, in particular, was the main goal of this study. Chicken feed pellets were the major products of focus in this design and implementation study. Relevant data through undertaking an in-depth examination of current literature and other valuable sources was obtained and compiled as stated in the subsequent chapters. The article describes the motorized solar-powered feed pelleting machine's design and development process, including the selection of relevant components and the integration of the solar powering system. An economic study is also used to examine the solar-powered machine's economic viability and environmental sustainability. According to the conclusions of this paper, our motorized solar-powered feed pelleting equipment provides numerous advantages.

Key words; Motorized solar powered Feed Pelleting Machine, Pellets.

CHAPTER ONE: INTRODUCTION

1.0 Introduction

This chapter is the general overview of the entire research study and it elaborates the background of the study, problem statement, objectives, justification and scope of the study.

1.1 Background

The animal feed industry accounts for a sizable portion (70%) of the Agro-Processing (Agricultural) industry. The pelleting process, which transforms loose feed into compacted pellets, is an important step in animal feed manufacturing (Uganda, 2015). Unlike loose feeding, the pelleting method increases the nutritional value of animal feed, decreases feed waste, and improves animal performance. In most developing nations, including Uganda, farmers who raise livestock run short of appropriate feeds that can meet their flocks' nutritional needs at the appropriate times and in the right quality and affordable prices (Chikwado 2013). From time to time, considerable changes have occurred in the structure of animal agriculture. The general shift from on-farm or small cooperative type feed processing operations to larger industrial-type feed manufacturing facilities has made processing technologies, such as pelleting, more economically feasible.

Farmers are encouraged to make their own feed to reduce the cost of production on animal feeds, which account for a larger portion of the cost of raising livestock (Okolie et al., 2019); the pelleting process has become a standard feed processing technique that involves compression of feed ingredients into compact pellets that are easier to handle, store, and transport, and can also provide more precise nutrient ratios to animals than traditional feed. Uganda's adoption of pellet feeds for livestock has been on the rise. According to a study by the International Livestock Research Institute (ILRI), the use of pellet feeds in Uganda has led to significant improvements in animal health, weight gain, and milk production though being limited by the high cost of the current feed pellets and pelleting machines in Ugandan Markets.

Currently, most pelletizing devices are operated manually or electrically (by hydropower or fossilfuel engines). The screw conveyor in a manually operated pelleting machine is moved or rotated using a handle; this is a slow and tiring task while in electrically powered pelletizers, an electric motor (primary mover) is used, which is costly in terms of recurring electrical bills.

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