

UNIVERSITI TEKNOLOGI MARA

**DESIGN AND DEVELOPMENT OF
COCONUT DE-HUSKING MACHINE**

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ABSTRACT

In Malaysia, the coconut industry faces challenges related to the labor-intensive and hazardous de-husking process. This project aims to design and develop a coconut de-husking machine to address these issues. The main objectives are to enhance the efficiency, safety, and cost-effectiveness of the de-husking process. The proposed machine will be designed using SolidWorks 2023 and powered by a single motor. Key methodologies include the conceptual design, engineering analysis, and fabrication of the machine. The expected outcomes are improved processing speed, reduced labor costs, and enhanced worker safety. This project not only aims to benefit the local coconut industry but also has the potential to contribute to global agricultural practices.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

In Malaysia, coconut industry is experiencing rapid growth due to high demand for coconut-based products. The overall cost of production for coconuts was RM9739.18/ha/yr, according to the information gathered regarding the management system, productivity and technical efficiency of coconut plantation operations, as well as the profile of coconut farmers. The largest expense, accounting for 34.4% of the total, was labor.[1] Therefore, this case study was studied to find ways to reduce the high cost of expenses as well as increase and speed up the production of products by the producer company.

Processing coconut, an essential crop in tropical areas, poses special difficulties, especially during the labor-intensive and ineffective de-husking procedure. The use of machetes or knives in traditional manual de-husking methods puts workers safety at risk and frequently results in uneven husk removal, wasting the precious coconut kernel. Furthermore, inconsistent husk removal frequently results in damage to the priceless coconut kernel and wastes a lot of time throughout the production process.[2] Therefore, the manufacture and construction of machines to de-husk coconuts need to be established to alleviate the problems that arise.

Coconut de-husking relies on several techniques, despite their limitations. Manual methods involve using a machine, traditional tools, or pedal, hydraulic and pneumatic systems. To address these challenges, the creation of specialized machinery adapted for efficient husk remover was planned with the use of powerful motors, strong iron frames and tool points made of strong materials. These innovations can increase success rates and reduce associated risks.[3]

The combination of these parts can produce an efficient coconut de-husking machine. The aim of this project is to speed up de-husking processes, enhance safety for the users and reduce labor costs. The coconut de-husking machine will be designed using SolidWorks 2021 and will be fabricated with suitable materials.