

DESIGN & FABRICATION OF MULTI-PURPOSE VEGETABLE CUTTER

MINI PROJECT REPORT

Submitted to



ALVA'S
Education Foundation®

DEPARTMENT OF MECHANICAL ENGINEERING, AIET

Affiliated to



VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

Karnataka State, INDIA-590018

In partial fulfilment of the requirements for the award of the Degree of

BACHELOR OF ENGINEERING

in

MECHANICAL ENGINEERING

Submitted by:

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Under the Guidance of

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Academic Year: (2023-24)

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mijar, Moodbidri D.K. -574225 – Karnataka



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M.C. Kulkarni
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Mini Project Guide


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VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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A Mini-Project Report on

“DESIGN AND FABRICATION OF PNEUMATIC LIFTING JACK”

A dissertation submitted in the partial fulfilment of the requirement for the Mini Project

BACHELOR OF ENGINEERING

In

MECHANICAL ENGINEERING

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KARTHIK DHANNUR 4AL22ME401

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**Senior Assistant Professor
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Dr G B Vaggar
Project Guide

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ABSTRACT

This Project presents the development and implementation of a pneumatic lifting jack specifically designed for the safe and efficient handling of gas cylinders. The pneumatic lifting jack utilizes compressed air to provide a reliable and controlled lifting mechanism, addressing the challenges associated with manually lifting and positioning heavy gas cylinders. The primary objective of the project was to create a device that enhances safety and operational efficiency in environments where gas cylinders are frequently used, such as industrial settings and laboratories. The design process involved integrating a robust pneumatic system with a sturdy lifting platform, ensuring stability and ease of use. Key features of the pneumatic lifting jack include adjustable lifting heights, precision control, and a safety mechanism to prevent overextension. The jack's performance was evaluated through rigorous testing, demonstrating its effectiveness in minimizing manual handling risks and improving the ergonomics of gas cylinder management. The report details the design considerations, material selections, and operational principles of the pneumatic lifting jack, providing a comprehensive overview of its capabilities and potential applications. This innovation not only enhances workplace safety but also contributes to increased operational efficiency by reducing the physical strain on users and ensuring precise handling of gas cylinders.

KEYWORDS - *Efficient handling, positioning, operational efficiency, sturdy lifting platform, manual handling.*

AUTOMATED PLANT WATERING SYSTEM USING ARDUINO

MINI PROJECT REPORT

Submitted to



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Affiliated to



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Dr. PROMOD VB

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Head of the Department

**CONCEPTUAL DESIGN OF THERMOTHERAPY
EQUIPMENT FOR HUMAN BODY
MINI PROJECT REPORT**

Submitted to



DEPARTMENT OF MECHANICAL ENGINEERING, AIET

Affiliated to



VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
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In partial fulfilment of the requirements for the award of the Degree of

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PROF. KIRAN CH

Mini Project Guide

DR. SATYANARAYAN

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Mijar, MOODSIDRI - 574 225

ABSTRACT

This project focuses on the conceptual design of thermotherapy equipment aimed at addressing the challenges faced in traditional Ayurvedic thermotherapy practices. Traditional methods often fail to maintain a consistent temperature, resulting in time-consuming and inefficient treatments. The goal was to develop a system capable of maintaining a constant 160°C using a nichrome heating coil insulated with magnesium oxide. An automated temperature control mechanism was integrated to ensure precision and stability throughout the treatment process. The design was modeled using CAD software, and validation tests confirmed the equipment's ability to sustain a stable temperature with minimal fluctuation. This innovation improves the efficiency and effectiveness of Ayurvedic thermotherapy by eliminating the need for manual reheating and ensuring uniform heat distribution. Future work will focus on optimizing insulation, enhancing control systems, and conducting real-world testing to further refine the equipment. This project marks a significant step towards modernizing traditional Ayurvedic therapeutic techniques.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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Mini Project Report on

**“DESIGN AND POTABLE MANUAL ARECA NUT
PEELING MACHINE”**

Submitted in partial fulfillment of the requirements for the award of degree

**BACHELOR OF ENGINEERING
IN
MECHANICAL ENGINEERING**

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Accredited by NBA & NAAC with A+ Grade

MOODBIDRI – 574 225.

2023-2024

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

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This is to certify that the following students,

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Mini Project Coordinator

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DR. SATYANARAYAN

CHAPTER 1

ABSTRACT

Areca nut is one of leading agricultural commodity in Indonesia. The economic prospect of Betel Nut could support financially the people which resided in country-side to a new level of prosperity. The increasing of betel nut demand especially which derived from outside of country such as India and Thailand of the Betel Nut which is used as the raw material for medicine and cosmetic products will need new machine design of betel nut cutter to supply the demand. Current process of betel nut manufacture is still using a hand-tool for cutting the Betel Nut in rural areas. It takes lot of time and resulted low productivity. The design of the machine betel nut manufacture provides the solution to increase the productivity and low production cost because of cut in half process is still manually. This equipment can produce the cutting work with average 300 Betel Nut per hour. The force resulting from lever is 0.03 N and the cutting speed for 1 fruit only takes 4 seconds. This equipment is able to cut in half of two or three the Betel Nut in one time. This cutting machine prototype has been used widely in rural area of Riau province like village of Penyalai-Kuala Kampar, district of Pelalawan and several villages in the district of Indragiri Hilir.

India is a major arecanut growing country. Of the many problems identified in arecanut processing, dehusking is found to be a major one, which is cumbersome and needs to be mechanised. Presently, there are a few types of equipments available, but these machines are basically of low capacity and cater to small arecanut growers. Performance evaluation of three high capacity green arecanut dehusking equipments was taken up, to work out its possible adoption for entrepreneurship development.

ARECANUT SORTING USING IMAGE PROCESSING

MINI PROJECT REPORT

Submitted to



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DEPARTMENT OF MECHANICAL ENGINEERING, AIET

Affiliated to



VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

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In partial fulfilment of the requirements for the award of the Degree of

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ABSTRACT

This research presents a novel approach for sorting arecanuts using image processing techniques. The proposed system eliminates the need for manual sorting and conveyor belts, making it a more efficient and cost-effective solution. By capturing images of arecanuts, the system employs Python and OpenCV libraries to analyze and classify them based on their physical characteristics, such as size, shape, and color. A manually curated database of arecanut images is used to train the image processing model, ensuring accurate classification. The system's ability to differentiate between various grades of arecanuts allows for efficient sorting and grading, ultimately improving the quality and value of the final product.

DESIGN AND FABRICATION OF GROUNDNUT PLUCKING MACHINE

MINI PROJECT REPORT

Submitted to



ALVA'S
Education Foundation®

DEPARTMENT OF MECHANICAL ENGINEERING, AIET

Affiliated to



VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
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Academic Year: 2023-24

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This is to certify that Mr. **NARAYAN V** and **PAIGAMBAR S NADAF** has completed the mini project on “**DESIGN AND FABRICATION OF GROUNDNUT PLUCKING MACHINE**” for VI Semester B.E. in Mechanical Engineering during the academic year 2023-24. The Mini project has been approved as it satisfies the academic requirements in respect of Mini project work prescribed for the Bachelor of Engineering Degree.


Project Guide


HOD

ABSTRACT

Groundnut, a crucial crop, is traditionally harvested through manual plucking, which is labour-intensive and time-consuming. To overcome this challenge, this project proposes the design and fabrication of a small-scale groundnut plucking machine that can efficiently reduce the time and cost for farmers during the harvesting process. The project focuses on the design and development of a machine that can effectively pluck groundnuts directly from the ground, eliminating the need for manual labour. The proposed machine utilizes a chain-based mechanism to gently dislodge the groundnuts from the soil, reducing the physical strain on the farmer and improving the overall efficiency of the harvesting process. Through the implementation of this innovative technology, the goal is to provide a cost-effective and user-friendly solution that can be easily adopted by small-scale farmers, ultimately enhancing their productivity and profitability.

DESIGN AND FABRICATION OF GROUNDNUT PLUCKING MACHINE

MINI PROJECT REPORT

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BACHELOR OF ENGINEERING
in
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ABSTRACT

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ENERGY GENERATION THROUGH COIL SUSPENSION

MINI PROJECT REPORT

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in

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ABSTRACT

The energy generation method through coil suspension explores the use of mechanical vibrations to generate electrical power without relying on traditional induction coils. This approach utilizes the suspension of a coil structure, which oscillates due to external mechanical forces, such as wind, movement, or vibrations. The system relies on the mechanical motion of the suspended coil itself, typically in conjunction with a magnetic field, to generate energy. In this setup, the coil is mechanically suspended and subjected to oscillatory motion. As the coil moves or swings in response to external stimuli, the mechanical energy of the motion is transformed into electrical energy through the interaction of the coil's movement with either a stationary or oscillating magnetic field. This method does not depend on a traditional induction process but rather the physical displacement and suspension of the coil to achieve energy generation. This innovative design is particularly suitable for applications where small-scale, decentralized energy generation is needed, such as in isolated environments, wearable technologies, or in structures experiencing constant mechanical vibrations. The key advantages of this system include its simplicity, minimal environmental impact, and ability to function in low-energy environments. The key benefits of this system include its simplicity, scalability, and minimal reliance on external power sources. It can be deployed in remote or off-grid areas where traditional energy generation systems may not be feasible. The suspended coil setup also reduces maintenance requirements and environmental impact compared to conventional energy harvesting technologies. Ongoing research focuses on improving the efficiency of the coil suspension, optimizing materials, and fine-tuning the mechanical and electrical coupling to increase energy yield, making it a promising solution for sustainable and decentralized energy generation.

Keywords: - Coil suspension, rack and pinion.