UNIVERSITI TEKNOLOGI MARA

JOHOR INTERNATIONAL INNOVATION, INVENTION COMPETITION AND SYMPOSIUM 2024

PROCEEDINGS OF JOHOR INTERNATIONAL INNOVATION INVENTION COMPETITION AND SYMPOSIUM 2024 (JIIICaS 2024)

"Flourish and Nurturing Sustainable Innovation for a Prosperous Nation"

JOHOR INTERNATIONAL INNOVATION, INVENTION COMPETITION AND SYMPOSIUM

Editorial Board

e ISBN: 978-967-0033-25-9

Published in Malaysia by
Universiti Teknologi MARA Cawangan Johor
Kampus Pasir Gudang
81750 Masai

Preface

In the name of Allah, the Almighty who gives us the enlightenment, the truth, the knowledge and with regards to Prophet Muhammad (peace be upon him) for guiding us to the straight path. We thank to Allah for giving us guidance and strength to write this e-book.

This e-book compiles the extended abstracts that submitted to Johor International Innovation Invention Competition and Symposium 2024 (JIIICaS2024), where JIIICaS2024 is a virtual platform for all creative minds to share and present their invention and innovation. Each abstract gives a brief background on the innovation or project.

We hope that this e-book will help the readers to get to know the innovation done by the students and get some ideas to develop future innovation products.

Foreword Rector

Assalamualaikum warahmatullahi Wabarakatuh, Salam Sejahtera, Salam Malaysia MADANI and Salam UiTM Dihatiku.

In the name of Allah, the Most Gracious, the Most Merciful.

It is a great honor to welcome you to the Johor International Innovation, Invention, Competition, and Symposium 2024 (JIIICaS 2024). This event connects various disciplines, focusing on education and engaging educators, students, researchers, and innovators from all walks of life.

Innovation is not just about ideas; it demands perseverance, creativity, and determination to turn those ideas into reality. The remarkable projects showcased today highlight the dedication and spirit of all participants. Initiatives like this not only explore new technologies but also cultivate skills and leadership among our youth. At Universiti Teknologi MARA (UiTM) Johor Branch, we are fully committed to fostering a dynamic culture of innovation, promoting the commercialization of new products, and encouraging meaningful collaborations with industry and society.

As we celebrate this event, I would like to extend my heartfelt gratitude to all sponsors, judges, the College of Computing, Informatics and Mathematics, UiTM Pasir Gudang Campus as the event organizer, as well as to the researchers and participants for their hard work in making this event a success. Let us continue striving for innovation and excellence. May the ideas presented today inspire us and lay the groundwork for future achievements.

Thank you.

Associate Professor Dr. Saunah Zainon
Rector
Universiti Teknologi MARA (UiTM)
Johor Branch

(A-ST022) KAPOK SEED SEPARATOR MACHINE

Hafsa Mohammad Noor[1,2], Mazleen Adha Mazlan[1], Asyraf Hakim Johan[1]

[1]Department of Mechanical Engineering, Centre for Diploma Studies,
Universiti Tun Hussein Onn Malaysia, Pagoh Higher Education Hub, 84600 Pagoh, Johor, Malaysia
[2]Sustainable Product Development (S-ProuD), Centre for Diploma Studies,
Universiti Tun Hussein Onn Malaysia, Pagoh Higher Education Hub, 84600 Pagoh, Johor, Malaysia

Corresponding author: hafsa@uthm.edu.my (Hafsa Mohammad Noor)

ABSTRACT

Kapok is a silky fibre obtained from the pods of the kapok tree. It is highly used for pillows, mattresses, toys, upholstery, insulation material, and as a substitute for absorbent cotton in surgery. Kapok is also naturally hypoallergenic, anti-microbial, and dust mite resistant which can overcome the health issues such as bacteria breeding and skin diseases. Kapok pillows are in high demand because of the beneficial use of the kapok and its lifespan. The traditional method to separate the seed from the kapok is using bare hands or beating using a wooden bamboo stick. However, there is a lack of safety and health issues when using traditional methods to make kapok pillows which may lead to itching and harm. The improper equipment also needs to be considered because the process requires blade rods composed of seed and stem. The difficulty in obtaining technical devices is due to the high cost of maintenance and acquisition of these machines, which does not match consumer money. Inadequate labor to complete the kapok filling process. In this study, a kapok seed separator machine is fabricated to evaluate the cleanliness of the kapok after the separation process and increase the speed of kapok pillow production. An electric motor and blower are used to separate aside the seed and kapok and instantly fill up the pillowcase with the well-separated kapok. As has been demonstrated, the Kapok Machine requires only 11 minutes to complete the process of making kapok pillow. The number produced for 1 kg kapok that can be done is 6 pieces. The design of this Kapok Machine ensures can assist SMEs in producing technologies that can reduce the risk of injury to employees during the process of seed separation from kapok and increase the speed of kapok pillow.

Keywords: Beating Rod, Kapok Processing Machine, Kapok Seed Separator Machine