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-ST172) PROTOTYPE OF HIJAB DRYER

Nur Syafiqah Saiful Nani[1], Raziq Amir Rosdi[2], Ahmad Najmie Rusli[3], Nurul Nadiah Rasdi[4]

[1,2,3,4] Universiti Teknologi MARA Cawangan Johor, Kampus Pasir Gudang

Corresponding author: ahmad7586@uitm.edu.my (Ahmad Najmie Rusli)

ABSTRACT

Hijabs, essential to many women's modest fashion, require meticulous care to maintain their appearance and longevity. Traditional drying and ironing methods often result in wrinkles. Working women with tight schedules and housewives managing multiple responsibilities struggle to find time for proper hijab care. The market lacks specialized appliances for efficient hijab drying and wrinkle prevention. Addressing this gap, the prototype of the hijab dryer aims to provide a comprehensive solution that saves time and keeps hijabs pristine. This project focuses on designing, analysing, and fabricating a hijab dryer. SolidWorks software facilitated detailed digital modelling and airflow simulations during the initial phase by optimizing the design. With these special features, the product has a huge potential for commercial value in household appliances.

Keywords: hijab, dryer

1.0 INTRODUCTION

Hijab is an important clothing in modest fashion for many women. It is a form of headscarf that comes in a plethora of styles, designs, and colours. There is even a variety of choices when it comes to fabrics such as chiffon, cotton, silk, viscose, jersey, crepe, satin, polyester, nylon, and spandex.

With all of these varieties, the hijab requires meticulous care to prevent damage and ensure its longevity. The hijab is also ironed before it is worn to keep it looking crisp and presentable. However, after ironing, the hijab is often laid on the surfaces such as the bed, sofa, chair, or table which can cause wrinkles to form again and may potentially damage the fabric. This is because women, whether they are staying at home or working at office, face challenges in dedicating time to properly care for their hijab. They have limited time but must manage multiple responsibilities daily.

Hence, it is a necessity to design an innovative household appliance to suit the needs of hijab wearing individuals. The specialised appliance can integrate drying and wrinkle prevention, as well as efficiently keep the hijab in place. Conversely, a prototype of hijab dryer is created.

2.0 OBJECTIVE

The objectives of this project are:

1) To design and analyse a hijab dryer.
2) To fabricate a prototype of a hijab dryer.

3.0 METHODOLOGY

Project flowchart was designed to ensure that the project will run smoothly. Figure 1 displays the project flowchart. This project begins by finding a problem statement and then proceed to objectives. Based on the research made, the market lacks specialised appliances for efficient hijab drying and wrinkle prevention. To solve this problem, the project was set with objectives to design, analyse, and fabricate a prototype of a hijab dryer.

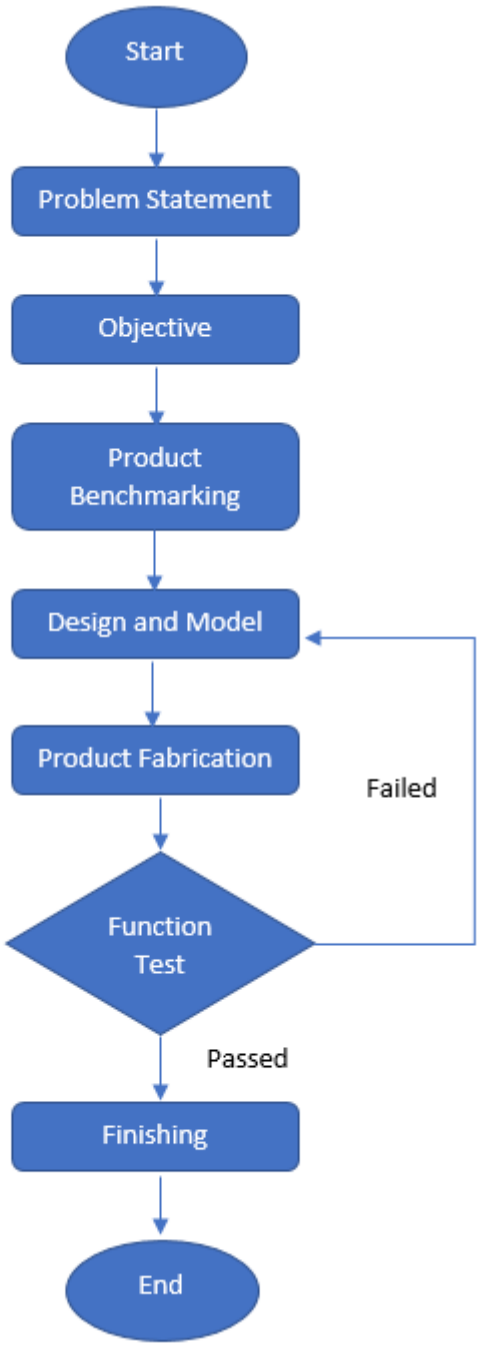

Figure 1: Project Flowchart

Prior to design stage, the benchmarking has been conducted to identify the available product of drying function and how the features available in the market. Based on the findings, the current dryer available in the market was not suitable as per demand. A total of 20 women participated in the survey, and 80% of them demand to have a product of hijab that comprises drying and dresser functions. Besides, most of them also demand to have special function of odour remover.

According to this demand, the project proceeds with the concept design and modelling the product as per parameter shown in Table 1. Additionally, Figure 2 depicts the concept design of the product by using Solidworks software. The heating elements are strategically positioned at the centre of the bottom section, ensuring that the heated air is distributed evenly and maintained a balanced temperature throughout the device.

Table 1: Design Parameter of Prototype Hijab Dryer

Main dimension (length, width, height)	500mm, 300mm, 640mm
Power input	220 Volts
Power output (heating)	120 Watts
Hijab drying capacity	2 units per time
Drying input humidity	30% RH
Main material	Acrylic 3 mm thickness
Special function	Odour remover

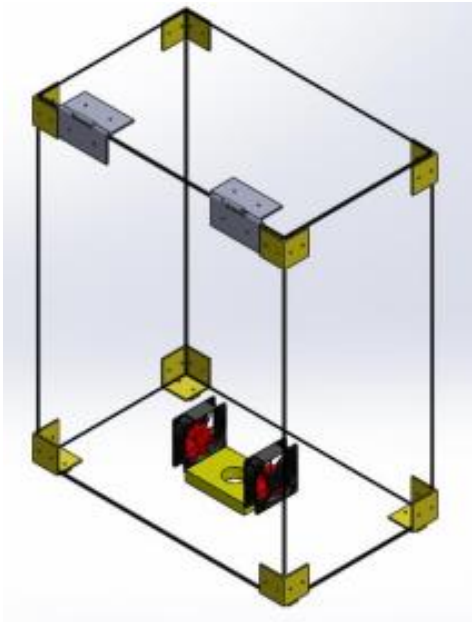

Figure 2: Concept Design of Prototype Hijab Dryer

The project proceeds with the fabrication stage which are cutting the acrylic, drilling the require holes for fastener, and wiring of heating and ventilation unit. For this project, the L bracket was specially designed and fabricated by using 3D printing to enhance the strength of main structure. Then, the fabricated product will be tested as per demand functions and if all the functions passed at this stage, the product will proceed to finishing stage and will product as a final prototype or product.

4.0 RESULTS

The hijab dryer can accommodate 1 to 2 hijabs simultaneously. The operation of the hijab dryer is automatically on when detecting 30% humidity of hijab. Drying rate is differ compare to humidity levels of hijab. It can also be concluded that drying time is direct proportion to the hijab humidity levels. Table 2 presents the result of drying time. Figure 3 illustrates the final product fabricate and product testing.

Table 2: Result of Drying Rate According to Humidity Levels

Humidity Levels (%)	Time Consume (Minutes)
30-40	5
41-50	8
51-60	10
61-70	15
71-80	17
81-90	20
91-100	36

Figure 3: Final Product of Prototype Hijab Dryer

5.0 CONCLUSION

In conclusion, hijab dryer prototype is a must have household appliance for women. They do not have to worry that their hijab will be damaged because the prototype can dry it according to different temperature for different fabrics. They also do not have to worry if their hijab will be wrinkled because the prototype can keep the hijab after it is dried. Thus, it will save their time.