UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF A PROTOTYPE SHOE DRYIG BOX

AMIRUL IMRAN BIN AHMAD SOPHIAN

Dissertation submitted in partial fulfillment
of the requirements for the degree of
Diploma
(Mechanical Engineering)

College of Engineering

Feb 2024

ABSTRACT

As a daily need for people in this country to go to work, we can see various kinds of shoes. It is used in formal events and on work sites as it gives full coverage of protection to our feet. However, continuous rainy weather in Malaysia has becomes a problem for those who wears shoes daily. Currently Malaysian uses old fashioned way to dry their shoes which would take a long time. Hence, there is a need to make the process faster. This is possible by creating a dryer box to speed up the drying process. Through this project students are required to develop a self-drying shoe box with the use of heater by using state- of-art SolidWorks 2019. The designed shoe box will be fabricated (prototype) as a proof of concept. Analytical and finite element analysis of the critical parts shall be carried out. This project shall speed up the process to dry up any shoes to wear them in time.

ACKNOWLEDGEMENT

Firstly, I wish to thank God for giving me the opportunity to embark on my diploma and for completing this long and challenging journey successfully. My gratitude and thanks go to my supervisor, Dr. Wan Muhammad Syahmi Bin Wan Fauzi

Finally, this dissertation is dedicated to my father and mother for the vision and determination to educate me. This piece of victory is dedicated to both of you. Alhamdulilah.

TABLE OF CONTENTS

CHAPTER ONE
INTRODUCTION

1.1 Background of Study

Malaysia has a tropical climate. Malaysia's average annual temperature is 25.4°C. Rainfall also remains high throughout the year, with an average annual precipitation of 3,085.5 millimetres (mm). Average monthly rainfall is also constant throughout the year, ranging from about 200 mm in June and July and 350 mm in November and December. Workers in Malaysia often wear shoes during the day when the weather is working in the office or on site. For people working on site, they will use safety shoes and leather shoes for the office. Students also wear shoes or sneakers during class. There will be problems if they don't have a good pair of shoes for them during the day [1].

Therefore, with the climate in Malaysia, which is always rainy, there will be problems such as wet shoes. Those who must walk to work or take public transport will often cross the street. During the rain, most roads in Malaysia will be flooded. Also, there are many puddles across the road. Often people will step on it and their shoes will get wet. To dry the shoes, it will take a long time and due to the heat resistance of most shoes, they should not be exposed directly to sunlight, or it will shorten the lifespan. Based on the case, there needs to be a solution made to shorten the time of the shoe drying process [2].

For this project, the product is about a box equipped with a heater and a fan. By using heat and wind and controlling the temperature, the shoes will dry faster without damaging them. The ideal temperature for drying shoes is 40 degrees Celsius. The higher temperatures used during drying will eventually damage the shoes and shorten their life. Over time it can cause it to crack, and the dreaded salt ridge can distort it permanently [3].

The idea of Magic Shoe Box (MSB) is to speed up the drying process of shoes for those who have the same problem. MSB should help solve the problem of wet shoes which will maintain the quality and life of the shoes and keep the smell away. This product also gets rid of bacteria by killing them using the help of Ultraviolet (UV) light