POLITEKNIK MALAYSIA

SULTAN SALAHUDDIN ABDUL AZIZ SHAH

TITLE: PET DRYER

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DIPLOMA IN MECHANICAL ENGINEERING

MECHANICAL ENGINEERING DEPARTMENT

SESI DISEMBER 2021/2022

POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

PET DRYER

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Laporan ini dikemukakan kepada Jabatan Kejuruteraan Mekanikal sebagai memenuhi sebahagian syarat penganugerahan Diploma Kejuruteraan Mekanikal

JABATAN KEJURUTERAAN MEKANIKAL

AKUAN KEASLIAN DAN HAK MILIK

TAJUK : PET DRYER

SESI : JUNE 2019

1. Kami, **1. MUHAMMAD MUQRI' SHAH BIN MUHAMMAD MAHADI (08DKM19F1206)**
2. MUHAMAD HILMI ZAIM BIN MUHAMAD HAINI (08DKM19F1196)
3. ZUL FITRY BIN NAZRI (08DKM19F1199)

Adalah pelajar tahun akhir **Diploma Kejuruteraan Mekanikal, Jabatan Kejuruteraan Mekanikal, Politeknik Sultan Salahuddin Abdul Aziz Shah**, yang beralamat di **Persiaran Usahawan, 40150, Shah Alam, Selangor**. (selepas ini dirujuk sebagai 'Politeknik tersebut').

2. Kami mengakui bahawa "Projek tersebut di atas' dan harta intelek yang ada di dalamnya adalah hasil karya/reka cipta asli kami tanpa mengambil atau meniru mana-mana harga intelek daripada pihak-pihak lain.

3. Kami bersetuju melepaskan pemilikan harta intelek 'projek tersebut' kepada 'Politeknik tersebut' bagi memenuhi keperluan untuk peanugerahan **Diploma Kejuruteraan Mekanikal** kepada kami.

Diperbuat dan dengan sebenar-benarnya diakui

Oleh yang tersebut;

a) MUHAMMAD MUQRI' SHAH BIN MUHAMMAD MAHADI	)	…….
(No. Kad Pengenalan:	)	MUQRI' SHAH
b) MOHAMAD HILMI ZAIM BIN MUHAMAD HAINI	)	…….
(No. Kad Pengenalan:	)	HILMI ZAIM
c) ZUL FITRY BIN NAZRI	)	…….
(No. Kad Pengenalan: 010105-14-0085)	)	ZUL FITRY

Di hadapan saya MOHD NASIR BIN)

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ABSTRACT

Pet dryer is a project that will be created by our group for the final project in the cost of mechanical engineering. The project was approved to be done because the project was quite well received by customers or animal lovers. Therefore, the project will continue to provide convenience to everyone regardless of age, gender and type of pets kept. The project will constantly monitor the types of goods used to ensure the level of safety will be more assured to consumers and animals. To ensure that the objectives of our project are achieved, we will solve the problem faced by animal lovers which is to create a product that is not too noisy when the drying process is carried out on the animals so that the animals do not feel afraid. In addition, to ensure our objectives are achieved we will also make a design other than the products on the market that is to add a temperature sensor on the product which can help customers to stop the machine when the machine overheats or the temperature rises.

Judging from the acceptance of this product from consumers, we target this product will get a favorable response by customers because with its better safety features on our products compared to existing products in the market. So we will always focus fully on getting better project results. However, this project still has shortcomings and weaknesses that can still be improved and have the potential to grow in line with the objectives of this design construction. Overall, we will always give our best commitment to this project so that the project objectives will be achieved

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CHAPTER 1 INTRODUCTION

1.1 Introduction

Pets are known as domestic animals or animals that have been tamed for companionship, protection, or entertainment. Pet are animals including dogs, cats, rabbits, birds, hamsters, and other small animals. Some people even keep reptiles as pets, such as lizards and snakes. Pets are also living creatures like humans where they also need to be given attention like any other living things.

However, many pet owners experience similar problems when drying their pets after bathing. they have no choice but to wipe their animals with a cloth or by using a hair dryer. As we know, animals such as cats or furry animals are quite difficult to dry. As a result, the fur of the animal will become damp and damaged. pets will also feel uncomfortable and experience chills afterwards.

To solve this problem, we have created a product called pet dryer. the purpose of us creating this product is to dry our pets effectively. Not only that, it can also facilitate defenders by saving energy as well as time. In addition, our products emphasize safety and comfort for consumers. It is also guaranteed to be effective. Finally, with the use of the latest technology, consumers and even animals can feel the same service as in an animal grooming store.

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1.2 Project Background

This project is called Pet dryer and is used as an equipment to facilitate pet shop owners or pet keeper to clean their pets. It is also capable of drying furry pets automatically. This Pet Dryer also detects the temperature while using it by using a temperature sensor. It is also easy to store because of its size which is not too big. This Pet Dryer is a new product developed based on several studies that have been conducted.

At this point, on the market there are only pet blowers and there is no concept like Pet Dryer that works automatically for the purpose of drying pets. The main purpose of this Pet Dryer developed is to reduce the energy of users to do the work of drying pets, time and save space.

1.3 Problem Statement

The construction of a pet dryer should be built taking into account the convenience factor to the user. Among the problems often posed by respondents is that it takes a long time to dry the whole body of the pet after bathing. Also, the noise produced from a regular dryer is very noisy and can scare animals. Next, regular dryers have an inappropriate temperature and are safe against pet skin.

1.4 Project Objective

Among the objectives found in this study are

a) To dry the pet body in shorter time

b) To minimize the sound from pet dryer while using.

c) To provide the dryer with suitable temperature for pets.

d) To design and fabricate the animal.

1.5 Project Scope

The project that will be produced has a certain scope so that its function is more focused and able to be produced before the due date. For this project the scope of the study is only focused on:

a) Ideal for animal lovers who have pet

b) Suitable for pet stores that offer for animal care service.

With the scope of this study, a project will be easier to understand by buyers because they will better understand whether the relevant project is suitable for them or not.

1.6 Research Questions

i. Is it possible to make a machine that can be stored easily in a narrow space?

ii. What kind of materials can be used to make this machine cheaper? iii. How long is the lifespan of this machine?

1.7 Summary

The results obtained from the collection of problem descriptions can provide assistance to our group to improve standards and find solutions for the comfort of pets to use the machines created by our group. Indirectly, our project can attract animal lovers to own our project and the objectives of our group will be achieved.

CHAPTER 2 LITERATURE REVIEW

PART A: DRYER

2.1 Introduction

In this his chapter will explain about the literature review for this project briefly. This chapter will discuss about the previous studies, concept and parts that related with the project.

2.2 The History of Dryer

The first dryer that was invented was a clothes dryer and it was the first electric dryer ever invented. The development of dryers is more advanced when nowadays there are various types of dryers such as hair dryers and each dryer also have the same working purpose which is to dry. a new and creative idea usually results from holistic or critical observation to produce a new product with the aim of simplifying the work and the way and most importantly can reduce the waste of energy resources, time and also save costs. Addition, the quality of the product should be at a higher level and safe from existing products in the market. Discussions with friends can also have an impact on getting new ideas. Survey methods are also used to find ideas or suitable design to be the final project.

2.2.1 Previous Studies

Aim to see how far this product fits in the market. The pet dryer is also designed and built to see the effectiveness of the current level of security used and able to assist make it easier for users. Simple and compact design can save space as well as attractive shapes to attract customers to buy.

2.2.2 Concept Selection

The design selection criteria are defined based on the specifications of the dryer on the market with the initial characteristics have been determined.

1. Manufacturing cost
2. Fabrication and assembly process
3. Capability and effectiveness.
4. Principles and concepts of work.

Once all the criteria are identified, the idea fits the design has been selected. Assessment is done based on the appropriate specifications and will meet the needs of users

PART B: BLOWER FAN

2.1 Introduction

This chapter explains briefly on literature review that is related to the project. Previous studies, concept and theories of the project will also be discussed in this chapter.

2.2 The History oof blower fan

Blower is hardware or a gadget which builds the speed of air or gas when it is gone through prepared impellers. They are chiefly utilized for stream of air/gas needed for depleting, suctioning, cooling, ventilating, passing on and so forth Blower is likewise normally known as Centrifugal Fans in industry. In 1862, Guido Bell from England invented centrifugal blower. The impeller, casing were concentric circular, the casing was made from brick, while wooden impeller was backward straight blade. At the time, their efficiency had only reached 40%, and they were mostly used in mine ventilation.

PART C: DIGITAL TEMPERATURE SENSOR

2.1 Introduction

In this chapter, will be shown some of the quality or abilities that can be performed by pet dryer. Also, describe the differences in terms of upgrades such as creating a digital temperature sensor on the project. A temperature sensor is a device that is designed to measure the degree of hotness or coolness in an object. The working of a temperature meter depends upon the voltage across the diode. The temperature change is directly proportional to the diode's resistance. The cooler the temperature, lesser will be the resistance, and vice-versa.

The resistance across the diode is measured and converted into readable units of temperature (Fahrenheit, Celsius, Centigrade, etc.) and, displayed in numeric form over readout units. In geotechnical monitoring field, these temperature sensors are used to measure the internal temperature of structures like bridges, dams, buildings, power plants, etc.

2.1.1 Previous studies

Make a comparison of the project with existing products on the market so that it has good safety features and is good to use for pets compared to existing products. Projects that have good security features will be able to attract customers to buy the product.

2.2 The history of temperature sensor

A major advance in temperature sensor technology occurred in 1665, when the Dutch mathematician and physicist Christiaan Huygens fashioned the first sealed thermometer containing a quantity of alcohol. Temperature sensor is a component that can convert the amount of heat into

the amount of electricity so that it can detect the symptoms of temperature changes in certain objects.

2.2.1 Concept selection

The design selection criteria are defined based on safety features available on the project and prioritize quality in terms of project production so that it is safe to use. Among the available safety features is a temperature sensor.

2.3 Summary

In conclusion, this chapter is the experiments that will be made referring to previous research sources to complete the work done.

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CHAPTER 3 METHODOLOGY

3.1 Introduction

In this chapter, the methods of project implementation will be explained from the planning until the Pet Dyer is completed. Diagrams, tables, charts and the painting will be shown for describe the implementation methods of this project more clearly. This chapter also will indicates the initial process of analysis including sampling, data collection method and data analysis mehtod that related to the project implementation.

3.2 Project Design

The study was carried out using a survey design to gather information on public opinion related to the project to be produced. This study aims to make an assessment and comparison of their opinions regarding the existing animal dryers in the market and automatic animal dryers. This study focuses on people who have pets especially furry animals about their views on the use of automatic dryers while drying pets. Due to time constraints due to the spread of Covid-19 in malaysia, we had to conduct research by collecting data from the results of question and answer forms that were distributed online. The data collection period was done within a week

3.2.1 Sampling

There are many sampling techniques and the sampling technique we choose is simple random sampling. The sample of this study involves a population consisting of mechanical studies students for universe 4 at Shah Alam Polytechnic, which is a total of 50 people and the sample of the study that we want is those who keep pets, especially furry animals. The purpose of this sampling is to minimize the cost of doing research and also to obtain maximum accuracy and expectations that will occur in the research.

3.2.2 Data Collection

This study was conducted using a quantitative method through an online questionnaire method.Since we are in the pandemic, we did not have the opportunity to meet fellow students or the community to distribute physical questionnaires, due to high Covid-19 transmission. Therefore, we used online questionnaire method since it is the safest method at the moment. It is also the easiest possible method to be used and can also measure effectively since it can reduce the expenses, time and even energy for data collection. Questionnaire method is one of the instruments that are widely used by researchers to obtain a fact through the responds.

Through questionnaires, information relating to respondents can be kept confidential. This also allows the respondents to answer and respond the questions comfortably without feeling worried or anxious. Respondents can also take their time during the questionnaires without pressure from the surrounding. This can ensure our respondents to respond genuinely and carefully according to our needs.

Hence, online questionnaires were used throughout our data collection session to obtain information mainly about how they usually dry their animals after bathing, as well as their interest

about our product; which is pet dryer . In a nutshell, we managed to receive a lot of positive responds and beneficial feedbacks from the questionnaires to be used for our perusal

3.2.3 Data analysis methods

There are many methods adopted in finding data analysis to produce our project. Among the methods used are:

1) Data from the questionaire

The data made from the questionnaire can help to know the suggestions from all users so that the projects we implement can be upgraded according to the suitability and desires of users.

Among the questions made were gender, type of pet, age, intrested in pet dryer and suggestions for improvements on the project. With the questions given to the respondents can help us to improve our project and indirectly we can focus on the appropriate age and gender to market our project.

Among the results that can be obtained from the questionnaire are:

I. Result of age

II. Result of kind of animal

III. Result of interested in pet dryer

IV. Result of status responden

2) Data from materials

The method of data from the material that can be made is through the search for information in social sites about the suitability of the material used so that the product produced is more secure. The use of quality and good materials is very important in implementing the project so that the project created will be more secure and in terms of safety features will be better maintained.

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CHAPTER 4 PRELIMINARY RESULT

4.1 Introduction

The data obtained are from the results of a questionnaire. An online questionnaire was conducted on 30 respondents. The purpose of the questionnaire is to obtain information on the marketability of this product in the market. This question form has 6 questions that need to be answered by the respondents. The following are the results of research from the respondents. There are several aspects that are the main focus, namely:

1. Respondent biodata (gender, age and status)
2. How the respondent dries the pet
3. Types of pets
4. Respondents' perspectives on Pet Dryer

4.2 Preliminary findings of the study

To further strengthen this study, the questionnaire method was conducted by involving PSA students in universe 4 and the general public. The data obtained will be in the form of bar graphs and pie charts to facilitate the information studied and analyzed. The following is information related to the questionnaire that was conducted.

4.2.1 Questionnaire study

a) Responden gender

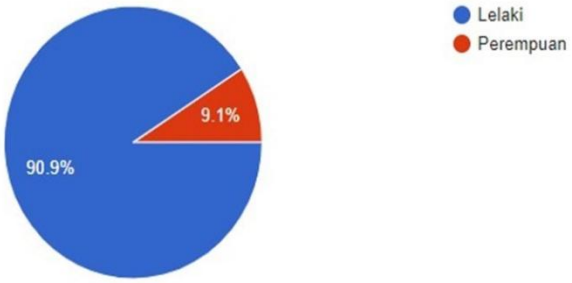

Diagram 4.2.1 (i): Gender of respoden

Based on figure 2 above the percentage for male respondents is higher than female respondents. For female respondents as much as 9.1 % while male respondents 90.9%

b) Age respondens

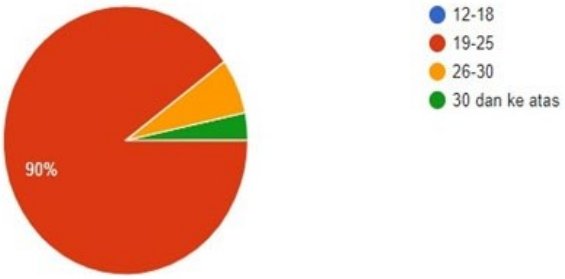

Diagram 4.2.1 (ii): Age of respodens

Taking into account the age of the respondents is very important to implement our project as it can help us focus on who is more deserving of attention to market our products.

c) Respoden status

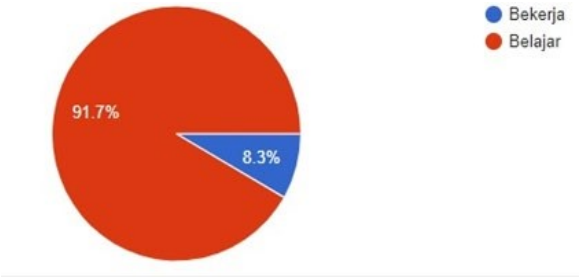

Diagram 4.2.1 (iii): Status of respodens

Respondent status is also important in determining a higher majority to market our products. In addition, this will also be able to help us to price our products according to the ability of buyers. For example, the majority of our products are students who are interested. This will make it easier for us to put a price that is not too high and affordable especially to students.

d) Ways of respoden to dries pet body

e) Type of animal

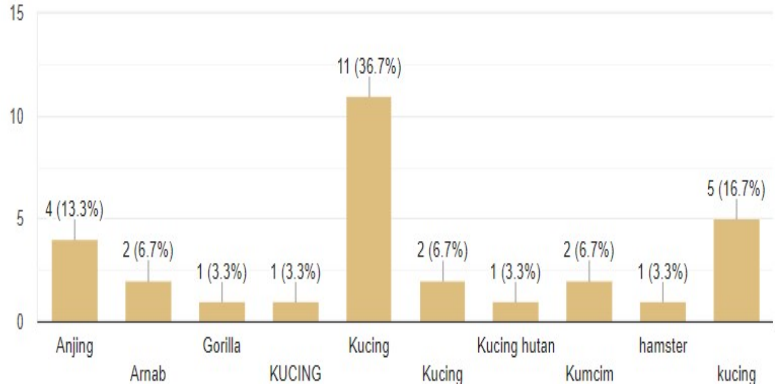

Diagram 4.2.1 (i): The type of pet kept by the respondent

Diagram 4.2.1 (i) shows an analysis with respect to the types of pets that maintained by the respondent. From the analysis, a total of 75.86% (22 people) of the respondents kept cats and 13.3% (4 people) of the respondents answered that they kept dogs. Meanwhile, 6.7% (2 people) of the respondents kept rabbits and 3.3% (1 person) kept hamsters.

f) Respondents' perspective on Pet Dryer

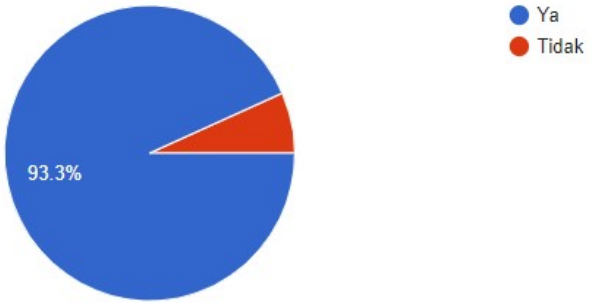

Diagram 4.2.1 (ii): Respondents' interest in trying Pet Dryer products

The results of the above analysis, diagram 4.2.1 (ii) shows that 93.3% (28 people) are interested in trying Pet Dryer products to be one of their ways to dry pets. While 6.7% (2 people) are not interested in trying our products.

4.3 Recommendation

The implementation of this project is very important in improving the project to a better quality as suggested by the respondents. This will be able to further increase the quality of our products and more in line with the sophisticated times. Among the suggestions that can be considered are:

I. Add interesting features such as wireless remote

II. Able to control the temperature of the dryer.

III. Adding UV light for disinfection pet body

These are among the proposals that will be considered to further increase the marketing of our products not only in the country but also abroad

4.4 Summary

The results of this study found that the respondents for this questionnaire are more male than female. Respondents are also more likely to study than work. Furthermore, respondents were also found to show high interest in our pet dryer project towards their pets. this effect can be identified through the boring questionnaires we have prepared. Respondents have given a positive response to our project which is a pet dryer. They are also interested in the features or advantages that we created in our project.

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CHAPTER 5

DISCUSSION, CONCLUSION AND UPGRADE PLAN

5.1 INTRODUCTION

This chapter covers the project's discussion, conclusion, and upgrade plan in detail. The analysis was carried out using data from the project's test run. As a result, in this chapter, all of the test run and analysis results will be discussed. Then, depending on the discussion and upgrading plan that have been established, a conclusion will be reached.

5.2 DISCUSSION

Based on the data we collected , we can agree to the fact that we need to increase the size of product. This is because not all pet can enter the pet dryer because the size are only fit for small size pet like cat and puppies. Thus, this will limit the use of this pet dryer due to its size, which is only suitable for small-sized pets. However, the design also plays an important role in determining the size of the pet dryer; this aims to produce an attractive and unique design for users to easily store the product if they do not want to use it. Furthermore, it can accommodate a variety of sizes of furry pets.

The Pet dryers should be selected at high fan speeds to reduce drying time. Furthermore, this product must include a heater so that the drying work can be completed in a timely manner. In addition, to prevent the heater from being used at an inappropriate temperature on the pet's skin, it will be controlled by a component called the B350K heater controller, which will be directly connected to the heater.

Moreover, this product requires safety enhancements such as temperature sensors that can emit a sound to warn or alert users in the event of an incident such as a fire on the wiring part. This is to avoid incidents where the user has inadvertently changed the speed of the fan as well as the

temperature of the heater, which can result in a variety of accidents such as pet skin burning and many more. Based on all of these discussions, a lot of upgrades could be made for future improvements to improve the product's quality and also to reduce the time it takes to make the product.

5.3 CONCLUSION

Based on this entire project, it is confident to say that this Pet Dryer provides a lot of benefits not only to humans, but also to the pet itself because the pet will be more comfortable and their emotional state will not be affected. Furthermore, it will assist many people who own pets in not spending too much money because the prices are so affordable to own, and it is hoped that this project will have a positive impact on humans, pets, and the environment. All upgrades and improvements will be made so that this project can provide more benefits and advantages. As a result, we hope that this project will continue to grow and benefit future generations.

4

ATTACHMENT

ATTACHMENT A **GANTT CHART**

ATTACHMENT B **PROJECT COST ESTIMATES**

ATTACHMENT C **PORJECT SKETHING**

ATTACHMENT D **FINAL DESIGN**

ATTACHMENT A

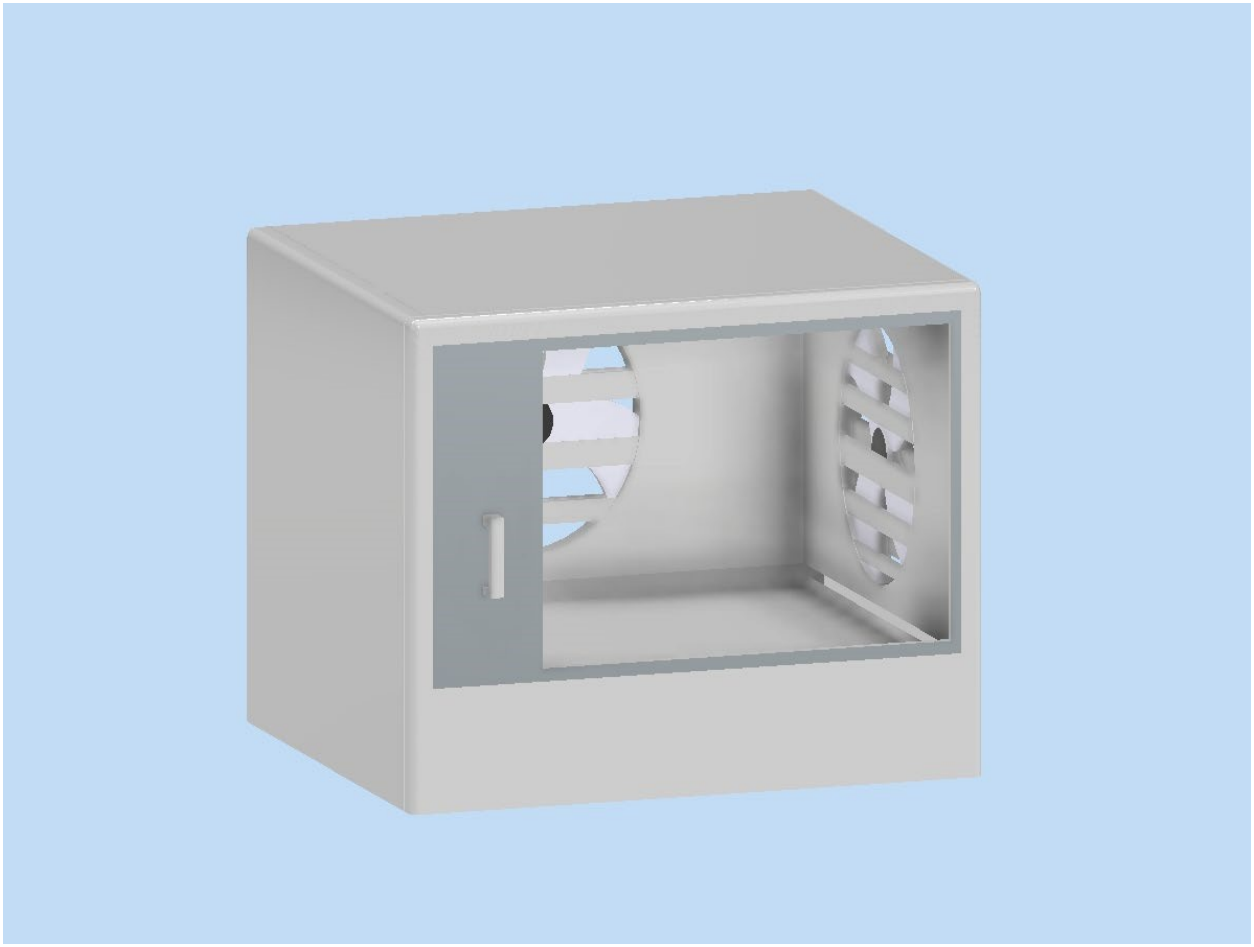
TASK	MAC				APR				MAY				JUN	
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
Project 1 briefing														
Division of group and supervisor														
Preparation of logbook														
Discussion on idea of project														
Research that related with														
Project flow chart														
Proposal writing														
Make a questionaire														
Submit logbook for evaluation														
Design project using inventor														
Proposal submission														

TASK	OCT				NOV				DEC				JUN	
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
Project 2 briefing														
Logbook writing														
Project Gantt chart														
Report writing														
Prepation pf project materials														
Making project poster														
Fabricate														
Project testing														
Data analysis														

ATTACHMENT B

Material	**Price**
Wood	RM 25
Brushless motor DC fan 12V (3 unit)	RM27
PWM DC motor speed control	RM 15
Thermometer mini digital LCD display	RM 9
Glass	RECYCLE
AC DC converter LRS-100-12 12VDC	RM59
High glow paint	RM20
total	RM155

ATTACHMENT C



ATTACHMENT D

PROJECT REPORT FORM

AHLI KUMPULAN			
NAMA	**NO. PENDAFTARAN**	**KELAS**	**NO. TEL.**
1. 1. MOHAMAD HILMI ZAIM BIN MOHAMAD HAINI	**08DKM19F1196**	**4F**	**0184746862**
2. 1. ZUL FITRY BIN NAZRI	**08DKM19F1199**	**4F**	**0133240057**
3. MUHAMMAD MUQRI' SHAH BIN MAHADI	**08DKM19F1206**	**4F**	**01125496728**

TAJUK	PET DYRER
NAMA PENYELIA	En. MOHD NASIR BIN KAMARUDDIN
TANDATANGAN	
TARIKH	