



JABATAN KEJURUTERAAN MAKANIKAL

DIPLOMA KEJURUTERAAN MAKANIKAL

CLOTH HANGING WARMERS

PENYELIA

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ABSTRAK

Cloth Hanging Warmer ialah penyangkut dalaman yang fleksibel, direka untuk mengeringkan pakaian dengan cekap dan berkesan. Ia disasarkan terutamanya kepada penduduk pangsapuri, pangsapuri dan rumah keluarga yang mengidamkan pengeringan segera pakaian mereka kerana terhad kepada pendedahan matahari. Pemanas ini menawarkan ciri seperti suhu boleh laras, pemanasan sekata dan kurang masa pengeringan. Ini dicapai melalui penggunaan gegelung cooper yang dipasang pada kedua-dua belah dan di atas penyangkut. Ini akan memudahkan kadar penyejatan dan pakaian akan lebih cepat kering. Bagi elemen haba, tenaga haba meningkatkan kadar penyejatan dan mengurangkan masa yang diambil untuk pakaian kering. Reka bentuknya juga fleksibel dan menjimatkan ruang yang sesuai dengan rumah dengan sempurna. Melayani pelbagai jenis keperluan pengguna, kami datang dengan tiga suhu boleh laras iaitu rendah, sederhana dan tinggi yang sesuai dengan kebanyakan jenis fabrik. Pendek kata, Cloth Hanging Warmer adalah mesra pengguna, menjimatkan ruang dan mesra alam untuk pengguna. Produk ini direka untuk membantu orang yang sibuk bekerja dengan tugas harian mereka. Tinjauan telah dilakukan untuk mendapatkan ulasan tentang projek ini, dan respons kebanyakannya menggalakkan. Terdapat beberapa cara projek ini boleh diperbaiki pada masa hadapan. Salah satunya adalah untuk mengukuhkan struktur dengan lebih berkesan supaya pengering pakaian boleh menyimpan lebih banyak pakaian.

ABSTRACT

Cloth Hanging Warmer is a flexible indoor hanger, designed to dry clothes efficiently and effectively. It is targeted mainly at flat,apartment residents and family home who crave for immediate drying of their clothes due to limitation to sun exposure. This warmers offers features such as adjustable temperature, even heating and less drying time. These were achieved through the use of cooper coil that attached at the both side and above the hanger. This will facilitate the rate of evaporation and clothes would dry faster. As for the heat element, the heat energy increased the rate of evaporation and reduced the time taken for clothes to dry.The design is also flexible and space saving that will fits home perfectly. Catering for a wide variety of users' needs, we comes with three adjustable temperature which is low,medium and high that suits most of types of fabric. In short, Cloth Hanging Warmer is user-friendly, space saving and environmentally friendly for the user.This product was designed to help busy working people with their daily tasks. A survey was done to get comments on this project, and the responses were mostly favourable. There are some ways that this project could be improved in the future. One of them is to strengthen the structure more effectively so that the clothes dryer can store more clothes.

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CHAPTER 1

INTRODUCTION

1.1 RESEARCH BACKGROUND

Weather has changed noticeably over the past two years, and since the 1980s, there have been more instances of rainfall overall. The research of how to make clothing more efficient than other factors is mostly driven by this reason.

Together with helping the working class, the technique is reputed to dry garments using the correct procedure.

With the design of an automatic cloth hanging warmer, any issue may be practically solved without the need to go through a laborious drying procedure. In order to address issues with non-drying, stinky, wrinkled, and other issues, this project is created as a system. The Clothes Dryer system is intended to be a dryer that operates automatically without requiring human labour. Use of a timer, an electric heater box, a relay, and an electronic circuit functioning.

1.2 PROBLEM STATEMENT

This cloth hanging warmer is implemented to solve the problem of imperfect drying of clothes in daily life. The machine is equipped with a suitable heating element for use in the process dries clothes in a short time. This concept was developed after observing how frequently the issue occurs. One of the frequent issues is that clothing don't dry properly and odor because of uncontrollable weather elements. Many individuals prefer to wear partially dried garments, which is quite harmful since it may result in skin illnesses.

The next issue is the lack of room for drying clothes in residences like flats, apartments, and family houses, where residents want quick drying of their clothing due to sun exposure restrictions. This project's main goal is to create a cloth hanging warmer for use in rainy and unpredictable weather. High humidity causes garments to dry more slowly and take longer to dry.

The issue of air pollution, which continues to grow every year and includes particles from vehicle smoke, dust, sand, and too many ultraviolet rays, was also taken into account. When laundry is allowed to dry outside, air pollution that may contain skin-harming particles has a chance of sticking to it. This phenomenon is more frequent in city areas when polluting activity is widespread. Tenants that reside in the region were the ones who suffered as a result of the situation.

1.3 RESEARCH OBJECTIVE

THE OBJECTIVES TO THIS RESEARCH ARE:

- i. To help people save time and energy.
- ii. To improve drying results and cleanliness of clothes.
- iii. To produce a quality clothes dryer with less electricity consumption.
- iv. To make the project work well and work as desired.

1.4 SCOPE OF RESEARCH

- i. Design and develop prototype of clothes hanging warmer for home use.
- ii. Specialized for everyday clothes such as clothes, pants and scarves.
- iii. The hanging warmer's interior space is limited.
- iv. The hanging warmer can only withstand a limited amount of weight of load.

1.5 SIGNIFICANCE OF RESEARCH

Although there are considerable differences in style and cost, clothes hanging warmer have previously been created, manufactured, and distributed globally. But the vast majority of Malaysians are still ignorant of its existence. Additionally, most individuals discover that it is preferable to wait a long time for their clothes to dry or wear wet clothes than to spend money on a dryer. Thus, it is hoped that the study's findings would transform people's perceptions of the clothes hanging warmer, which are highly innovative. Additionally, Malaysians will gain greatly from it because they won't have to worry as much about laundry any longer.

1.6 CHAPTER SUMMARY

This chapter provided an explanation of the studies' sources of inspiration and ideas. All of the problem statements were used to create all of the objectives. The goal of this project, along with its significance, will be to create highly portable, reasonably priced clothes hanging warmer that will make it more convenient for citizens. Even the project's limited scope will concentrate on producing clothes hanging warmer that dry clothes quickly. Consequently, this new dryer may be utilised for normal tasks with great care for a longer lifespan.

CHAPTER 2

LITERATURE REVIEW

2.1 LITERATURE REVIEW

This literature review provides information on recent studies that were relevant to the project's development and that employed a nearly identical system. To gather data related to the project being created, a literature review was done. In this study, initiatives that have been carried out directly or in response to observations are more in the spotlight. To ensure that each process can be completed successfully in the scope of this design, a thorough examination of all factors is crucial. Today's technological and scientific advancements know no bounds. Numerous products or pieces of machinery have been developed by humans to facilitate daily life. We can witness a vast range of electrical products being used to fulfil human needs wherever we are.

2.2 INTRODUCTION

Every person, whether a kid, teenager, or adult, includes clothing among their accessories. In terms of nature, education, employment, and even industry, clothing use is also highly widespread. Indirectly, the use of clothing should be emphasized so that a person appears perfectly in terms of daily wear. In terms of care, clothes need to be washed or cleaned to avoid fabric or clothing material being damaged and so on. There are a lot of clothes making nowadays using materials from leather and cloth where clothes should be washed properly to prevent damage and maintain the quality of clothing. Clothes should be dried with optimal temperature and conditions so that the texture and quality of the clothes do not get affected. Since some people have hygiene concerns, the cleanliness of clothing must also be considered.

Therefore, this dryer will be developed to address the issue with clothing care and drying. This dryer uses coils as heating elements to dry clothes. This coil produces heat that is transferred into the surrounding area with a fan. When the coil is charged with electric power, it becomes red hot. This heat is transferred into the open area by using an exhaust fan. As the fan blows air over the coil, the coil is continuously heated, which warms the air then dries the clothes.

2.3 THEORY

In this project that we produce, the source of electrical energy needs to be used for help the drying process. Energy resources used must be able to reduce product production costs in order to achieve the objectives of the study that have been discussed. Between The energy source that has been studied to move this machine are :

a) Electricity

Electricity can be produced through various means and sources. There are various types of generation plants such as gas turbine plants, steam turbine plants and diesel plants that use fossil resources such as oil, gas or coal as fuel. Electricity too can be produced with hydro, wind, wave, nuclear, solar and various power other causes.

Oil, natural gas, coal, and hydropower are some of the fossil fuels that are used to produce electricity in Malaysia. Currently, natural resources are used to create about 60% of the electricity. The remaining uses different energy sources, including hydropower, coal, and oil. Nowadays, electricity is one of the most important requirements for turning on equipment electronics or even machines. This causes a high demand for energy electricity has now caused the electricity payment rate to increase. For Factories using electricity as the main energy are greatly affected by the cost production and manufacturing of products.

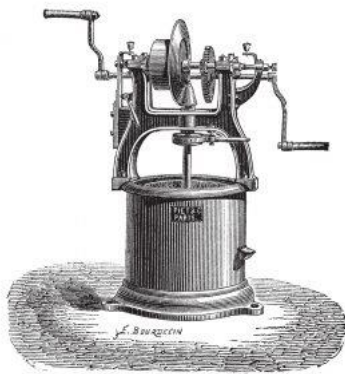
b) Heat energy

Thermal energy is energy that moves with a temperature difference. The SI unit of heat is joules. Heat moves from a high temperature region to a low temperature region. Every object has an internal energy associated with the random motion of constituent atoms or molecules. Heat is also produced when there is friction between two surfaces that are in contact. This energy is not used because it does not involve temperature.

2.4 TEMPERATURE FOR TYPE OF FABRIC

- a) Low temperature is generally between 120 to 122 degrees Fahrenheit (49 to 50 degrees Celsius). Suitable for silk, wool, arcylics and linen material. (1)
- b) Medium temperature is generally between 130 to 133 degrees Fahrenheit (55 to 56 degrees Celsius). Suitable for lightweight cotton such as t-shirt. (1)
- c) High temperature is generally 140 to 145 degrees Fahrenheit (60 to 63 degrees Celsius) or above. Suitable for , jersey, cotton thick, towel material. (1)

2.5 HISTORY OF DRYER



The first electric dryer was invented in the early 20th century. Inventor J. Ross Moore was tired of hanging his clothing outside, especially during the winter. To help keep his wardrobe out of the freezing weather, he built a shed to house his clothes while they dried. In addition, he added a stove. The clothing would hang on the line in front of the fire and dry. This was the beginning of the development of electric dryers.

For the next three decades, Moore worked to eventually build a gas and electric unit, but couldn't find anyone to help him get his idea manufactured. The drum-type model was built and eventually picked up by Hamilton Manufacturing in Wisconsin. The new dryers were sold under the name June Day beginning in 1938.

In England and France during the end of the 18th century, clothes dryers were being made. Called ventilators, these large contraptions were made of metal. The drum had ventilation holes in it that allowed heat into it while it was hand cranked over an open fire. This invention was used for decades.

As time moved on, America caught onto the idea of these ventilators. Unfortunately, the clothing consistently smelled of smoke, was covered in soot and occasionally caught on fire during the drying process. As you can imagine, this wasn't an ideal situation.

George T. Sampson of Ohio decided that the ventilator invention needed to be tweaked. Instead of using heat from an open fire, he chose to place a rack over a stove. This heat source was much better, as it didn't dirty the clothing or catch it on fire! On June 7, 1892, Sampson was granted a patent for his idea. These "dryers" were used well into the 19th century

2.6 MATERIAL SELECTION

a) 304 STAINLESS STEEL PIPE

It is suitable for use in Construction, Industry, decoration and foodstuff etc. Stainless steel are highly resistant to corrosion, allowing them to be used in a range of environments. High and Low Temperature Resistance. Strength-to-weight Advantage.



b) MEDIUM DENSITY FIBREBOARD WOOD (MDF)

Because of its high strength, stiffness, hardness, and rigidity, it is well-liked for industrial applications such as cabinets and furniture shelves. MDF is also fire resistant because of its chemical makeup which includes phenol formaldehyde resin that acts as a heat barrier.



c) COOPER PIPE AS HEATING ELEMENTS

It is a durable, reliable and economical material with good electrical conductivity amongst other metals. In addition, copper is superior for conveying liquid and it is applicable to heat exchanger, chemical industry, gas pipe and water supply. Better resistance to corrosion. The maximum temperature is 350°F (176°C).



d) ALUMINIUM FOIL

It is temperature resistant, bacteria resistant material , flexible sizing , oxygen, light and odor barrier.



e) FAN

An exhaust fan is a fan which is used to control the interior environment by venting out unwanted odors, particulates, smoke, moisture, and other contaminants which may be present in the air. Exhaust fans can also be integrated into a heating and cooling system.



f) DIGITAL LED TEMPERATURE CONTROLLER

To maintain the temperature of an item at a constant level. Is a type of temperature controller that provides proportional control with integral and derivative adjustment. Work to control the level of temperature so that the temperature being controlled is the same as the set point.



g) POLYURETHANE FOAM

Contributes to a significant reduction in electricity and fuel costs. The temperature in each room will be maintained at a constant and convenient level. It also minimising heat losses. Has a low heat-transfer coefficient.



h) POWER CABLE

A power cable is an electrical cable, an assembly of one or more electrical conductors, usually held together with an overall sheath. The assembly is used for transmission of electrical power. Power cables may be installed as permanent wiring within buildings, buried in the ground, run overhead, or exposed.



2.7 CHAPTER SUMMARY

As a way to sum up this chapter, a literature review is critical to highlight all the research on materials and techniques that has been done to advance our understanding of the project. It is extremely helpful for us to properly comprehend this clothes hanging warmer that every research and other project that is related to it.

This is decided based on the budget necessary, the parts that are easily accessible, and the deadline established for finishing the job. The system's application is consistent with its intended use. The expense of project development is under control thanks to this well-organized management mechanism. Theoretically, the project operation, the components used, the software chosen, and the type of hardware developed are the criteria that require complete attention. Overall, the information and ideas gained from this study were very helpful in building the project's structure and architecture. This will serve as the project's indirect main foundation for defining its course.

CHAPTER 3

METHODOLOGY

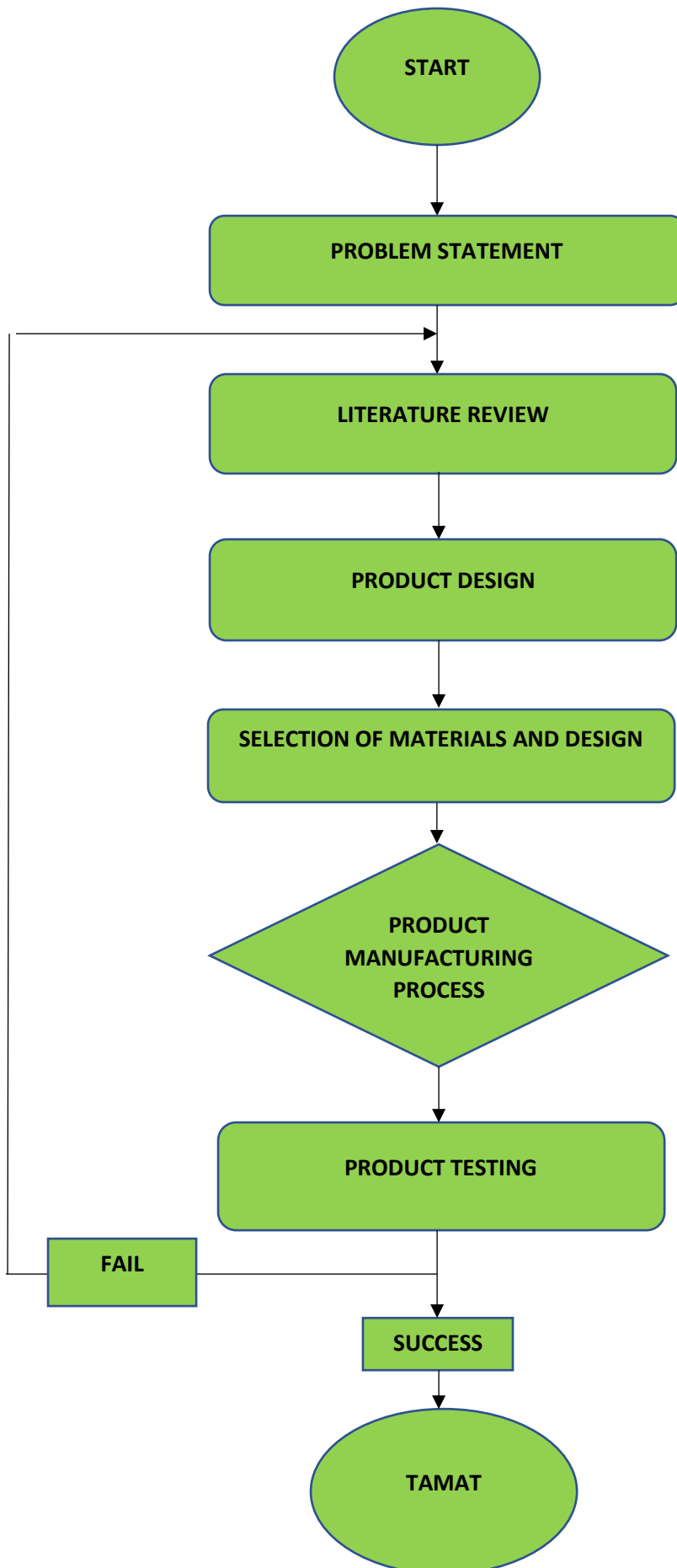
3.1 INTRODUCTION

A methodology is a strategy of attack, particularly if it is utilised frequently. It may be obvious, yet the words methodology and technique are linked. In fact, a methodology is a system of methods followed consistently. Scientists, for example, use various methodologies as they perform experiments. Thus, methodology is a necessary component of any study in order to produce results. To meet scientific requirements, employ scientific methods, and have quality, methodology must apply systematic processes.

Several techniques to display materials have been made in order to develop this system, including getting hardware and information from lecturers and other colleagues. Additionally, it is crucial to truly understand and be familiar with each step of the study methodology's framework. Obtaining as much information as you can is one of the things that must be done. Clothes hanging warmer is a project created to overcome the problem of erratic weather changes throughout the year causing the clothes not dry and also save human energy and time.

A lot of details about the steps we took to create our final project will be covered in this chapter. A flowchart outlining how we made the entire project will be available. The steps we took are detailed in this flowchart. Next is the Gantt Chart, which will display the actual and planned progress over the course of the 13 weeks of our final project.

3.2 FLOW CHART



3.3 FLOW CHART EXPLANATION

i. PROBLEM STATEMENT

- a problem statement was created to identify current issues that people are currently facing, as well as issues with the products being studied.

ii. LITERATURE REVIEW

- A literature review is done to gather facts and information about the project that is being produced. In this study, the focus is mainly on the projects being conducted, either directly or through via observations and data.

iii. PRODUCT DESIGN

- The designation of the project began after the researches gathered. New design was made to make an identical change between the past project and the new one. Detailed design is done to assess the level of convenience and speed of drying clothes. The study design serves as a guide in a study to find clear answer to the research questions.

iv. SELECTION OF MATERIAL, DESIGN AND TOOLS

- To create a prototype of a wardrobe drier, it's critical to select the best materials available. Using high-quality materials will extend the project's duration.
- This project involves the use of various tools and materials for manufacturing work such as aluminium foil ,cooper coil, exhaust fan, thermostat , capasitor , transformer, diode, resistor, relay, stainless-steel pipe and MDF board.

v. PRODUCT MANUFACTURING PROCESS

- In the process of the prototype development tools such as saw, circular saw ,grinder machine ,drilling machine ,sand paper, scissors, tape and other were used for the purpose of assembling the components of the product prototype. The prototype was developed as mini project. The actual materials were not used yet; instead, we assembled alternative materials using the equipment that mimicked the real materials

vi. PRODUCT TESTING

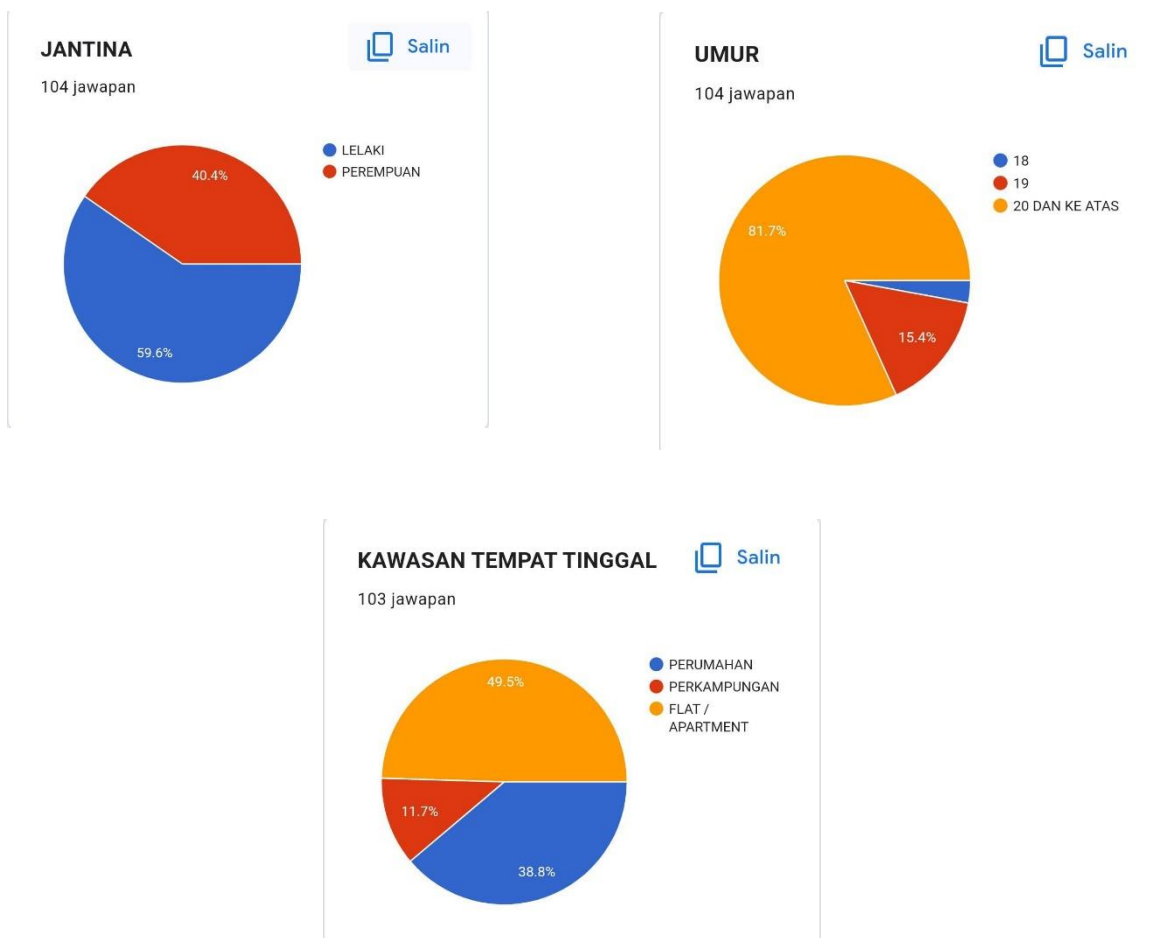
- Project testing must be done to determine the outcomes and issues that the project encountered . Additionally, issues that surface during testing can be found before a product is released. Project testing is carried out using group members as the initial users.

3.4 SURVEY AND RESEARCH

This interview and survey are the outcome of adjustments made to earlier theses and journals on the clothes dryer system. Before it was done to the working group, discussions and meeting were first held with the supervisor. This survey is more focused on the effectiveness of the produce clothes drying system. This survey is being conducted primarily to allow us to collect feedback about the project we are running from those who will benefit it. The process of conducting the survey is done by group members by building a Google survey platform and distributing it to the public using social media platforms. With that, the outcomes will be examined in order to give us recommendations, conclusions, and motivation for our final project. Our survey is divided into three sections . The first section contains background information like age, name, gender, and home. The second section contains general questions about the effectiveness and benefits of owning a dryer. For the third section which is the last section of this survey, it contains cost, frequency and time taken when using the dryer in the laundry.

3.5 SURVEY RESULT


a. First Section



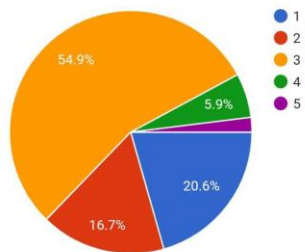
b. SECOND SECTION




c. THIRD SECTION

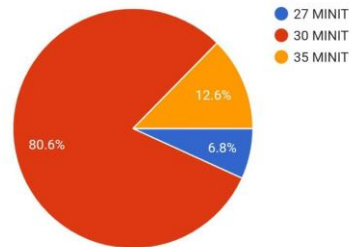
BERAPA KERAP KALI ANDA MENGGUNAKAN PENERING BAJU DI DOBI DALAM MASA SEMINGGU?  Salin


102 jawapan



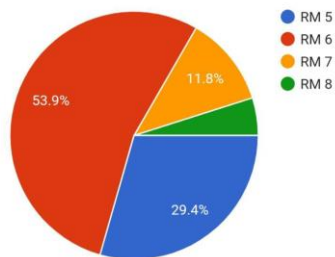
BERAPAKAH TEMPOH MASA YANG DIAMBIL UNTUK MENGERINGKAN PAKAIAN DI DOBI?  Salin

103 jawapan



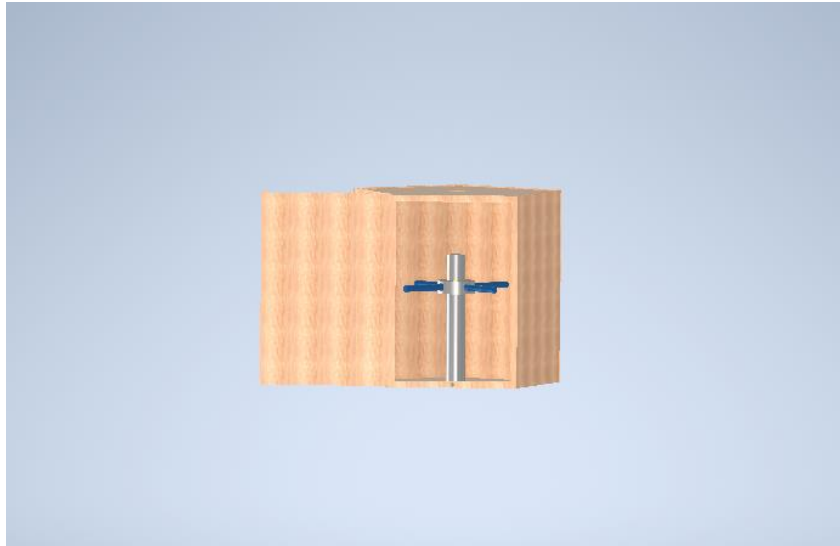
BERAPAKAH KOS SEKALI PENGGUNAAN DI DOBI UNTUK MENGERINGKAN PAKAIAN ?  Salin

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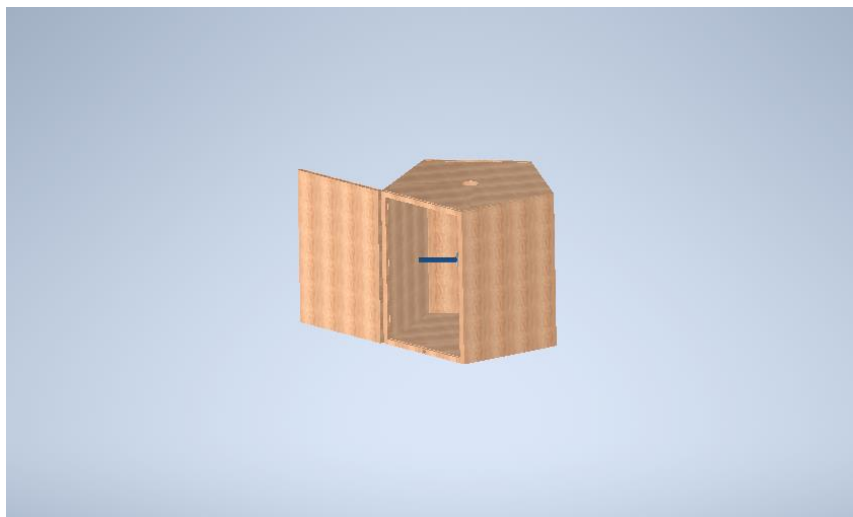


3.6 PRODUCT DESIGN

FRONT VIEW



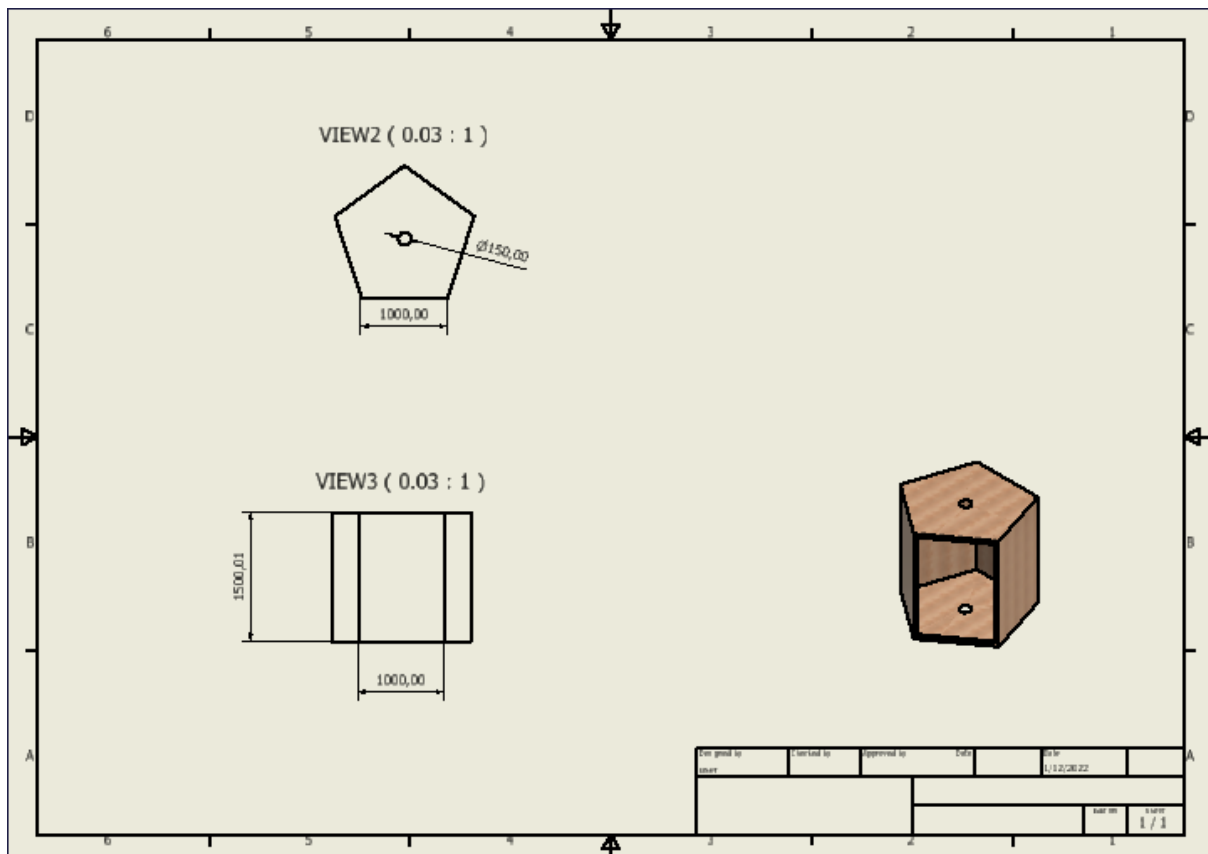
SIDE VIEW



TOP VIEW



ORTHOGRAPHIC VIEW



3.7 BUDGET CALCULATION

NO	MATERIAL / EQUIPMENT	UNIT	PRICE
1	DIGITAL LED TEMPERATURE CONTORLLER	1	RM 15
2	COOPER PIPE	1	RM30
3	LED TUBE LIGHT	2	RM 10
4	EXHAUST FAN	1	RM 30
5	ALUMINIUM FOIL (30cm x 10m)	2	RM 40
6	MEDIUM DENSITY FIBRE (MDF) BOARD (150cm x 70cm x 2cm)(L x W x T)	5	RM 200
7	POWER CABLE	1	RM 4
8	STAINLESS STEEL PIPE (90cm – 150cm)	1	RM 35
9	POLYURETHANE FOAM (1ft)	5	RM 27
10	MAIN CIRCUIT	1	RM 40
TOTAL			RM 431

3.8 GANTT CHART

PROJECT ACTIVITY PLANNING (GANTT CARRT)

GANTT CHART 1 (2022)

Week / Activities Status	Status	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15
Student	P															
Registration	C															
Presentaion of Ideas	P															
	C															
Preparing Proposal	P															
	C															
Survey	P															
	C															
Literature Review	P															
	C															
Methodology	P															
	C															
Writing Report	P															
	C															
Presentation Report	P															
	C															
Submission Report	P															
	C															

P	PLANNING
C	COMPLETE

3.9 CHAPTER SUMMARY

In conclusion, the procedures used in this project are very important and crucial to its completion. Therefore, as indicated in the interview, majority of the respondents to our survey which included residents of city areas who were impacted by the frequent climate changes and wants who desire clean, wrinkle free, and odor free clothing agreed and accepted this idea. The materials used in the project will create a light and strong product. But if one of the methods was adjusted, the result would be completely different.

4.0 REFERENCES

- 1) homesandgardens.com. 2022. *Tumble dryer temperature guide – knowhow for fabric care*. [online] Available at: <https://www.homesandgardens.com/kitchens/tumble-dryer-temperature-guide> [Accessed 26 September 2022]. (1)
- 2) Melaminepaper.com. 2022. [online] Available at: <http://www.melaminepaper.com/is-mdf-combustible-at-what-temperature-does-mdf-burn.html> [Accessed 26 September 2022]. (2)
- 3) Sushangsteel.com. 2022. *304 Stainless Steel Tube/Pipe*. [online] Available at: https://www.sushangsteel.com/product/Stainless_Steel_Pipe_Tube5202/304_Stainless_Steel_Tube_Pipe.html [Accessed 26 September 2022].(3)
- 4) Warwick, S. (2022, May 8). *Tumble dryer temperature guide – knowhow for fabric care*. homesandgardens.com. Retrieved September 29, 2022, from <https://www.homesandgardens.com/kitchens/tumble-dryer-temperature-guide> (4)
- 5) TNB Better. Brighter. 2022. *TNB Better. Brighter.*. [online] Available at: <https://www.tnb.com.my/residential/pricing-tariffs> [Accessed 26 September 2022]. (5)
- 6) “Copper Coils.” RFS Hydraulics, www.rfshydraulics.com/copper-pancake-coils.html?utm_term=copper%20coils&utm_campaign=Copper+Pipes/Coils&utm_source=adwords&utm_medium=ppc&hsa_acc=4957807990&hsa_cam=10244129452&hsa_grp=101340930646&hsa_ad=548350253979&hsa_src=g&hsa_tgt=kwd-297373383734&hsa_kw=copper%20coils&hsa_mt=b&hsa_net=adwords&hsa_ver=3&gclid=Cj0KCQjw-fmZBhDtARIsAH6H8qirpkYCT0mtseRrJiH7ZLgWSUI9tvnbdM_CQzovx9zy5Rpjis-2hLsaAkz1EALw_wcB. Accessed 6 Oct. 2022. (6)
- 7) “15 Benefits of Choosing Stainless Steel Scales - Marsden.” *Marsden Weighing*, 28 Sept. 2020, www.marsden-weighing.co.uk/blog/stainless-steel-scale-benefits?gclid=Cj0KCQjw-fmZBhDtARIsAH6H8qgFVolaA390dHsVS7W4TAaFiC6M0_3yv22M1TbXszWe9zInZg2n4qgaAmkBEALw_wcB. (7)

- 8) admin. "Why Use Aluminum Foil Packaging | Maco PKG." *Maco PKG*, 28 July 2021, www.macopkg.com/why-use-aluminum-foil-packaging. (8)
- 9) "The Fan - IRRI Rice Knowledge Bank." *The Fan - IRRI Rice Knowledge Bank*, www.knowledgebank.irri.org/step-by-step-production/postharvest/drying/dryer-components/item/the-fan#:~:text=The%20fan%20is%20the%20most,which%20leads%20to%20many%20p,roblem. Accessed 6 Oct. 2022. (9)
- 10) IHS. "Why Digital Temperature Controllers? PID Heater Sensors." Why Digital Temperature Controllers? PID Heater Sensors, industrialheatingsystems.com/Digital-TempControllers.html. Accessed 4 Nov. 2022. (10)
- 11) "Polyurethane Foam — the Advantages and Disadvantages of Foam Thermal Insulation." Purios - Spray Foam Insulation You Can Trust, 1 Oct. 2018, purios.com/en/blog/polyurethane-foam-the-advantages-and-disadvantages-of-foam-thermal-insulation. (11)
- 12) admin. "History of the Clothes Dryer | Commercial Dryer in Raleigh, NC." *T & L EQUIPMENT SALES CO., INC. | Commercial Laundry Equipment Experts*, 10 July 2016, www.washcycle.com/history-clothes-dryer.
- 13) "Home Questions Answered." *Home Questions Answered*, 24 Oct. 2022, www.homequestionsanswered.com/what-is-an-exhaust-fan.htm.