



**MECHANICAL ENGINEERING OF DEPARMENT
POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH**

PROJECT 2

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CLASS: DKM5F

PROPOSAL NAME:

GRIP AND ROTOR LEMANG'S TOOL

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APPRECIATION

Throughout the journey of making the project proposal, I would like to express my gratitude to the divine with the overflow of grace as well as the grace of time, life energy bestowed on me so that I can also complete this task successfully.

First of all, I would like to dedicate this appreciation to my beloved lecturer, Puan NurAzlinda Binti Yahya@Muhammed because with her guidance has helped my team and me a lot in completing this task successfully despite the many mistakes that our group made.

I would also like to thank my group also for reminding me of everything I have neglected. They helped me by answering every question I uttered to them. With their support and cooperation in preparing this proposal paper.

At the end of the speech, I would like to thank those who were directly or indirectly involved in the making of this course work. Thank you.

ABSTRACT

Grip and Rotor Lemang's Tool is a tool that serves to clamp and rotate or rotate the lemang which aims to maintain the traditional way in the process of making lemang. With the creation of this tool can increase the level of safety when burning lemang. It is made of mild steel because it is lightweight and heat resistant. We got the idea through a problem we found which was the purchase of an expensive lemang burner machine. In addition, no specific tools can be used in managing lemang burning. Next, it was less safe when we found the seller's hands felt the heat of the embers and potentially caused injury even wearing gloves. Among our objectives is to produce tools that can clamp and rotate lemang. In addition, maintaining the traditional way in the process of making lemang. We have themed by applying some of the concepts applied in the design of this project. Among the concepts are a pusher clamp worn with a sealing material that serves to grip or push the material and the concept of a pliers handle that serves as a rotor. As a result, we produced a project that serves as a clamp tool and a lemang rotor, the tool can work well. In conclusion, our objective has been achieved by creating a special tool for lemang burners can directly create lemang burners at a low cost rate.

ABSTRAK

Grip dan Rotor Lemang's Tool ialah alat yang berfungsi untuk mengepit dan memutar atau memalingkan lemang yang bertujuan mengekalkan cara tradisional dalam proses pembuatan lemang. Dengan penciptaan alat ini dapat mempertingkatkan tahap keselamatan ketika membakar lemang. Ia diperbuat daripada keluli lembut kerana ringan dan tahan panas. Kami peroleh idea melalui masalah yang kami dapati iaitu pembelian mesin pembakar lemang yang mahal. Selain itu, tiada alat tertentu yang boleh digunakan dalam menguruskan pembakaran lemang. Seterusnya, kurang selamat di mana kami dapati tangan penjual terasa bahangnya bara api dan berkemungkinan boleh mendatangkan kecederaan walaupun memakai sarung tangan. Antara objektif kami ialah untuk menghasilkan alat yang boleh mengepit dan memutar lemang. Selain itu, mengekalkan cara tradisional dalam proses pembuatan lemang. Kami telah mereka dengan mengaplikasikan beberapa konsep yang diterapkan dalam rekabentuk projek ini. Antara konsep tersebut ialah pengapit penolak yang dipakai bersama bahan pendedap yang berfungsi untuk mencengkam atau menolak bahan dan konsep pemegang playar yang berfungsi sebagai pemutar. Hasilnya, kami menghasilkan sebuah projek yang berfungsi sebagai alat pengepit dan pemutar lemang, alat tersebut dapat berfungsi dengan baik. Kesimpulannya, objektif kami telah tercapai dengan mewujudkan sebuah alat khas untuk pembakar lemang secara langsung dapat mewujudkan sebuah alat pembakar lemang dengan kadar kos yang rendah.

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CHAPTER 1 (INTRODUCTION)

1.1 INTRODUCTION

Lemang is derived from the Minangkabau loan word "lamang".

Lemang is glutinous rice cooked with coconut milk and salt in bamboo ribs lined with banana leaves before baking until cooked. This is a way to breed rice that is traditional throughout the Malay world from Indonesia to Malaysia, Singapore and Brunei. This dish is best known among the Minangkabau community, but the simple way of cooking it is also plagiarized or imitated among other regional races such as the Negrito, Semai tribe, Dayak and Malay race.

The bamboo sticks chosen to cook the lemang need to be chosen in terms of age so as not to get too old and then become hard or not too young to crack easily and damage the cooked lemang. The selected bamboo rugs fit largely cut and cleaned from all the nodules before being coated with rolls of banana leaves. This reed arrangement is referred to as a "talang". The washed glutinous rice will be stuffed into these groins followed by coconut milk until there is enough space for bamboo stems. A piece of bamboo in this talang is filled between 1 to 1.5 liters of glutinous rice. The lemang are burned from one hour to 4-5 hours depending on the magnitude of the fire being lit. The stems should be reversed every 15 minutes so that the whole rice cooks evenly.

Lemang is often served in a lush or serunding manner, but some eat lemang in a sweet way such as tapai (among Minangkabau people) or fruits. There are many types of lemang produced using special ingredients. For example, Lamang puluik which is the most common lemang foundation produced in minangkabau society uses glutinous rice as the main ingredient. Hard fruit is often added as a flavour enhancer as well as avoiding further gluing of rice. Besides that, Lamang pisang is lemang using banana fruit as a byproduct, glutinous rice and coconut milk mixed first before bananas are inserted then Lamang tapioca where lemang uses tapioca as a basic ingredient without the need for coconut milk. Finally, the yellow Lamang using rice is milled into flour mixed with turmeric, coconut milk and salt.

Lemang is cooked or sold all year round, but is more widespread on festive days such as Hari Raya Aidilfitri and Eid al-Adha. In addition, lemang is often cooked by the Minangkabau people on the prophet Muhammad's birthday as well as welcoming the coming of Ramadan. Minangkabau people often make lemang as a gift when visiting friends or during weddings.

1.2 BACKGROUND OF PROJECT

In the process of cooking lemang has been many innovations that have been produced, where there are various designs that have been produced in helping the problems faced when using traditional methods in the process of burning lemang. Each design is designed to have its own shape and characteristics but still retain wood or charcoal as fuel during the combustion process to maintain the taste and aroma of lemang in cooking lemang. There are also some projects that use fuels such as gas.

One of the studies that has been found through the website is the lemang baking machine. However, the process of making traditional lemang is quite complicated for most people especially getting bamboo according to the size and length of burning period. Wood selection is also important for producing good coals, thus ensuring that the lemang is completely ripe. The project was developed environmentally friendly for not using bamboo, instead reusable stainless steel. The size of the lemang produced is more consistent based on the height and girth of the lemang shell. The taste of the lemang does not change even when using stainless iron and cooks evenly. Usually bamboo glue is crusted, but this machine can be cooked according to the needs of the user.

In addition, the study we found was also "Lemang Burner Tool". Where this tool differs in design and functionality. The tools they designed were the place of the lemang burner and used the gas stove as fuel. The advantage they get is that it does not require the use of apai wood because their project uses a gas stove. Besides, cook quickly and not too crusted. The project also made it easy for users to get anywhere easily.

Meanwhile, the project we are about to build is a functional tool to turn and clamp the lemang. This tool we use mild steel iron because this iron has

such characteristics as lightweight and heat resistant. Among the advantages of this project, it is easy to carry anywhere and suitable for small traders. This tool can also be used by large traders and ordinary people on budget taps for our affordable create tools.

1.3 PROBLEM STATEMENT

- i. Purchasing a machine involves an expensive cost
 - Small business who want to get faster lemang combustion require sophisticated machines but the price of machines is quite expensive to buy.

- ii. No special equipment for lemang management
 - If you follow the traditional method of burning lemang, the burner uses gloves to turn or turn the lemang.
 - The burner wear gloves to prevent the hand from getting injured unconsciously can increase the risk if the gloves are hit by a spark.
 - This can damage gloves and cause the burner to have to provide large quantities of gloves.

- iii. The production of lemang machines requires a lot of materials
 - If the lemang business wants to make his own machine requires a lot of materials and also takes a long time in the manufacturing process. It should also choose the right materials so that there are no problems with machines and lemang such as short lifespan, rusting easily and affecting the taste of the clay.

1.4 OBJECTIVE

- To produce an affordable product.
- To create a special tool that can clamp while rotating the lemang.
- to increase the level of safety.
- To maintain the traditional way of making lemang.

1.5 THE QUESTIONING

- Is this tool usable when the lemang is tightly arranged?
- Is this tool applicable for all sizes?
- Is it possible to clamp the lemang firmly?
- Is this heat-resistant if used for a long time?
- Is this tool needed by small traders and suitable for large traders?
- Can the waste of gloves be reduced?

1.6 PROJECT SCOPE

Based on some of the information we've studied, these tools we've created have limitations such as:

- Can only clamp the lemang with a diameter of 1 – 3.5 inches
- Only serves to clamp and rotate the clay
- Suitable for small business use

1.7 IMPORTANT OF PROJECT

Grip and Rotor Lemang tool's is a tool that is using during the process of burning lemang in turning lemangs. It works by clamping the glue first and then turning the clay away. This tool is not only focused on small business but can be used for the general public who want to burn the lemang on their own. Additionally, large business can also use this tool if they want to use.

Beside that, the use of this tool can help in the process of burning lemang. It serves to clamp and turn the clay during the combustion process. This can facilitate the process of turning and removing the lemang during the combustion process as well as saving time.

Finally, being able to create affordable products. This is because it is not affordable for small traders who want to buy expensive lemang machines or create machines. With our tool, it can help small business in terms of cost. This tool is also not only focused on small business but for ordinary people or even large business can be used.

1.8 DEFINITION OF TERMS/OPERATION

Grip and Rotor Lemang tool's is a device used during the process of burning lemang in turning lemang. The way it works is first need to clampit first and then turning the lemang away. This tool is not only focused on small business but can be used for the general public who want to burn the lemang on their own. Additionally, big business can also use this tool if they want to use.

1.9 CONCLUSION

In conclusion, this chapter taught us to identify the problem first before we decide to build up a project that can solve the problem. We also need to do some research before build up a project either it suitable or not and know is it the society needed our project or not because if we build up without any support, it just same like we do not settle the problem.

CHAPTER 2 (LITERATURE REVIEW)

2.1 INTRODUCTION

Based on the research and references I made on the website there are several tools that have been created such as the Lemang Oven. This Lemang oven is made of stainless steel to help those who sell lemang commercially or have catering services. Among the benefits of this oven is that it only takes one and half hours to cook compared using the traditional method which requires as much as 6-7 hours of time taken to fully cook lemang. The oven temperature can reach 200 to 250 degrees Celsius. This oven also can turn the Lemang automatically.

Besides that, there is also a project created called "Tong Lemang Kitchen" by students of the final semester vocational college. The lemang's kitchen is built using zinc and iron plates with a capital of only RM100. The difference in this invention in terms of its use remains the same but in terms of different combustions that use charcoal as fuel. Barrels that are 22 inches in diameter have heat trap covers and loops that work to lay bamboo these lemang can hold 12 or 15 lemang rods depending on size with only two hours of combustion. The use of this tool is not only easy but can also save combustion time compared to using traditional methods.

2.2 CONCEPT / THEORY

As we all know, there are lemang burners that use a machine as a lemang mover. However, in the production of this project, we have planned to produce a tool that is far different from the existing lemang burners. Conceptually, this tool works by mobilizing it using human energy. For example, this tool is used by users when they want to place the lemang and rotate the surface of the lemang that has not been exposed to charcoal. Where this tool needs to hold the top of the lemang and rotate the lemang so that the surface can be exposed to the charcoal. There are some differences between our tools and existing tools. Among the differences found in this project tool is that it is used to hold the handle and turn while the existing tool works

automatically because it has a machine. Next, a significant difference on this project tool is in terms of its ergonomic design. This makes it easier for one to hold the tool holder with ease compared to existing tools whose design is the result of improving the traditional design. Meanwhile, to produce this project does not require the most material and the size is not too large because its function is only dedicated to holding and rotating the lemang, unlike the existing project which requires a lot of material and of course a large size and even require high cost. We have themed by applying some of the concepts applied in the design of this project. Among the concepts are the pusher clamp worn with a sealing material that serves to grip or push the material and the pliers handle concept that serves as a rotor. We use rubber tape to wrap the handle which serves as thermal insulation. Finally, we used the bearing concept to rotate but did not rotate by 360 degrees, only 180 degrees.

2.3 PREVIOUS RESEARCH

Based on the research and references I made on the website there are several lemang burning machine that have been created such as the Lemang Oven. This Lemang oven is made of stainless steel to help those who sell lemang commercially or have catering services. Among the benefits of this oven is that it only takes one and half hours to cook compared using the traditional method which requires as much as 6-7 hours of time taken to fully cook lemang. The oven temperature can reach 200 to 250 degrees Celsius. This oven also can turn the Lemang automatically.



Figure 1 – Attachment 3

Besides that, there is also a project created called "Tong Lemang Kitchen" by students of the final semester vocational college. The lemongrass kitchen is built using zinc and iron plates with a capital of only RM100. The difference in this invention in terms of its use remains the same but in terms of different combustions that use charcoal as fuel. Barrels that are 22 inches in diameter have heat trap covers and loops that work to lay bamboo these lemongrass can hold 12 or 15 lemongrass rods depending on size with only two hours of combustion. The use of this tool is not only easy but can also save combustion time compared to using traditional methods.



Figure 2 – Attachment 4

The tool we want to create is the Grip and Rotor Lemongrass Tool, which has two functions in one tool. The function of this tool is clamping down

where it holds the lemang and the second function is rotate where it turns the lemang. It is intended to help facilitate the seller of lemang in the process of cooking lemang by hand. This can pose a risk of injury such as burns so with the tools we want to make can help traders while this tool is not yet available on the market.

2.3.1 CONCEPT SELECTION

The project that we will create uses several concepts and is absorbed into this project so that our objective is achieved, which is to create a tool that can rotate and pinch the handle. Here are the concepts that we use:




	<p>Pusher Clamp: The way this tool is used that we apply where it pushes the sealer out but this concept we use to clamp the bamboo.</p>
	<p>Playar: This form of player we apply as the main concept in this project.</p>
	<p>Bearing: The round shape of the bearing which we apply to rotate but not rotate by 360 degrees, only 180 degrees.</p>

Figure 3 - Attachment 5

2.3.2 HOW IT WORK

All projects that are designed certainly have their own way of functioning, so is our project which can be said as a tool to turn the lemang which uses more human energy. The tool has two handles where the handle without a pusher is the first handle while the second handle is the one with the pusher. How to use this tool is to first hold both tool holders. Then, insert this tool into the lemang and pinch the lemang using the pusher on the second handle. After that, turn the lemang without releasing the pusher and release after turning or turning the lemang.

2.4 CONCLUSION

The summary of chapter 2 is to show the source of resources that have been produced by producers from each country. From what is produced also has a great impact in solving problems related to work or life. From this success can be seen the rapidity of economy and technology over time. This can be seen from articles or studies that have been done. Thus, the study we studied can also be linked to the study collected from the article i.e. Tools for clamp and turning Lemang.

CHAPTER 3 (METHODOLOGY)

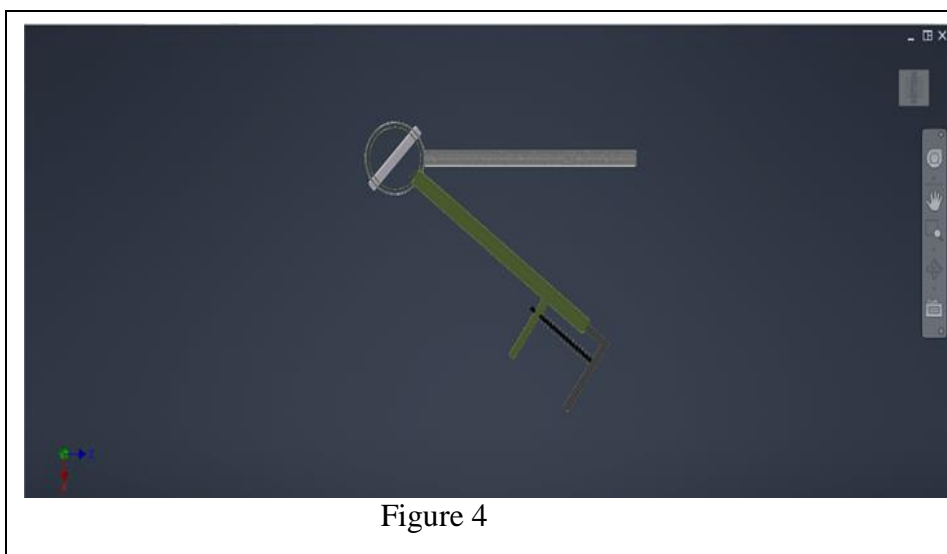
3.1 INTRODUCTION

Methodology is a method that helps in solving and one of the problems that can be demonstrated through certain methods that determine the effective procedure to answer the research problem. Therefore, this method can help in solving the problem of turning or reducing the lemang during the process or after the burning of the lemang takes place.

3.2 DESIGN OF PROJECT

Based on the project design, the study design was made from observational methods that can be seen by means of the traditional lemang burning process on the day of the Aidilfitri or Aidiladha festival. This poses a variety of possible problems.

Thus, the result is a tool specially designed to help small traders to further facilitate the work when burning lemang. This tool also makes it easy to turn and lift the lemang such as turning the lemang to ensure that the lemang is cooked evenly. Picture below is a 3D drawing design that using Inventor software. Refer attachment 6 to see more detail in 3 view ,sketch of design project and also the materials that we use to create this tool.



3.3 METHOD OF COLLECTION DATA

The method we used throughout our project was carried out to achieve our objectives was a quantitative method by way of constructing questionnaires related to our project aimed at data collection. Questionnaires were distributed to respondents online. We use media platforms such as "WhatsApp" as an introduction to our target respondents, namely small traders that we always see on festive days, the public which to use for their own use or large traders which to use whenever necessary. The data collection period will last for 4 months, starting from March until now.

3.4 INSTRUMENT OF STUDY

Lemang will be made either at home or at a designated place, after the manufacturing process is done, will be transferred to the firing process to produce lemang. With the use of lemang handles and rotors, this can help small business in lemang management. This tool will pinch the lemang and can rotate the lemang which aims to turn so that the texture of the lemang is cooked evenly and tasty. This tool is used for lemang measuring less than 7 cm and makes it easier for small business to pinch the lemang. Figure 5 below show that some of the concept that we use in our project ;

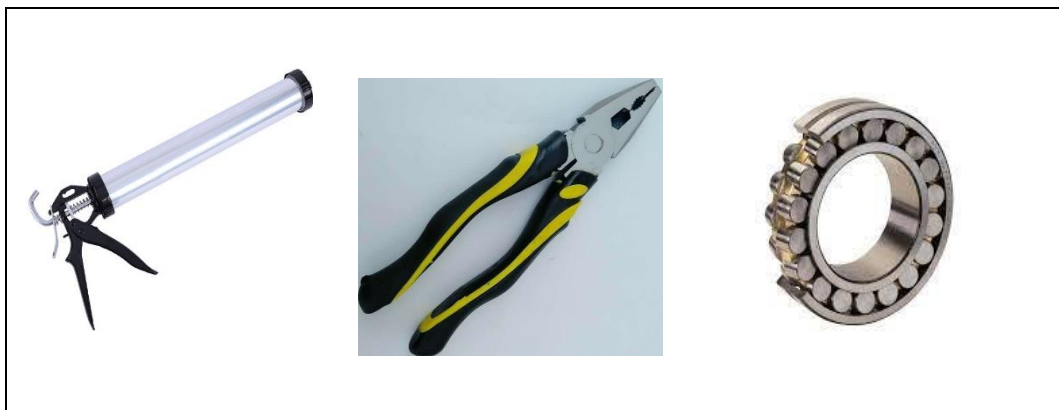




Figure 5 – Attachment 7

3.5 SAMPLING TECHNIQUE

The technique we used was purposive sampling technique. Our project is more focused on small traders where the project is more on lemang management during or after burning. Therefore, we preferred small traders throughout the project conducted as respondents of our study.

3.6 DATA ANALYSIS METHOD

In this process, our group uses Google Form as a medium to disseminate to the target group online. All data collected will be stored in Excel form and then graphs are used to show the data so that it is easier to understand. Our group uses the Questionnaire method because it can measure the level of awareness and willingness of buyers to receive new products from our project. The questionnaire in this questionnaire method is a measure of our answers whether our project is accepted by the public or not. census, our group has prepared 10 short questions related to our project in this questionnaire and respondents only need to answer "Yes" or No. We have targeted a total of 50 respondents to obtain information from this questionnaire.

After our group conducts a questionnaire or census, the primary data is collected and processed and subsequently analyzed. In short, data analysis is done after data collection. The purpose of our group conducting data analysis is to explain the collected data into simpler data. and easily understood by the general public. Our group has suggested the use of “Excel”, questionnaire methods and hypothesis testing in data analyzers.

Section A (refer attachment 8)

The image shows two screenshots of a Google Forms survey. The left screenshot is the title page, and the right screenshot shows the first section of the survey.

BORANG SOAL SELIDIK

Kami pelajar daripada Politeknik Sultan Salahuddin Abdul Aziz Shah dikehendaki untuk mengumpulkan maklumat orang umum mengenai masalah yang dihadapi dan kami akan cuba untuk hasilkan suatu produk yang boleh menyelesaikan masalah tersebut.

zakizulkifli585@gmail.com (not shared)
[Switch account](#)

GRIP AND ROTOR LEMANG'S TOOL

Produk yang kami akan hasilkan ini berfungsi dengan mengepit lemang dan kemudian putarkan lemang tersebut. Alat ini berfungsi sebagai mengepit dan memutar lemang. Antara objektif projek ini dihasilkan adalah untuk mengurangkan risiko kecederaan pada bahagian tangan. Selain itu, projek ini juga dihasilkan adalah untuk mengurangkan kos bahan jika menggunakan alat pembakar lemang yang lebih canggih. Oleh itu, kami ingin mengemukakan serba sedikit soalan kepada anda.

Next Clear form

BAHAGIAN A

Maklumat Responden

1) Gender (Jantina)

Lelaki
 Perempuan

2) Age (Umur)

18-25
 25-32
 33 dan ke atas

3) Types of people (Kategori)

Peniaga Kecil
 Peniaga Besar
 Orang Awam

Back Next Clear form

Figure - 6

Section B

The image shows a screenshot of a Google Forms survey titled 'Bahagian B'. It contains five questions with radio button options for 'YA' (Yes) and 'TIDAK' (No).

Bahagian B

Penyelesaian Masalah

1. Ketika dalam proses pembakaran lemang, adakah tangan anda akan rasa panas ketika memusingkan lemang tanpa memakai sarung tangan ? (While in the process of burning the lemang, will your hands feel hot when turning the lemang without wearing any gloves?)

YA
 TIDAK

2. Semasa anda memusingkan lemang ketika memakai sarung tangan, adakah anda masih lagi terasa bahang arang di tempat bakar tersebut ? (When you turn the lemang while wearing gloves, do you still feel the heat of the charcoal in the burner?)

YA
 TIDAK

3. Adakah dengan adanya alat ini dapat meningkatkan tahap keselamatan semasa proses membakar lemang? (Does the presence of this tool can increase the level of safety during the process of burning lemang?)

YA
 TIDAK

4. Adakah anda sanggup mengeluarkan modal yang besar untuk membeli mesin lemang dalam pasaran yang sedia ada ini ? (Would you be willing to spend a lot of capital to buy a lemang machine in this existing market?)

YA
 TIDAK

5. Alat ini diperbuat daripada keluli lembut. Jadi pada pendapat anda adakah alat ini akan mempengaruhi tekstur lemang tersebut ? (This tool is made of mild steel. So in your opinion will this tool affect the texture of the lemang?)

YA
 TIDAK

6. Selain daripada sarung tangan, apakah lagi pengalas yang akan anda gunakan untuk memusingkan lemang ketika dalam proses pembakaran ? (Apart from gloves, what other pads will you use to turn the sleeves during the burning process?)

KAIN
 TANGAN KOSONG SAHAJA
 Other: _____

7. Sekiranya anda sebagai orang yang tiada berpengalaman dalam membakar lemang, adakah anda rasa memerlukan alat ini ? (If you are an inexperienced person in burning lemang, do you feel the need for this tool?)

YA
 TIDAK

8. Pada pendapat anda, dengan adanya alat ini adakah ia dapat membantu memudahkan kerja dalam proses memusingkan lemang? (In your opinion, with this tool it can help facilitate the work in the process of turning the lemang?)

YA
 TIDAK

9. Pada pendapat anda, adakah alat yang akan kami ciptakan nanti dapat membantu anda mengurangkan rasa bahang ketika memutar lemang ? (In your opinion, is the tool that we will create later can help you reduce the feeling of heat when turning the lemang?)

YA
 TIDAK

10. Adakah anda akan keluaran sedikit kos untuk membelinya sekiranya alat ini dijual pada harga RM35 dapat memudahkan kerja anda dalam membakar lemang ? (Will you spend a little cost to buy it if this tool is sold at a price of RM35 can facilitate your work in burning lemang?)

YA
 TIDAK

Back Submit Clear form

Figure 7

3.7 CONCLUSION

In conclusion, in chapter 3 data techniques and data analysis methods are made systematically in the research methodology to find out whether our tools can be marketed large or small and information to support the research instruments and elaborate more clearly in this study.

After the data analysis is done, it is important to draw conclusions or conclusions on the results and hypotheses that is whether the handle and rotator is effective or otherwise.

CHAPTER 4 (RESULTS)

4.1 INTRODUCTION

The introduction of this chapter will show the results of studies or research based on the problem questions answered by the respondents about the project that we will produce. Once all the data and information are obtained, an analysis is done to see the marketability of this tool for use by small traders and the general public. The results obtained in this chapter are the results obtained as a result of questionnaires and experiments that have been conducted online to targets such as the general public and small traders lemanng. The data resulting from the online experiments were analyzed in more detail to draw conclusions based on the stated objectives of the study.

4.2 RESPONSE RATE

Based on the data that has been collected through google form, about 50 respondents who have successfully answered the questionnaire that we have shared online.

In part A of the respondent form which is information about the response, the percentage of males is more dominant which is 82.9% when compared to the percentage of females which is 17.1% only. While the respondents who answered this questionnaire are many among young people between the ages of 18 - 25 years and the least is between 25-32 years which is only 26.2% of 42 respondents. Meanwhile, most of those who answered this questionnaire were among the general public which showed 1/2 of the total respondents.

Next is part B which is a question and answer session for the respondents to find out each of the answers that we have asked them at the same time to obtain data to facilitate us to make analysis on the Grip And Rotor Lemang's Tool. For the first question to the third question is a question of safety during the process of burning lemanng. Overall, many respondents, 88.87% agreed that this device can improve safety when doing the process of burning lemanng such as avoiding injuries to the hands

from embers from lemang charcoal.

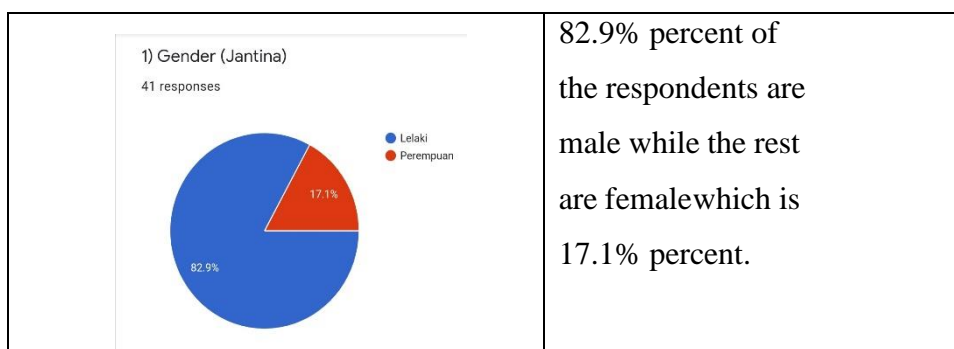
Furthermore, more than half of the responden, wich is about 52.4% are not willing to spend large capital to buy a lemang machine that is available in the market even it is facilitate the process of burning lemang compared to the tools we produce. It shows that many of the respondents are from the B40 group. Therefore, many of the respondents that is 90.5% feel that they need this tool that we will produce because it is cheaper and safer to use and can increase the level of safety during the process of burning lemang.

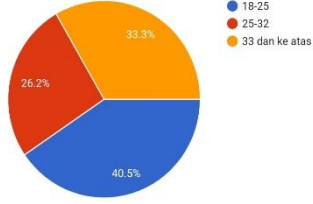
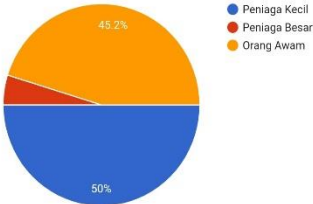
In conclusion, based on the data collected in this questionnaire, it can be analyzed that the tool we produced has a great opportunity to be commercialized in the market and can achieve the objective when this tool is used, which is to provide safety when doing the burning process.

4.3 RESPONDENT DEMOGRAPHIC PROFILE

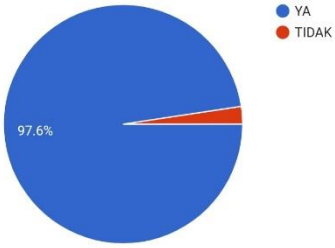
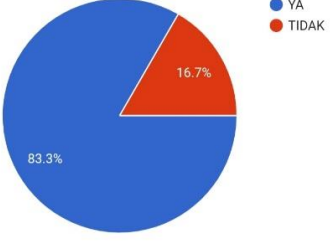
The diagram below shows the respondents we met after the questionnaire was distributed to our target market. Our questionnaire is divided into 2 parts there are :

SECTION A (Respondent Information)



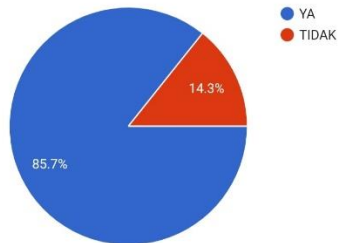
<p>2) Age (Umur) 42 responses</p>  <p>Legend: 18-25 (blue), 25-32 (red), 33 dan ke atas (orange)</p>	<p>As many as 40.5% are those aged 18-25 years old</p>
<p>3) Types of people (Kategori) 42 responses</p>  <p>Legend: Peniaga Kecil (blue), Peniaga Besar (red), Orang Awam (orange)</p>	<p>50% percent of the respondents are smaller trader</p>

SECTION B (Questionnaire)

<p>1. Ketika dalam proses pembakaran lemang, adakah tangan anda akan rasa panas ketika memusingkan lemang tanpa memakai sarung tangan ? (While in the process of burning the lemang, will your hands feel hot when turning the lemang without wearing any gloves?) 42 responses</p>  <p>Legend: YA (blue), TIDAK (red)</p>	<p>2. Semasa anda memusingkan lemang ketika memakai sarung tangan, adakah anda masih lagi terasa bahang arang di tempat bakar tersebut ? (When you turn the lemang while wearing gloves, do you still feel the heat of the charcoal in the burner?) 42 responses</p>  <p>Legend: YA (blue), TIDAK (red)</p>
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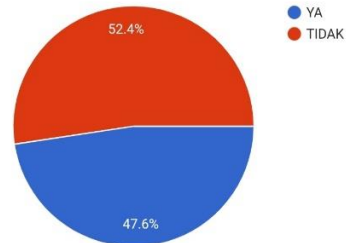
3. Adakah dengan adanya alat ini dapat meningkatkan tahap keselamatan semasa proses membakar lemang? (Does the presence of this tool can increase the level of safety during the process of burning lemang?)

42 responses



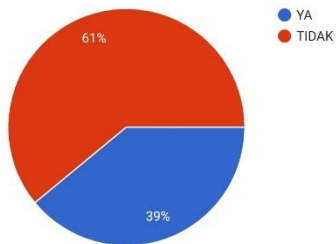
4. Adakah anda sanggup mengeluarkan modal yang besar untuk membeli mesin lemang dalam pasaran yang sedia ada ini? (Would you be willing to spend a lot of capital to buy a lemang machine in this existing market?)

42 responses



5. Alat ini diperbuat daripada keluli lembut. Jadi pada pendapat anda adakah alat ini akan mempengaruhi tekstur lemang tersebut? (This tool is made of mild steel. So in your opinion will this tool affect the texture of the lemang?)

41 responses



6. Selain daripada sarung tangan, apakah lagi pengalas yang akan anda gunakan untuk memusingkan lemang ketika dalam proses pembakaran? (Apart from gloves, what other pads will you use to turn the sleeves during the burning process?)

42 responses

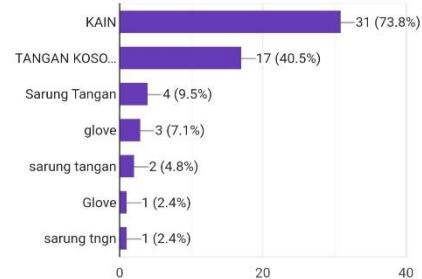










Figure 8 – Attachment 9

4.4 PROJECT FABRICATION

This is a journey in producing a product or project that goes through several processes to shape and follow a self-determined design.

<p>Step 1</p>		<p>Measuring Process : Measure each material according to the measurements set according to the design project.</p>
<p>Step 2</p>		<p>Cutting Process : Start cutting project materials according to the measurements that have been made or marked.</p>

<p>Step 3</p>		<p>Welding Process : Then, start the process of joining the workpieces that have been cut using a Metal Inert Gas (MIG) welding .</p>
<p>Step 4</p>		<p>Facing Process : To smooth the project surface from excess welding after going through the welding process using grinder.</p>

<p>Step 5</p>		<p>Testing Process : Perform experiments or tests on the completed project to find out whether the project objectives are achieved or not.</p>
<p>Step 6</p>	<p>Before</p> 	<p>Results : This is the final result after testing the project.</p>



4.5 PROJECT TESTING

The uniqueness of this project is that it can be used by people using the right hand or left hand. to his place of origin. This product is made to be compatible with various types of lemongrass bamboo with a diameter of 60mm and below. Furthermore, this product is also the first tool in Malaysia that is specially designed to clamp and rotate the sleeve that offers functions at an affordable price, which is definitely an affordable price. The material used on this tool can last up to 900 °C. In fact, this product is also come with a material that is able to withstand rust and the design makes it easy to hold this tool while in the process of burning the lemongrass. This project is mostly made of mild steel material and also aluminium which makes this tool lighter when lifted and durable. We wrapped this project with rubber on the handle so that it does not feel hot when held because rubber is a good thermal insulator. Finally, the stated objectives and goals have been achieved and implemented effectively. Figure 6 shows the successful design and assembled products.



Figure 9 – Attachment 10

4.6 CONCLUSION

In conclusion, the Grip and Rotor Lemang's Tool is a product that can provide benefits to its users, especially to big traders and those who have no experience in the process of burning lemang such as avoiding injuries to their hands. At the same time, this product is also in high demand based on respondent forms that have been analyzed. Therefore, the general public especially for small traders are able to carry out the process of burning their lemang productively and in a safe condition which can reduce the risk of their hands being injured.

CHAPTER 5 (DISCUSSION AND CONCLUSION)

5.1 INTRODUCTION

Discussion is a way to come up with interesting ideas. Therefore, it is very helpful in completing the task and speeding up the project in achieving the objectives to be achieved. When the results discussed are achieved then it is easier to make a brief conclusion of what has been discussed.

5.2 DISCUSSION

The uniqueness of this project is that it can be used by people using the right hand or left hand. to his place of origin. This product is made to be compatible with various types of lemang bamboo with a diameter of 60mm and below. Furthermore, this product is also the first tool in Malaysia that is specially designed to clamp and rotate the sleeve that offers functions at an affordable price, which is definitely an affordable price. The material used on this tool can last up to 900 °C. In fact, this product is also come with a material that is able to withstand rust and the design makes it easy to hold this tool while in the process of burning the lemang. This project is mostly made of mild steel material and also aluminum which makes this tool lighter when lifted and durable. We wrapped this project with rubber on the handle so that it does not feel hot when held because rubber is a good thermal insulator. Finally, the stated objectives and goals have been achieved and implemented effectively. Figure 5 shows the successful design and assembled products.

5.3 CONCLUSION

Throughout the project, the product is a progression from a rough draft to a polished product. It combines the concept of other tools such as pinch and turn or press and push which encourage creativity in creating projects to be able to attract attention and user-friendly with the method of modification or improvement. The design of this project is produced through discussions from group members to produce a special design that will be used as a tool to clamp the lemang which has achieved the project objective of producing a special tool for lemang management. This is supported through trials conducted in the process of burning lemang where this tool is very helpful for users to pinch and turn the lemang in the process. If following the old way of burning lemang, traders or consumers often use only gloves to lift or turn the lemang. This causes the hands to be exposed to the heat of the charcoal and it will cause discomfort in the hands.

We can see that in this developing era there are already a variety of machines that are very sophisticated in performing various industrial processes as well as in daily use. This also applies to the method of producing lemang where many very sophisticated machines have been created and each lemang machine creation has many distinctive features. But the cost to own the machine is very expensive. This causes small traders to be somewhat burdened to buy existing machines. So another objective in this project is achieved, which is to create affordable tools. Created a tool that can be owned by small traders or regular users because of its low manufacturing cost. With this affordable tool, consumers and small traders can manage lemang very easily. This can be evidenced through the materials used that are only intended to pinch and turn the lemang. It is different from the existing machines which take care of the whole process of burning lemang, but some of the machines no longer use the traditional method which uses stove gas. So. The use of this tool greatly reduces the burden of small traders and ordinary users in owning tools to manage lemang.

We all know that there are few lemang machines, but this is very burdensome for small traders or ordinary users in owning them. Regarding that, if a small trader or ordinary user wants to create a similar tool or machine itself, it requires a lot of materials to produce a machine that is able to manage the process of burning lemang from beginning to end. With the existence of this problem, the final objective of this project is achieved, which is to reduce the use of materials in producing lemang burner aids. This is because this tool uses only a few materials in its manufacturing process. So, it gives a very positive thing to small traders and regular users if they want to build it themselves. It also helps in maintaining the sustainability of our environment. Thus, the use of this tool has a very positive impact on small traders and ordinary consumers.

Conclusion, the clamp tool and the lemang rotor have been tested several times to ensure that the tool actually works properly. The effectiveness of the project used during the process of clamping and rotating the lemang which allows the lemang not to fall while being lifted proves the grip on the lemang is very good. The project has the potential to

be sold to small lemong traders and the general public. Advertising and commercialization are recommended to help customers get the availability of Lemang Grips and Rotor Tools in the market

5.4 OPINION

For each project that has been fabricated, there will definitely arise ideas to improve the project at intervals of time so that a project becomes more user-friendly or can provide optimal benefits to its users or it is more comfortable when used. In that case, after we successfully produced our project, which is a Grip and rotor's Lemang tool, we got some various idea to improve on our project after conducting tests on the project and can identify concepts that can be added to this project.

Therefore, among the suggestions and ideas from what we can give to future researchers is to make the holder of the tool more ergonomic so that it is comfortable for those who use it. The importance of ergonomics in daily work plays a very important role in maximizing comfort in one's limb posture. The term ergonomics is generally used to refer to the physical ergonomics associated with the workplace as in the example for ergonomic chairs and keyboards. In this case, if we look at the tool holder that can be clamp and rotate the lemong that has been produced in this project is quite less ergonomic for several reasons. One of the reasons is that the tool holder lack of diameter even though it is cylindrical in shape which is too small and only measures 15mm in diameter. This will cause the user to feel unfomfortable when gripped or held on the holder of the tool. The second reason is because the design on the handle of the tool is too linear which does not follow the posture of the grip on the hand. To illustrate this situation, we give a simple example where if we look at the design of the handle on a motorcycle it is designed in an inverted "V" with an angle of about 135° which makes the person carrying the motorcycle feel comfortable when held and twisted. This is also related to the holder of this tool which is we recommend to future researchers to bend slightly upwards at the end of the tool holder so that the user feels comfortable with his hand posture because usually the burning lemong process occurs at a low level.

Furthermore, after examining how this tool works after testing, we came up with another idea which we suggested that the functions of gripping and rotating the handle can be combined so that both these functions can be performed at the same time so that the work process of burning lemang becomes faster and does not waste time. It is quite difficult for the user when the functions of clamping and rotating the straps are not combined simultaneously. For example a tool that combines two functions at the same time is an automatic wire puller. This tool is used to pull while cutting the wire wrap at the same time. Same as with the second proposal we put forward, which is to combine two functions at the same time when used.

In addition, future researchers can also innovate the tool so that it can be used with one hand or one hand only to facilitate users who use the tool. It also plays an important role in facilitating a person when this tool is used to grip and rotate the handle. In addition, this innovation can be combined with innovation with the previous one that combines two functions at the same time. It also plays an important role in facilitating a person when this tool is used to grip and rotate the handle. In addition, this innovation can be combined with innovation with the previous one that combines two functions at the same time. There is no denying that a tool that uses two hands is a bit tedious and will cause a person to feel tired quickly because the energy exerted by a person who uses two hands is more than a person who uses only one hand. Therefore, the idea of trying us this point is very thoughtful to innovate on this tool in the future to facilitate employee or worker in doing the lemang burning process.

5.5 CHAPTER SUMMARY

In chapter 5 discussion and conclusion, recount briefly the ways and processes undertaken to achieve the project objectives. It also describes the concepts adopted to produce the tools that have been created and also gives suggestions for improvement to the next study. With this, the tool can be developed to further facilitate users in managing lemang and always maintain the identity in the process of burning lemang.

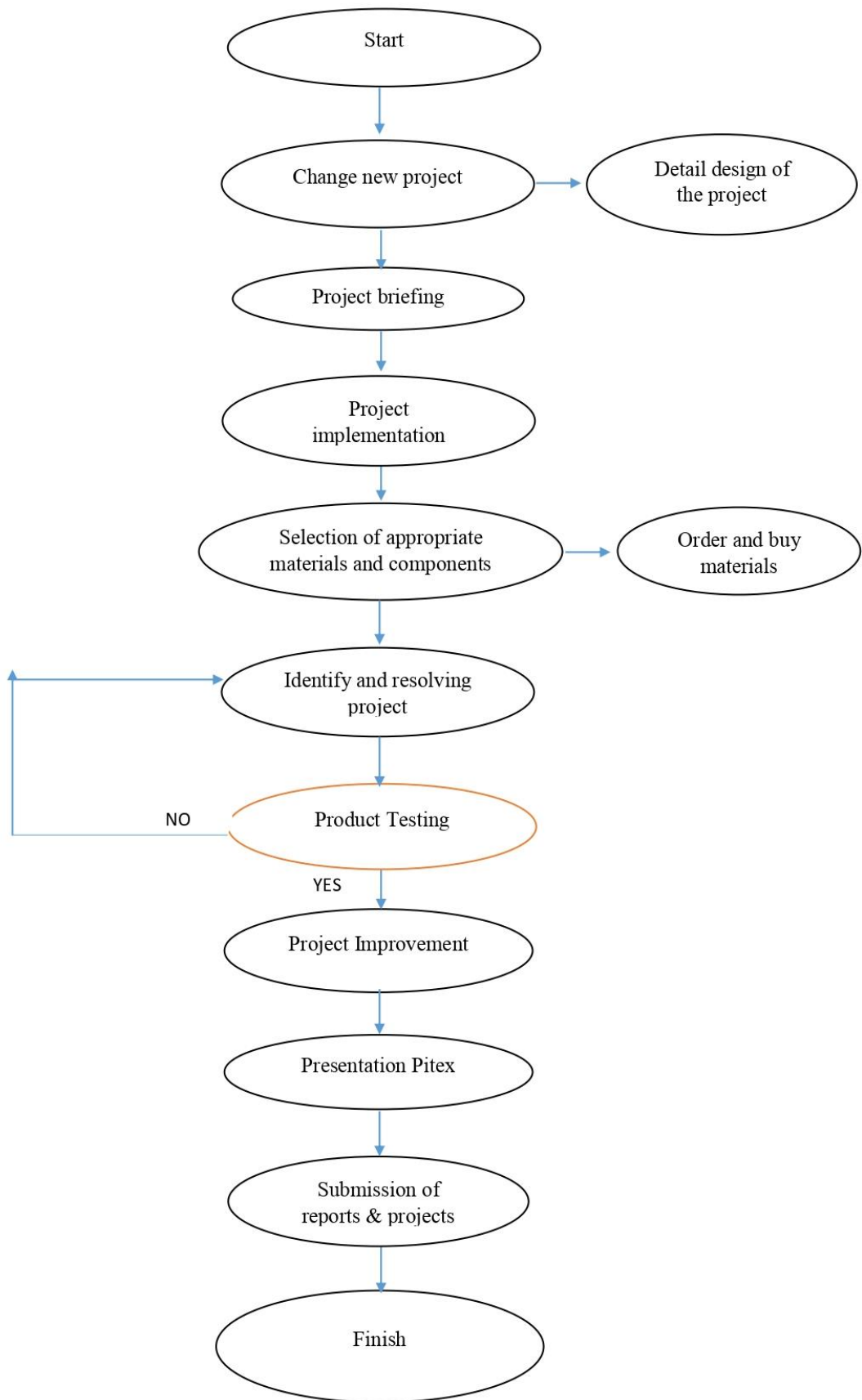
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ATTACHMENT 1



ATTACHMENT 2

Week/ Project activity	STATUS	MK1	MK2	MK3	MK4	MK5	MK6	MK7	MK8	MK9	MK10	MK11	MK12	MK13	MK14
Project briefing/group division	P	█													
	I	█													
Preparation of log books	P	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	I	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Discussion of new project ideas/select project title	P		█	█											
	I		█	█											
Flow Chart Project	P			█											
	I			█											
Webinar meeting with Mr. Asif	P		█												
	I		█												
Gantt Charts of Project 2	P		█	█	█										
	I		█	█	█										
Complete All Chapter 1,2 & 3 in report	P	█	█	█	█										
	I	█	█	█	█										
Sketches project design update	P				█										
	I				█										
Discussion to select appropriate material	P				█	█									
	I				█	█									
Buy the selected material	P						█								
	I						█								
Chapter 4	P							█							
	I							█	█						
Chapter 5	P							█							
	I							█	█						
Fabrication Process	P									█					
	I									█					
Project Testing	P									█					
	I									█					
Present the Project	P													█	
	I													█	█
Fix the project for second time	P											█	█		
	I											█	█		
Project submit	P														█
	I														█
Update report (if Needed)	P											█	█	█	
	I											█	█	█	
Report Submit	P														█
	I														█

ATTACHMENT 3



ATTACHMENT 4



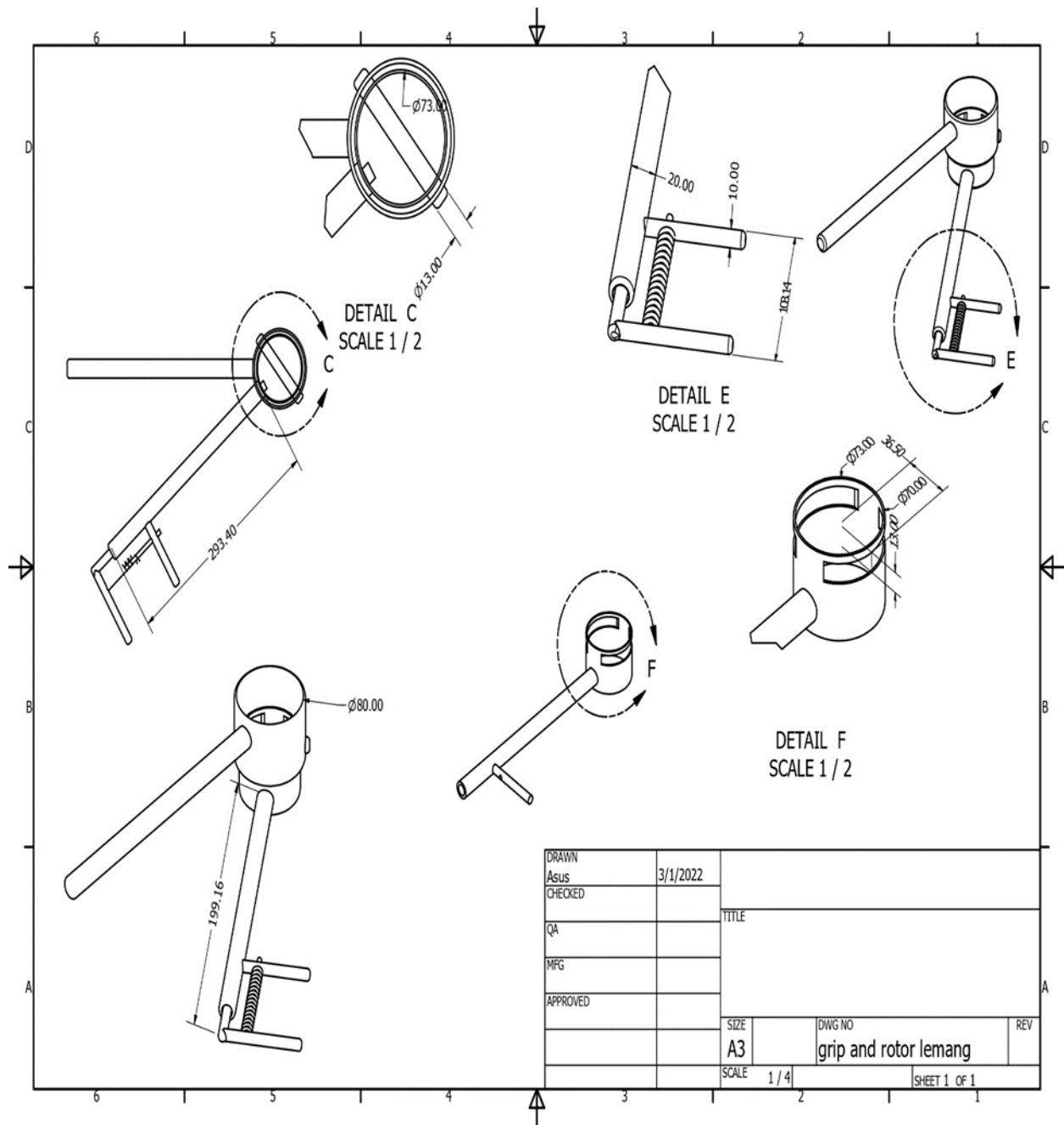
ATTACHMENT 5

	PUSHER CLAMP
	SPRING
	RUBBER TAPE
	PLAYAR
	BEARING

ATTACHMENT 6





	Top view
	Front View
	Side View

Sketch design of the project



DRAWN	Asus	3/1/2022		
CHECKED			TITLE	
QA				
MFG				
APPROVED				
			SIZE	DWG NO
			A3	grip and rotor lemang
			SCALE	REV
			1/4	
			SHEET 1 OF 1	

Materials and components

MATERIAL	SIZE	COST
1. Aluminium hollow tube 	(D= 1.5cm, l= 29.5cm) * 2	RM 5
2. Mild steel hollow 	(D= 7.3cm, l= 5.5cm) (D=8cm, l=6cm)	RM 5
3. Spring 	6cm	RM 3
4. Solid stick 	111cm	RM 4
5. Galvanized wire 	8cm	-
		Total = RM 17

ATTACHMENT 7



ATTACHMENT 8

Section A (Respondent Information)

docs.google.com/forms/c

BORANG SOAL SELIDIK

Kami pelajar daripada Politeknik Sultan Salahuddin Abdul Aziz Shah dikehendaki untuk mengumpulkan maklumat orang umum mengenai masalah yang dihadapi dan kami akan cuba untuk hasilkan suatu produk yang boleh menyelesaikan masalah tersebut.

zakizulkifli585@gmail.com (not shared)
[Switch account](#)

GRIP AND ROTOR LEMANG'S TOOL

Produk yang kami akan hasilkan ini berfungsi dengan mengepit lemang dan kemudian putarkan lemang tersebut. Alat ini berfungsi sebagai mengepit dan memutar lemang. Antara objektif projek ini dihasilkan adalah untuk mengurangkan risiko kecederaan pada bahagian tangan. Selain itu, projek ini juga dihasilkan adalah untuk mengurangkan kos bahan jika menggunakan alat pembakar lemang yang lebih canggih. Oleh itu, kami ingin mengemukakan serba sedikit soalan kepada anda.

Next Clear form

BAHAGIAN A

Maklumat Responden

1) Gender (Jantina)

Lelaki

Perempuan

2) Age (Umur)

18-25

25-32

33 dan ke atas

section B (Questionnaire)

Bahagian B

Penyelesaian Masalah

1. Ketika dalam proses pembakaran lemang, adakah tangan anda akan rasa panas ketika memusingkan lemang tanpa memakai sarung tangan ? (While in the process of burning the lemang, will your hands feel hot when turning the lemang without wearing any gloves?)

YA

TIDAK

2. Semasa anda memusingkan lemang ketika memakai sarung tangan, adakah anda masih lagi terasa bahang arang di tempat bakar tersebut ? (When you turn the lemang while wearing gloves, do you still feel the heat of the charcoal in the burner?)

YA

TIDAK

3. Adakah dengan adanya alat ini dapat meningkatkan tahap keselamatan semasa proses membakar lemang? (Does the presence of this tool can increase the level of safety during the process of burning lemang?)

YA

TIDAK

4. Adakah anda sanggup mengeluarkan modal yang besar untuk membeli mesin lemang dalam pasaran yang sedia ada ini ? (Would you be willing to spend a lot of capital to buy a lemang machine in this existing market?)

YA

TIDAK

5. Alat ini diperbuat daripada keluli lembut. Jadi pada pendapat anda adakah alat ini akan mempengaruhi tekstur lemang tersebut ? (This tool is made of mild steel. So in your opinion will this tool affect the texture of the lemang?)

YA

TIDAK

6. Selain daripada sarung tangan, apakah lagi pengalas yang akan anda gunakan untuk memusingkan lemang ketika dalam proses pembakaran ? (Apart from gloves, what other pads will you use to turn the sleeves during the burning process?)

KAIN

TANGAN KOSONG SAHAJA

Other: _____

7. Sekiranya anda sebagai orang yang tiada berpengalaman dalam membakar lemang, adakah anda rasa memerlukan alat ini ? (If you are an inexperienced person in burning lemang, do you feel the need for this tool?)

YA

TIDAK

8. Pada pendapat anda, dengan adanya alat ini adakah ia dapat membantu memudahkan kerja dalam proses memusingkan lemang? (In your opinion, with this tool it can help facilitate the work in the process of turning the lemang?)

YA

TIDAK

9. Pada pendapat anda, adakah alat yang akan kami ciptakan nanti dapat membantu anda mengurangkan rasa bahang ketika memutarakan lemang ? (In your opinion, is the tool that we will create later can help you reduce the feeling of heat when turning the lemang?)

YA

TIDAK

10. Adakah anda akan keluarkan sedikit kos untuk membelinya sekiranya alat ini dijual pada harga RM35 dapat memudahkan kerja anda dalam membakar lemang ? (Will you spend a little cost to buy it if this tool is sold at a price of RM35 can facilitate your work in burning lemang?)

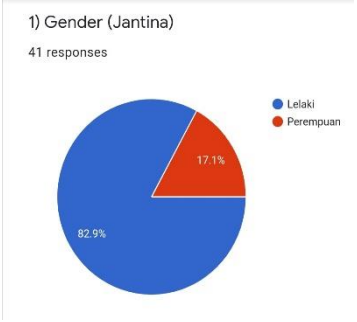
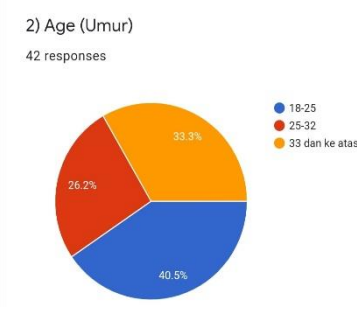
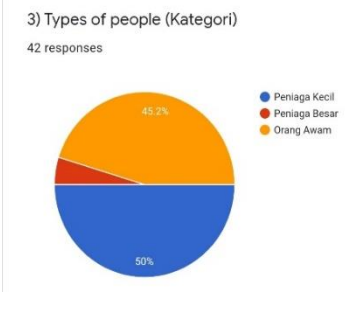
YA

TIDAK

[Back](#) [Submit](#) [Clear form](#)

ATTACHMENT 9

Section A (Respondent Information)

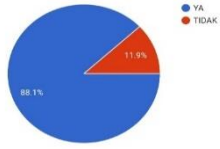
<p>1) Gender (Jantina) 41 responses</p>  <p>A pie chart titled '1) Gender (Jantina)' with '41 responses'. The chart is divided into two segments: a large blue segment representing 'Lelaki' (Male) at 82.9%, and a smaller red segment representing 'Perempuan' (Female) at 17.1%. A legend to the right of the chart identifies the colors: blue for 'Lelaki' and red for 'Perempuan'.</p> <table border="1"><thead><tr><th>Gender</th><th>Percentage</th></tr></thead><tbody><tr><td>Lelaki</td><td>82.9%</td></tr><tr><td>Perempuan</td><td>17.1%</td></tr></tbody></table>	Gender	Percentage	Lelaki	82.9%	Perempuan	17.1%	<p>82.9% percent of the respondents are male while the rest are female which is 17.1% percent.</p>		
Gender	Percentage								
Lelaki	82.9%								
Perempuan	17.1%								
<p>2) Age (Umur) 42 responses</p>  <p>A pie chart titled '2) Age (Umur)' with '42 responses'. The chart is divided into three segments: a blue segment for '18-25' at 40.5%, an orange segment for '33 dan ke atas' at 33.3%, and a red segment for '25-32' at 26.2%. A legend to the right of the chart identifies the colors: blue for '18-25', red for '25-32', and orange for '33 dan ke atas'.</p> <table border="1"><thead><tr><th>Age Group</th><th>Percentage</th></tr></thead><tbody><tr><td>18-25</td><td>40.5%</td></tr><tr><td>25-32</td><td>26.2%</td></tr><tr><td>33 dan ke atas</td><td>33.3%</td></tr></tbody></table>	Age Group	Percentage	18-25	40.5%	25-32	26.2%	33 dan ke atas	33.3%	<p>As many as 40.5% are those aged 18-25 years old</p>
Age Group	Percentage								
18-25	40.5%								
25-32	26.2%								
33 dan ke atas	33.3%								
<p>3) Types of people (Kategori) 42 responses</p>  <p>A pie chart titled '3) Types of people (Kategori)' with '42 responses'. The chart is divided into three segments: a blue segment for 'Perniaga Kecil' at 50%, an orange segment for 'Orang Awam' at 45.2%, and a small red segment for 'Perniaga Besar'. A legend to the right of the chart identifies the colors: blue for 'Perniaga Kecil', red for 'Perniaga Besar', and orange for 'Orang Awam'.</p> <table border="1"><thead><tr><th>Type of person</th><th>Percentage</th></tr></thead><tbody><tr><td>Perniaga Kecil</td><td>50%</td></tr><tr><td>Perniaga Besar</td><td>~4.8%</td></tr><tr><td>Orang Awam</td><td>45.2%</td></tr></tbody></table>	Type of person	Percentage	Perniaga Kecil	50%	Perniaga Besar	~4.8%	Orang Awam	45.2%	<p>50% percent of the respondents are smaller trader</p>
Type of person	Percentage								
Perniaga Kecil	50%								
Perniaga Besar	~4.8%								
Orang Awam	45.2%								

Section B (Questionnaire)



10. Adakah anda akan keluaran sedikit kos untuk membelinya sekiranya alat ini dijual pada harga RM35 dapat memudahkan kerja anda dalam membakar lemang ? (Will you spend a little cost to buy it if this tool is sold at a price of RM35 can facilitate your work in burning lemang?)

42 responses



ATTACHMENT 10

