POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

‘COMPLEX RUBBER CUP’

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MECHANICAL ENGINEERING DEPARTMENT

SESSION I: 2022/2023

POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

SYSTEM DEVELOPMENT ESPECIALLY FOR RUBBER TAPPERS: 'COMPLEX RUBBER CUP'

This report is submitted to the Department of Mechanical Engineering as fulfilling part of the conditions of the award
Diploma in Mechanical Engineering

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AKUAN KEASLIAN DAN HAK MILIK

'COMPLEX RUBBER CUP'

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2. I acknowledge that "Complex Rubber Cup" and the intellectual property contained there in are my original works / designs without taking or copying any intellectual property from other parties.

3. I agree to release the ownership of the "Complex Rubber Cup" intellectual property to the Polytechnic to meet the requirements for the award of a Mechanical Engineering Diploma to me.

Diperbuat dan dengan sebenar-benarnya diakui oleh;

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Di hadapan saya,

EN. BRYAN HEE TZE KEON

Sebagai Penyelia projek pada tarikh …… ……

APPRECIATION

Bismillahirrahmanirrahim. Assalamualaikum wbt and Hello. Firstly, thanks be to Allah S.W.T for with permission and abundance His grace we managed to complete the project report 'COMPLEX RUBBER CUP' in the allotted time with the existence of cooperation and help each other.

So we would like to thank our project supervisors Bryan Hee Tze Keon who have guided us and provided guidance from beginning to end until we successfully completed this final project report.

Then, thanks also to a lot of friends who gave me improvement ideas. Finally, the panel or lecturers involved in the production of this project also give a lot of advice or ideas that can further strengthen our project report.

ABSTRACT

This project aims to help small plantation farmers especially rubber tappers. The objective of this project is minimize the workforce and enhance the income of rubber tappers during the rainy season. During the same time, the quality of the rubber produced can be maintained. The scope of study is by attaching a rain sensor to the rubber collection cup. This rain sensor is used to display the desired output to the lid of the led rubber cup according to the instructions programmed on the Arduino. During our observation of some of the problems experienced by rubber tappers is that when it rains the latex collected in the cup is mixed with the rainwater. This will affect the quality of the latex collection and affect the income of the rubber tappers because the rubber cannot be sold. With this invention, mixing rainwater with latex can be avoided. For this project, a rubber cup cover and a rubber vinegar tube will allow the latex to flow directly into the latex cup to reduce the labor of the rubber tappers. With our invention, the stated problems experienced by the rubber tappers can be overcome. Finally, we used a methodological study to plan the production process and used the flow chart as a planning guide in testing this project.

LIST OF CONTENT

CHAPTER 1
INTRODUCTION

(MUHAMMAD FIRDAUS IKHWAN BIN MAT SHADID)

1.1 INTRODUCTION

Unpredictable weather in Malaysia affects small farmers as well as large farmers. This was due to the changed of the transition phase of the monsoon in which the state of the country received weak winds from various conducive directions. Rubber cups were cups used mainly by rubber tappers. The used of rubber cups was to store rubber after the tree was tapped and would produced latex. It was also used on every rubber tree. Latex was a white liquid produced from a notch on a rubber tree.

The rubber tappers' income was determined by the quality of the latex produced, which was affected by the weather and a number of other factors. As a result, latex quality was vital to considered, especially when the rainy season lasts for a long time. Our project idea arose as a result of this dilemma. 'complex rubber cupped' was a researched and development initiative aimed at improving the quality of latex produced.

Unlike typical rubber cups, the 'complex rubber cup' had various additional features controlled by sensors, such as a raindrop sensor, stepper motor, and arduino, which sends a signal to the user that it was raining. According to the arduino instructions, this rain sensor was utilised to display the desired output on the rubber cupped lid led. Used the app on the smartphone, the sensor and arduino would communicate signals to the user. Furthermore, the 'complex rubber cup' had a top that allows it to closed when it rains, and rubber vinegar was directed into the rubber cupped to lessen the effort of rubber tappers

1.2 PROJECT BACKGROUND

Latex was a stable dispersion (emulsion) of polymer microparticles in an aqueous medium. It was found in nature, but synthetic latex can be made by polymerizing monomers such as styrene that have been emulsified with surfactants. Latex found in nature was a milky liquid found in 10% of all flowering plants (angiosperm). It was a complex emulsion consisting of proteins, alkaloids, essences, sugars, oils, tannins, resins, and gums that freeze on exposure to air. It was usually purified after tissue injury. In most plants, latex were white, but some have yellow, orange, or red rubber. In Malaysia, the rubber industry still serves as a strategic commodity crop, especially to support the rubber -based product manufacturing industry and as a major source of income for small farmers. Malaysia was the world's seventh largest producer of natural rubber in 2018 after Thailand, Indonesia, Vietnam, China, India and Ivory Coast with an area of 1.08 hectares of rubber plantations. Natural rubber production increased in 2019 and has recorded a production of 581 thousand tons. Based on the statement that rubber was the main income of small farmers, namely rubber tappers, they have problems that arise when it rains. This will cause the tappers to not be able to go out to tap, the rubber will mix with rainwater and cause the quality of the rubber to be affected. This also makes rubber unsaleable and their income affected. With this, we are interested in creating a rubber cup that can help the problems of rubber tappers. What's more, we found little or no more products that could help this group when this rainy weather problem occurred. We also plan to produce rubber cups by having rain sensors.

I. Had a cover on a rubber cup that was driven by a stepper motor and programmed with a rain sensor and Arduino. This can prevent rainwater from combining with the latex and maintain the quality of the rubber.

II. The rubber vinegar channel was channeled from the tank to the rubber cup. This can reduce manpower and facilitate the work of rubber tappers. This latex vinegar works to speed up the process of vulcanization of rubber into a solid.

1.3 PROBLEM STATEMENT

The unpredictability of Malaysia's weather had a significant impact on both small and large farms. This was due to the change in the monsoon's transition phase, during which the country region experiences light wind gusts from several favourable directions. Furthermore, the rain had an impact on farmers, particularly rubber tappers. As a result of the latex being combined with rainwater, the quality of the rubber was compromised. In the meanwhile, it was unable to be sold, affecting the income of rubber tappers. When it rains, the rubber tappers must return to their rubber plantations to mix the rubber vinegar, which speeds up the vulcanization process. As a result, additional personnel will be utilised. Because their rubber fields are frequently distant from home, this will require extra workers.

1.4 OBJECTIVE

This studied was conducted to achieve the following objectives:

- Used sensors and servo motor, designed and developed rubber cups for rubber tappers.
- Able to alleviate rubber tappers' income concerns when it rains.
- Capabled improving the rubber quality produced.

1.5 QUESTION

1. What were the functions of these rubber cupped lids and rubber vinegar tube?
2. Would this rubber cupped helped rubber tappers solve their financial problem?
3. Could this project guaranteed the latex quality?

1.6 SCOPE OF THE PROJECT

This product was primarily intended for rubber tappers. A sensor raindrop was used in the design and development of this product. The raindrop sensor was used to display the desired output on the stepper motor, which then closes the rubber cupped according to the arduino instructions. The size of the project was mini and the projected costed was less than rm 250.

1.7 IMPORTANCE OF THE PROJECT

This project was important because it would helped consumers, particularly rubber tappers, when it rains. Users did not needed to travel to a rubber plantation to mixed vinegar into rubber cups with this project. At the same time, the presence of a rubber cupped lid would improved the rubber's quality. In other words, rainfall would not mixed with the rubber in the rubber cupped when it rains. This 'complex rubber cupped' could also helped save time and energy for consumers. Furthermore, when the rainy season arrived, the revenue of rubber tappers had been unaffected.

1.8 DEFINITION OF TERMS/DEFINITION OF OPERATIONS

This project's concept was based on the predicament of consumers, particularly rubber tappers. In recent years, the environment had became more unpredictable, and protracted rainy seasons had became more common in our country. This had a significant impact on rubber tappers' earnings. The word 'complex' in the project's title denotes that the rubber cupped serves various purposes and could had a beneficial impact on customers. It could also made utilising this 'complex rubber cupped' easier for users. The characteristics of this project were mostly defined by its current market size, which had been adjusted by the addition of a stepper motor that allows the cupped lid to opened and closed, hence facilitating the project's production.

1.9 PROJECT EXPECTATIONS

With this project, we hoped to created a device that would assist rubber tappers. In addition, a sirim stamp was required. This was because it had the ability to persuade customers to used the product. We were hopeful that it would benefit the rubber tappers.

1.10 SUMMARY

To summarise, the issues that rubber tappers faced when it rains were still unresolved. As a result, we went up with the concept to created this product. As a result, this product could been created used a specific procedure.

CHAPTER 2
LITERATURE REVIEW

(SYED MUHAMMAD FARIS BIN SYED FADZLI)

2.1 INTRODUCTION

Rubber tree (hevea brasiliensis) was a tree in the euphorbiaceae family and the most important member of the genus hevea. This tree was economically important because yields such as latex could been collected and were the main source of natural rubber. Rubber was a plant that could live in tropical areas and requires rainfall of 180 cm - 250 cm per year. It also requires a temperature between 25 - 30 degrees celsius. The suitability of the height of the soil from the leveled of the sea faced that could been planted with rubber was 500 meters. The higher the rubber was planted, the less the yield and the fitness of its growth had been. The ideal soil requirement for planting rubber was a typed of loam that had good drainage, was not acidic, did not flood andfertile soil. A rubber tree was a perennial typed of tree, and its height could reach 18 meters. The age of an economical rubber tree ranges from 20 to 30 years. Rubber trees up to the age of 5-6 years could been tapped with scratches made orthodly on latex ducts. With a depth that was only enough to took latex without affecting the growth of the tree. The latex was collected in prepared rubber cups. Older trees produced more latex

Latex or latex was a white liquid produced from the tapping of a rubber tree (hevea brasiliensis). Mature rubber trees had been tapped normally in the morning used a shredder and this latex would came out of the impact of a slow-flowing tapping tapping directly into the cupped. Depending on the clones, weather and agronomic practices, the quantity of latex produced determines the income of rubber tappers. However, this latex would fell in quality if it rains (it became liquid) or was inserted (rubber and tapping skin) into it (usually to made frozen rubber). This latex had been collected in two forms, namely liquid latex or even book rubber (collected the next day after tapping and latex freezes). What happens was the process of extraction of latex or latex from the tree indeed it was for used in the production of rubber. The word latex was also used to referred to natural latex rubber (natural rubber) especially non-artificial rubber (vulcanized). Among the most famous products from latex were products such

as latex gloves, latex condoms, and latex clothing. In terms of science, latex was a stable dispersion (emulsion) of polymer microparticles in an aqueous medium. It was found from natural rubber trees.

2.2 HISTORY RUBBER TREE

The natural rubber industry in malaysia began in 1877 in kuala kangsar, perak. The cultivated rubber cub was a species of hevea brasiliense's. The first rubber estate was developed in melaka in 1902/1903. After that, the area of rubber cultivation continued to grow until it reached its peak of 2. 06 million hectares in 1979. The highest production ever achieved by the country was 1. 66 million metric tons in 1988.

in simple terms, the rubber tree came from the brazilian state. Christopher columbus, a spanish cruise expert, was the first person to discover rubber in brazil in 1473 and he had brought backed to europe to study its used.

in 1768 the first rubber boots were invented. Then in 1770, joseph priestley, a chemist, named the result of the "getah" as rubber because it could be used to erase pencil writing. In 1823, solomon mcintosh created a waterproof cloth from rubber. Charles goodyear introduced the vulcanization process and in 1846, thomas hancock successfully made tires from natural rubber. In 1888, john dunlop managed to create a comfortable pneumatic tire from solid tires.

the invention had paved the way for the use of natural rubber, as the used of rubber had widened and the demanded for raw materials had increased, efforts to expand the natural rubber industry had been implemented by:

1. The effort brought 70,000 rubber seeds from brazil to kew garden, london by farris, crossed, and henry wickham in 1876.

2. As many as 2,000 rubber cubs had been able have been turned on in wardian cases, which were temperature-appropriate and climate-appropriate greenhouses in brazil.

3. Some of the trees was taken to ceylon and the remaining 22 trees was sent to the botanical gardens in singapore and 9 trees was sent to kuala kangsar.

4. In 1888, h. N. Ridley was appointed as director of the singapore botanic gardens and had contributed greatly to the development of the rubber industry to the pointed of being dubbed the "father of the natural rubber industry. Among his contributions was the rubber and knife exploitation system.

2.3. FUNCTION OF LATEX

Rubber or latex had an upgrade and produces a wide range of used now. The rubber sector in malaysia had a more positive impact when exports surpassed the rm40 billion mark, jumping 75. 6 per cent compared to the previous time. In addition, latex-based products had also contributed 90 percent to exports, up 81 percent compared to the previous year. This proves that the production of rubber had had a high impact on the income of the people and the country.

Various goods that had been produced used rubber. Here were the components produced from the rubber:

1. Tires

FIGURE 2.2.1 TIRES

- Tires were an important objected for the vehicle and were part of the vehicle's safety system. Tires were components that connected the vehicle with the road surface. For example, vehicles that used tires were cars, airplanes, and motors.

2. Railway tracks

FIGURE 2.2.2 RAILWAY TRACKS

- The usefulness of rubber could also been seen on the railway tracks. The runway liner was made of rubber as it could reduce shaking and friction. This could also reduce the risk of accidents and improved the safety of passengers.

3. Bridge

FIGURE 2.2.3 BRIDGE

- The bridges built on the highway used rubber liners. This was because the used of rubber could reduce shaking and friction. In addition, the used of rubber could strengthen the construction structure from the occurrence of collapsed.

Other items were produced from rubber such as heat diverting hoses, car windscreen wipers, car floor pads and battery pads. What was unique was also in japan, which was always facing earthquake problems, usually a rubber layer was placed under the building so that the shaking could been reduced, and the building would not collapsed easily. Moreover, the used of rubber from latex for daily used was undeniable. There were many items were mattresses, gloves, hoses, rugs, rubber mats and shoes. Jackets and shoes for safety boots were also made of rubber.

2.4. COMMON CAUSES FACED BY TAPPERS

However, such weather factors had caused limited frozen rubber to have been produced. This was causing annoyance by the tappers to generate income and even the production of frozen rubber would also decrease. Rubber production in malaysia had also experienced a downward trend lately. Thus, the income generated from the frozen rubber had reduced, causing many tappers to ran away to simpler areas such as the cultivation of fruits and vegetables. The malaysian rubber board (lgm) said in a statement that the tappers had been affected by the impact of income due to the monsoon season. Malaysian volunteer president isham jalil said tappers were not intentionally unproductive during the monsoon season but should not went out tapping during the rain. During the monsoon season, the tappers did not go out tapping because the rainwater mixes with the latex which caused the tapping to have been bad. In addition to other factors, this proves that weather factors were an important aspect of the reduction in rubber production in Malaysia. The creation of technology for tappers was also very diminished and even difficult to found because society was less important to the production of latex. That was, it was difficult for the tappers because they must use the old technique which was to let the tapped rubber been inserted into a normal rubber cupped and left it. Even more difficult when it rains, the tappers must chase to save the latex from mixing watered, if the watered was mixed then the latex had been damaged and had been detrimental to the tappers. So, the creation of such a technology as rubber cups became an important factor in the economic growth of the tappers.

2.4.1. RUBBER CUPS THAT ARE ON THE MARKET

In general, we knew that there were different types of rubber cups on sale on the market. However, it was a common cupped used from the past to the present. There were no technological changes created for rubber cups to made it easier for tappers to get quality latex when it rains. The tappers had thought of various ways to get a good quality of rubber despite the rainfall but still could not got the solution.

Examples of rubber cups available on the market were as follows:

1. SOCFIN 1970

FIGURE 2.4.1.1. SOCFIN

- This rubber cupped was produced in 1970. The used was still the same only for inserting tapped latex. This cupped had no technology that could helped the tappers from entering the watered when it rains. Therefore, these cups were not capable of keeping the quality of latex from mixing with watered.

2. CERAMIC RUBBER CUP

FIGURE 2.4.1.2 CERAMIC RUBBER CUP

- The function of this cupped was still the same only for harvesting tapped latex. No other function could protect latex from contact with watered. These cups were manufactured used ceramics. However, the downside of this cupped was that it would broke when crashing down. This did not gave the tappers the privilege to collected the latex and even needed to took care of the cupped so that it did not fell.

3. GLASS RUBBER CUP

FIGURE 2.4.1.3 GLASS RUBBER CUP

- This rubber milk cupped, on the other handed, was made of glass. This was also a cupped that broke easily when falling. In addition, this cupped was not suitable for used as it made it difficult for tappers to collected latex as the glass property was smoothed and unsafe to hung in trees. This cupped also had no other function to maintained and maintained the quality of latex when it rains

4. PLASTIC RUBBER CUP

FIGURE 2.4.1.4 PLASTIC RUBBER CUP

- Plastic rubber cups were always the choice of tappers for used. This was because it was easy to carried, lightweight and would not broke when falling. However, there was still no function that could helped the tapper to prevent the ingress of watered into the latex.

From this studied, found the lack or difficulty of seeing reforms in technology related to rubber. This could make it difficult for tappers to guaranteed income during the monsoon season. In today's technological era, it should be that the technology associated with was already in placed to ease the burden of tappers to generate income. Therefore, we had studied and would built a technology used a rubber cupped which was "complex rubber cupped". This constructed cupped would had several functions that would made it easier for the tappers when it rains. One of its functions, it could prevent watered from mixing with latex when. Even more pleasantly it had been self-sealed used sensors that had been placed in such cups. The tapper did not had to

bothered to save latex when it rains and could guaranteed income even during the monsoon season. Many other functions were available and built once in one cupped to made it easier to tapper.

2.4.2 EQUIPMENT REQUIRED FOR THE COMPLEX RUBBER CUP

	ARDUINO UNO		WIFI NODE MCU ESP8266
	PLASTIC GLASS		SERVO MOTOR

	HOSE TUBE		MULTICORE WIRE
	SOLAR PANEL		RAINDROP SENSOR
	PUMP		PLASTIC BOTTLE

	BASKET		CONTROLLER BOX
	RELAY BOARD		BATTERY

2.4. RAIN SENSOR

A rain-activated switching device was the rain sensor. Rain sensors were primarily used in two different scenarios: automatic irrigation systems and automatic windscreen wipers. This project's objective was to create a rain sensor-based rain detecting system. Any rain that has fallen on it is detected by the rain sensor, which then perceives it and carries out the required actions. This system's controller was an Arduino. The rain sensor might be linked and operated with the arduino uno board. On the other hand, a module that was operated by rain was in charge of moving the sensor. This module was managed by an Arduino Uno board acting as a microcontroller. The signal from the sensor was processed by "processing development environment software." The processing ide delivered the output.

2.4.3 NODE MCU ESP8266

Espressif Systems in Shanghai, China manufactures the ESP8266, a low-cost Wi-Fi microprocessor with integrated TCP/IP networking software and microcontroller capabilities.

The ESP-01 module, created by an independent manufacturer named Ai-Thinker, helped the chip gain popularity in the English-speaking maker community in August 2014. With the use of Hayes-style commands, this tiny module enables microcontrollers to join a Wi-Fi network and establish straightforward TCP/IP connections. However, at initially, there was hardly any information available in English on the chip and the orders it would receive. Many hackers were drawn to the module, the chip, and the software on it as well as to translate the Chinese documentation because of the extremely low price and the possibility that it may ultimately be produced in large quantities at very low cost.

The ESP8285 is a comparable chip with an integrated 1 MiB flash memory that enables the building of single-chip Wi-Fi-capable devices.

The ESP32 family of gadgets has replaced these microcontroller chips.

2.4.4 SERVO MOTOR

A servo motor is a rotary actuator or linear actuator that allows for precise control of angular or linear position, velocity, and acceleration. It consists of a suitable motor coupled to a sensor for position feedback. It also requires a relatively sophisticated controller, often a dedicated module designed specifically for use with servomotors.

2.4.5 RELAY BOARD

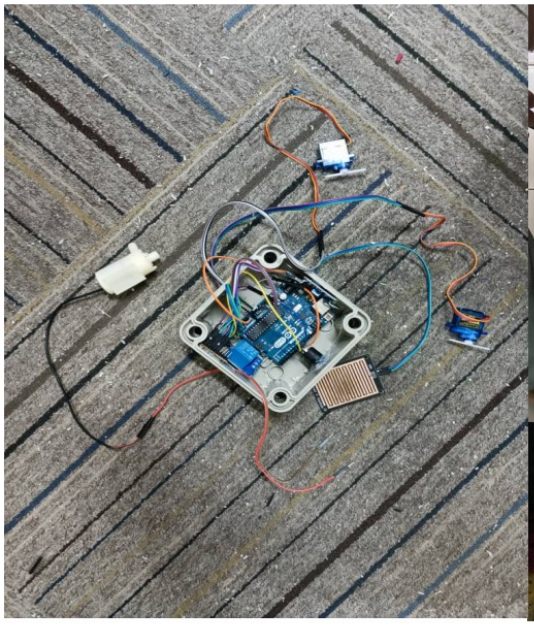
Relay modules (or power relay modules) are ubiquitous electronic components. They are an exceedingly significant component of any home automation project. You will require a relay module if you use a low voltage microcontroller such as an Arduino to control motors or lighting circuits.

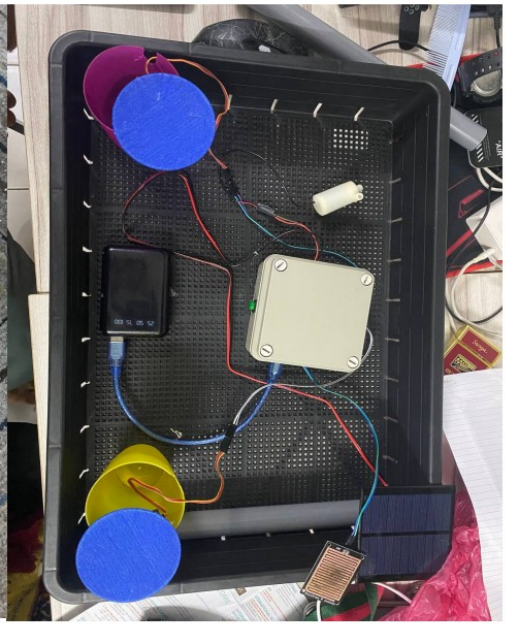
2.4.3. COMPARISON BETWEEN RUBBER CUP ON MARKET AND COMPLEX RUBBER CUP

Complex rubber cupped had many differences with rubber cups that were on the market. Complex rubber cupped had several technological additions such as the internet of thing (iot) which could eased the burden of tappers while also being able to built income during the rainy season. Some of the differences that ordinary rubber cups and complex rubber cups had were as follows:

1. Rubber cup

- serves as a tapped latex fence.
- doesn't had any of the latest technology.
- cannot prevent watered from mixing wih rubber





2. Complex rubber cup

- serves as a tapped latex fence.
- have the latest technology related to iot.
- able to prevent watered from mixing with rubber.
- has a systematic system of vinegar channels

2.5 SUMMARY OF CHAPTER

At the end of this chapter, the importance of the latest technology should been applied to all sectors especially in the field of latex production. This was because according to the times, the technique in maintaining the quality of latex was still in the same technique. This could been seen with the tired dumping of tapped latex had been thrown in vain for mixing with watered. With the advent of the "complex rubber cupped" product, it could certainly lightened the burden of the tappers in producing good quality of latex. This product was also able to prevent from getting exposed to watered especially when it rains because it had a rain-detecting system. All the tiredness of the tappers would not been squandered and could guaranteed income for the survival of life without thinking about any problems. Furthermore, with the increase in the output of latex, it could increase the production of malaysian products such as gloves and could export abroad high. This could boost and strengthen the malaysian economy and could secure the country's income in the future. Therefore, the product "complex rubber cupped" was a great product have been used to secure the economy of the people and the country.

CHAPTER 3
METHODOLOGY

AHMAD WAFI MU'MIN BIN RAMLI

3.1 INTRODUCTION

The idea of this project went about because we wanted to helped rubber tappers to facilitate their daily worked and reduce their energy and time while in the garden. This project could reduce the problem of income and quality of rubber when rainfall occurs. The rubber cups that were always rubber tappers used we had modified by designing and developing rubber cups to enhance the electrical and mechanical technologies we had learned

3.2 DESIGN REASEARCH

The studied was conducted used an experimental design to studied the effectiveness of this complex rubber cupped used in one rubber plantation. This studied focused on discussions among members of our group on data analysis as a reference. This researched would also had a positive impact have been applied to rubber tappers.

3.2.1 DESIGN SELECTION PROCESS
(MUHAMMAD ALIFF)

Several suitable ideas and designs had been produced by our group. Among them, we've made a painting that shows the design. We had also done researched with rubber tappers in relation to this project so that the design that had been produced would made it easier for the users as well. Then, we started planning and putting every part we needed in our project strategically so that it could worked properly. Here were examples of some of our sketch designs;

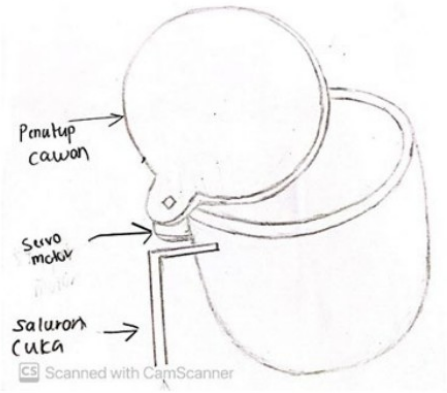


Figure 3.2.1.1: Side view

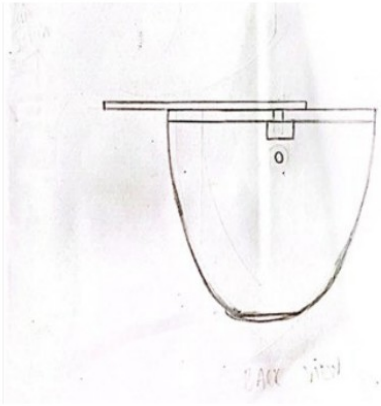


Figure 3.2.1.2: Back view

After sketching this rubber cup, figure 2 indicates where this rubber cup has servo motor and a vinegar channel. We chose this design because it would prevent rainwater from entering the rubber cup while the vinegar channel was created to reduce the tapping energy to pour vinegar on each rubber cup for the rubber freezing process. Here are the factors why we chose 3 designs that can influence some of the following designs**:**

A) Resilience

We made a system that controls vinegar channels, and these rubber cups were in a closed placed to prevent damage and theft of the tools used. Whereas this rubber cupped had a servo motor that allows the lid to opened or closed when it rains. We would made a strategic placed for this motor servo on a rubber cupped so that it was not damaged and durable

B) Aesthetic Value

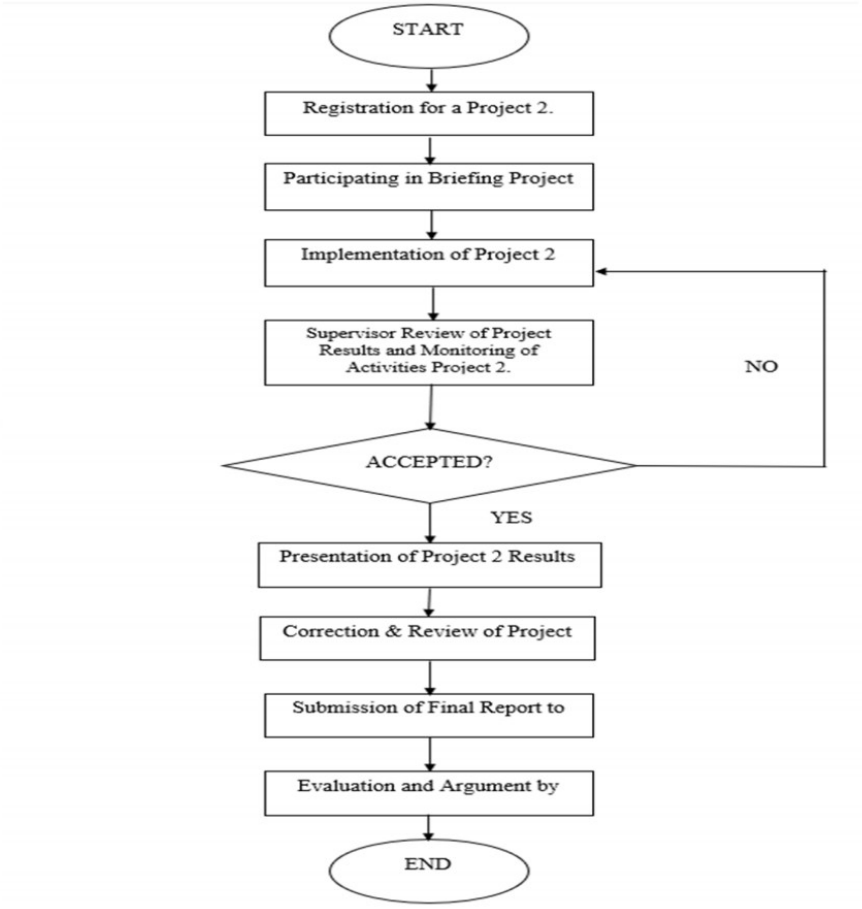
The resulting design was better than the existing one on the market. We also developed a state-of-the-art and modern design to suit the tastes of the current farmers by providing convenience to them.

C)Ergonomic

The tapper does not have to worry when it rains because the raindrop sensor will send a signal on the rubber cup that has been used servo motor that allows the lid to close when it rains. As soon as the rain stops, the rubber cup lid will reopen. The tapper can reduce the energy to pour vinegar on each rubber cup for the latex freezing process as we have made one channel of vinegar go into each rubber cup manually controlled by the application.

3.2.2 METHODS/PROCESSES/TECHNIQUES OF PROJECT PRODUCTION

A) Method of Project Development



ORGANIZING PROGAMMING IN THE COMPUTER

A) Materials and Equipment

I) Engineering Drawing

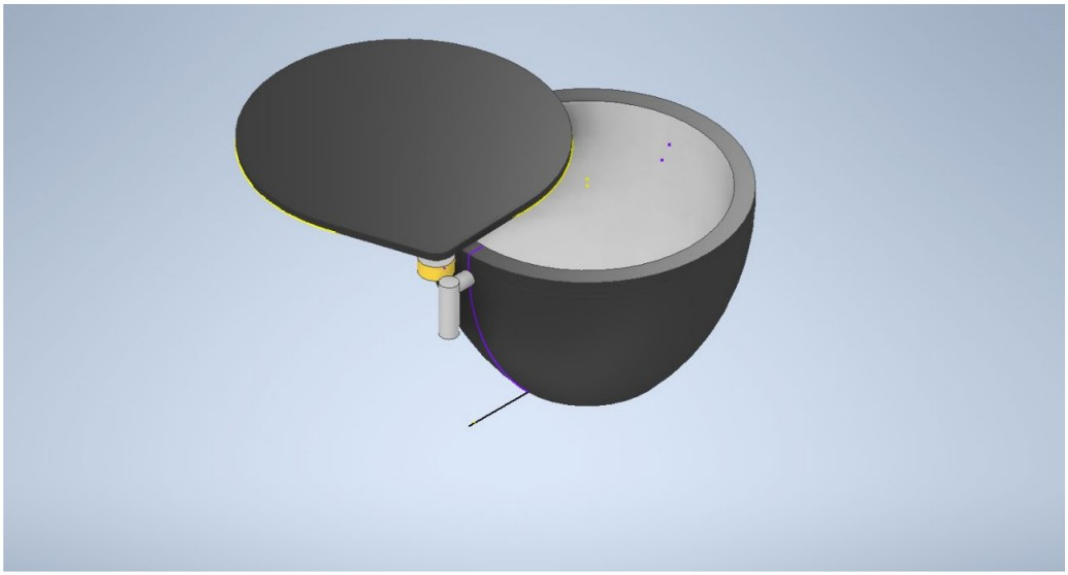


Figure 3.2.2bi

II) Drawing Orthography

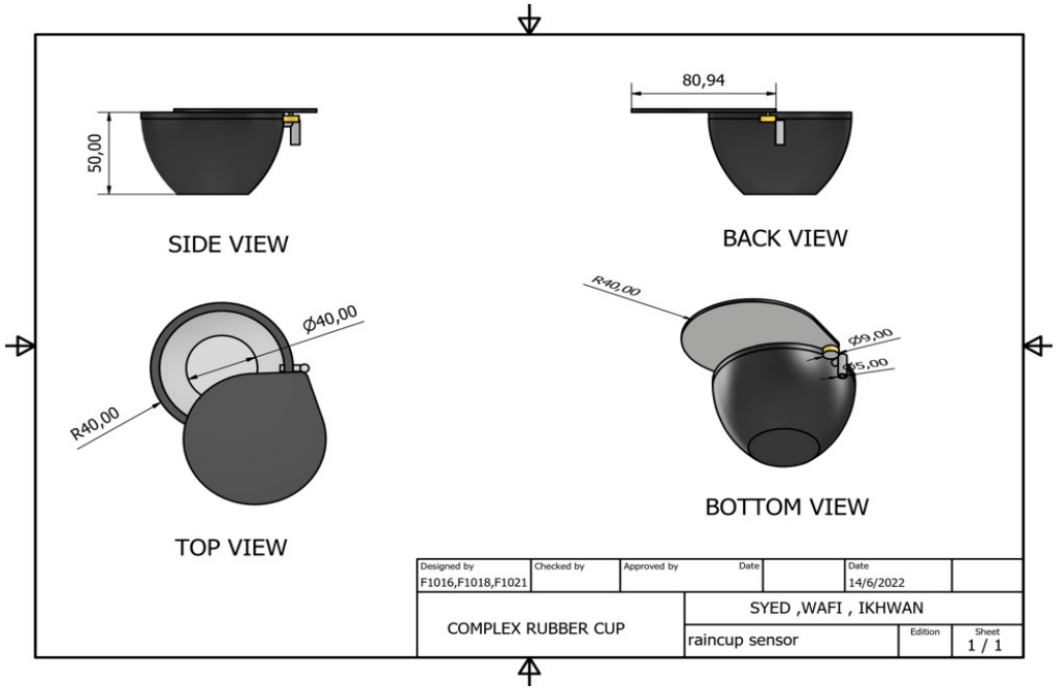
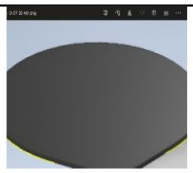
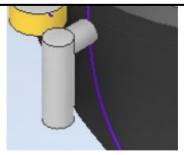


Figure 3.2.2bii

FUNCTIONS

SECTION	FUNCTION
	This part serves to cover the rubber cups during the rain so that rainwater does not get into the cup and mixes with rubber which can damage the quality of the rubber.
	This motor servo works to move the opening/close of the rubber cup lid with a 180-degree turn.
	This is a vinegar channel into a rubber cup sent sucked by a pump from a vinegar tank.

B) Cost Estimates for the Project

Costed was an important consideration in the production process, especially when it came to legislation. The company would lost money if it fails to checked and calculate the costed. The costed of production must been calculated carefully and correctly because the users were farmers and did not burden them. All the prices included in this section were materials to made our complex rubber cupped project. The required material costed from started to finished was the costed of complex rubber cupped.

Material and Overall cost for our Complex Rubber Cup project.

NO	MATERIAL	QUANTITY	PRICE (RM)
1.	DIP UNO R3 Rev3 V3 Atmel ATMEGA328P Compatible Board Plug and Play (No need downloads extra Arduino USB driver)	1	RM47.90
2	5.5V(1W) Solar Panel With (CNC95x95-5) Wire Mini Solar System DIY For Battery Cell Phone Charger	1	RM13.77
3	MG995 MG996r SG90 9g MG90s S3003 Metal / Plastic Gear 180 / 360 Deg Degree Micro Servo Motor Set for Arduino TowerPro	3	RM 13.40
4	Rain Sensor Module for Arduino, Robotics, IoT	1	RM3.80
5	5V DC Low Noise Mini USB Water Pump Submersible Small Fountain Fish Tank Water Change Small Aquarium	1	RM4.09
6	Aquarium Silicone Hose Tube Airline Tubing Fish Tank Pond Pump Water Pipe Hose Accessories	10 Meter 4mm	RM20.06
7.	Bottle	1	RM1.00
8	RVB2 Multicore Wire 0.5mm2 AWG 20 (1 meter) Red and Black	10 Meter	RM30.00
9	NodeMCU V2 / LoLin V3 / ESP32 ESP-32 for Arduino Lua IoT	1	RM20.00

	ESP8266 ESP-12E ESP 12 WIFI Wi-Fi Module Bluetooth Board		
10	Basket	1	RM10.00
11.	Controller box	1	RM30.00
12.	Plastic glass	1	RM2.00
13.	Relay Board Module - Active-Low 1, 2, 4, 8 Channel (5V / 12V / 24V) DC5V Arduino Raspberry PIC STM 32 DC Compatible	1	RM3.30
14.	GP Supercell Carbon Zinc 9V Battery Smart Tag Toy Car Mike Walkie Talkie Thermometer Multimeter Bateri GP1604S	1	RM1.60
			RM201.07

3.2.3 Data Analysis Method

Each implemented and implemented project must have its own advantages and disadvantages. Upon completion of the manufacturing and testing process of this project, it was found that the Rubber Cup of this Complex has a number of advantages and disadvantages. Among the advantages of the Complex Rubber Cup is that as stated in the objectives of the Complex Rubber Cup can help improve the quality of rubber and reduce the energy consumption of rubber tappers. This is because, in the presence of a motor servo that allows this rubber cup lid to be able to open or close when it rains. In addition, we also make vinegar channels from one tank into a rubber cup. Next, with today's iot advance, we also use the iot system in our project that we use this raindrop sensor. For example, when it rains down the sensor will detect the presence of rain and send a signal to the motor servo for the rubber cup cap to close. In addition, we use wifi to send information on the phone to make it easier to work.

3.3 SUMMARY

After examining the methodology of the study, there is a lot of information we can gather about this rubber cup. This information provides references to the design concept, dimensions and cost estimates to be used in the creation of the project. This information is also very useful as a guide to help simplify the design process as well as develop our study prototypes.

CHAPTER 4

RESEARCH INITIAL FINDINGS

(MUHAMMAD FIRDAUS IKHWAN BIN MAT SHADID)

4.1 INTRODUCTION

This was the last chapter of the studied, and it would addressed the benefits and standards used, as well as researched recommendations for latex cups. The test findings of the experimental design had shown a favorable effect on users. In addition, to saw if the selected material was appropriate and successful in meeting the goals we set, so that the project was successful, and everyone responds

4.2 FINDING RESEARCH

The results of the surveyed and discussion with the supervisor showed that this rubber cupped was very helpful and had a positive effect on its used. Overall when this complex rubber cupped carrier was successfully produced and used then all the objectives of the studied stated in chapter 1 could been produced.

4.3 RECOMMENDATION

A suggestion that could been obtained was to found a more suitable design method for rubber cups. Another suggestion was that the material used was stainless and its durability was longer due to exposure to rain and heat.

4.4 SUMMARY OF CHAPTER

At the end of this chapter, each experiment performed must been appropriate for the project to succeed well. In addition, the needed for this complex rubber cupped was to helped especially rubber tappers. Among the advantages was that it could reduce their income problems.

APPENDIX

REFERENCES

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https://www.hmetro.com.my/mutakhir/2018/10/390251/penoreh-getah-terima-bantuan 2018
[7] Arerich K ‘Menoreh Ketika Hujan??’
http://suatu-kenangan.blogspot.com/2009/10/menoreh-getah-ketika-hujan.html 2009

GANTT CHART

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

GANTT CHART

SESION : 1:2022/2023
DEPARTMENT : MECHANICAL ENGINEERING
CODE/COURSE : DJJ50193 PROJECT 2

	WEEK/ PROJECT ACTIVITY	STATUS	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
1	Project briefing, iSOLMS briefing	P	■														
		A															
2	design thinking / Arduino workshop	P				■											
		A															
3	Technical writing workshop	P					■										
		A															
4	Project Planning	P	■	■													
	project requirement		■	■													
	project plan		■	■													
	project scope and limitation		■	■													
	project methodology		■	■													
		A															
5	Project Development	P		■	■	■											
	project development details			■	■	■											
	project techniques and tools			■	■	■											
		A															
6	validity and reliability measurement	P					■										
	project results and analysis						■										
		A															
7	Project report writing	P					■	■	■	■	■	■	■	■	■	■	
		A															
8	Technical Paper review by supervisor	P												■			
		A															
9	Project Inventory Form submission	P													■		
	Poster review by supervisor														■		
		A															
10	PITEC JKM (Project Exhibition and Presentation)	P														■	
	Logbook and report submission															■	
		A															
11	PITEC 3 PSA (Project Exhibition and Presentation)	P															■
		A															

■ Planning
■ Actual

PROJECT COST ESTIMATES

NO	MATERIAL	QUANTITY	PRICE (RM)
1.	DIP UNO R3 Rev3 V3 Atmel ATMEGA328P Compatible Board Plug and Play (No need downloads extra Arduino USB driver)	1	RM47.90
2	5.5V(1W) Solar Panel With (CNC95x95-5) Wire Mini Solar System DIY For Battery Cell Phone Charger	1	RM13.77
3	MG995 MG996r SG90 9g MG90s S3003 Metal / Plastic Gear 180 / 360 Deg Degree Micro Servo Motor Set for Arduino TowerPro	3	RM 13.40
4	Rain Sensor Module for Arduino, Robotics, IoT	1	RM3.80
5	5V DC Low Noise Mini USB Water Pump Submersible Small Fountain Fish Tank Water Change Small Aquarium	1	RM4.09
6	Aquarium Silicone Hose Tube Airline Tubing Fish Tank Pond Pump Water Pipe Hose Accessories	10 Meter 4mm	RM20.06
7.	Bottle	1	RM1.00
8	RVB2 Multicore Wire 0.5mm2 AWG 20 (1 meter) Red and Black	10 Meter	RM30.00
9	NodeMCU V2 / LoLin V3 / ESP32 ESP-32 for Arduino Lua IoT	1	RM20.00

	ESP8266 ESP-12E ESP 12 WIFI Wi-Fi Module Bluetooth Board		
10	Basket	1	RM10.00
11.	Controller box	1	RM30.00
12.	Plastic glass	1	RM2.00
13.	Relay Board Module - Active-Low 1, 2, 4, 8 Channel (5V / 12V / 24V) DC5V Arduino Raspberry PIC STM 32 DC Compatible	1	RM3.30
14.	GP Supercell Carbon Zinc 9V Battery Smart Tag Toy Car Mike Walkie Talkie Thermometer Multimeter Bateri GP1604S	1	RM1.60
			RM201.07

QUESTIONARE

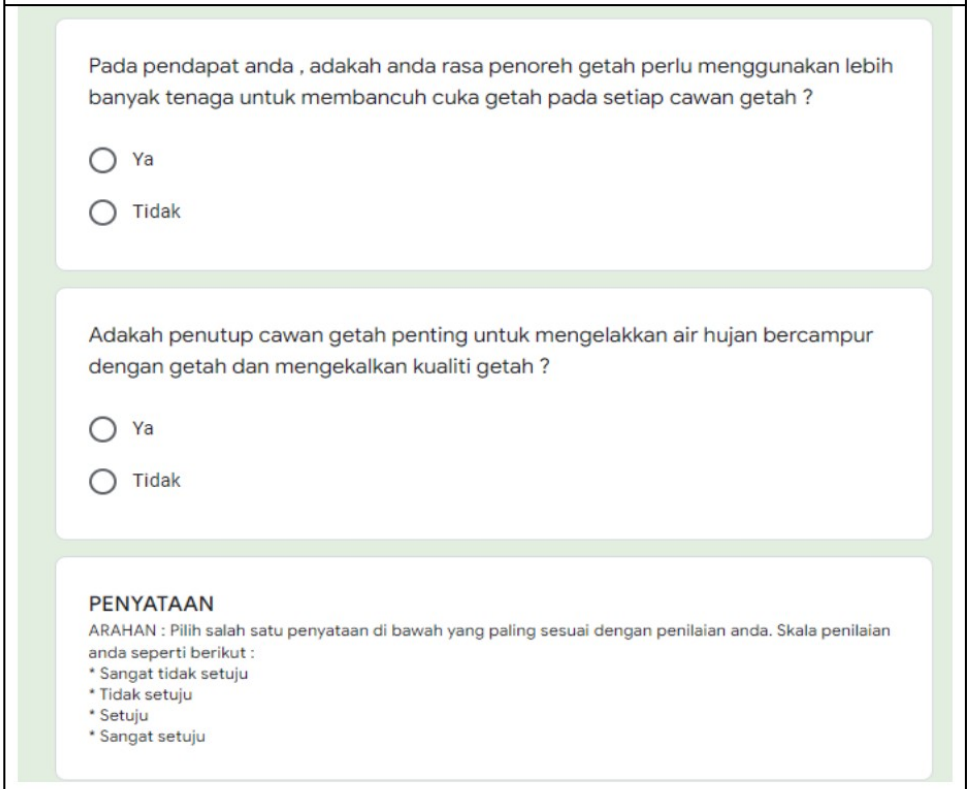
BORANG SOAL SELIDIK MECHANICAL ENGINEERING FINAL YEAR PROJECT

Borang soal selidik ini adalah bagi memenuhi keperluan Projek Akhir bagi Program Diploma Kejuruteraan Mekanikal , Politeknik Sultan Salahuddin Abdul Aziz Shah . Soal selidik ini bertujuan untuk mengkaji keperluan mereka bentuk dan menambah baik cawan getah yang sedia ada . Projek kami bernama COMPLEX RUBBER CUP . Projek ini diwujudkan untuk memberi kemudahan kepada penoreh getah apabila hujan berlaku .Projek ini dilengkapi dengan bahagian yang berfungsi dan mempunyai kebolehan berbeza seperti penutup cawan getah yang boleh buka tutup dengan adanya stepper motor yang mengawalnya , saluran cuka yang disambungkan dari tangki cuka ke cawan getah, dan pump yang memperlengkapkan aliran tersebut .

firdausikhwan150@gmail.com (not shared) Switch accounts

Draft restored

*Required



Pada pendapat anda , adakah anda rasa penoreh getah perlu menggunakan lebih banyak tenaga untuk membancuh cuka getah pada setiap cawan getah ?

- Ya
- Tidak

Adakah penutup cawan getah penting untuk mengelakkan air hujan bercampur dengan getah dan mengekalkan kualiti getah ?

- Ya
- Tidak

PENYATAAN

ARAHAN : Pilih salah satu penyataan di bawah yang paling sesuai dengan penilaian anda. Skala penilaian anda seperti berikut :

* Sangat tidak setuju
* Tidak setuju
* Setuju
* Sangat setuju

Adakah cawan getah yang sedia ada di pasaran dapat mengekalkan kualiti getah apabila berlakunya hujan ?

- ◯ Sangat tidak setuju
- ◯ Tidak setuju
- ◯ Setuju
- ◯ Sangat setuju

Adakah anda rasa kita patut mengubah suai cawan getah yang sedia ada kepada Complex Rubber Cup ?

- ◯ Sangat tidak setuju
- ◯ Tidak setuju
- ◯ Setuju
- ◯ Sangat setuju

Dengan adanya Complex Rubber Cup ini , adakah ia dapat mengurangkan beban penoreh getah dari segi tenaga dan pendapatan ?

- ◯ Sangat tidak setuju
- ◯ Tidak setuju
- ◯ Setuju
- ◯ Sangat setuju

Dengan adanya Complex Rubber Cup ini , adakah ia dapat meningkatkan kualiti getah ?

- ◯ Sangat tidak setuju
- ◯ Tidak setuju
- ◯ Setuju
- ◯ Sangat setuju

Dengan adanya Complex Rubber Cup ini , adakah ia dapat meningkatkan kualiti getah ?

- ◯ Sangat tidak setuju
- ◯ Tidak setuju
- ◯ Setuju
- ◯ Sangat setuju

Apakah cadangan anda untuk penambahbaikan cawan getah yang sedia ada ?

Your answer

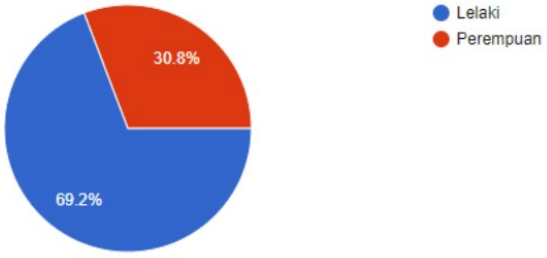
Submit Clear form

Never submit passwords through Google Forms.

Jantina

Copy

13 responses



Adakah dalam kalangan ahli keluarga/terdekat bekerja sebagai penoreh getah ?

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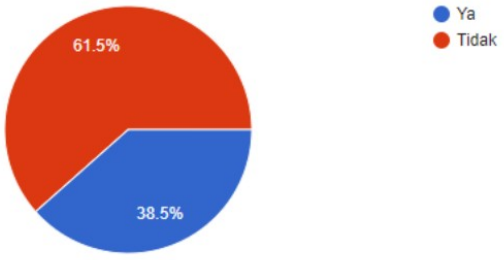
13 responses



Adakah musim hujan akan menjejaskan pendapatan penoreh getah ?

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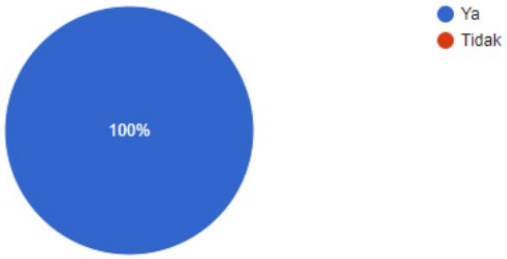
13 responses



Pada pendapat anda , adakah anda rasa penoreh getah perlu menggunakan lebih banyak tenaga untuk membancuh cuka getah pada setiap cawan getah ?

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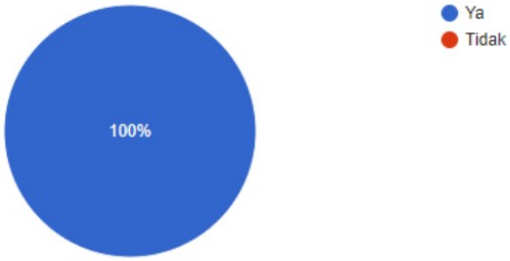
13 responses



Adakah penutup cawan getah penting untuk mengelakkan air hujan bercampur dengan getah dan mengekalkan kualiti getah ?

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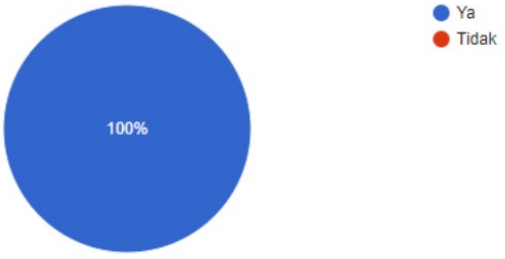
13 responses



Adakah cawan getah yang sedia ada di pasaran dapat mengekalkan kualiti getah apabila berlakunya hujan ?

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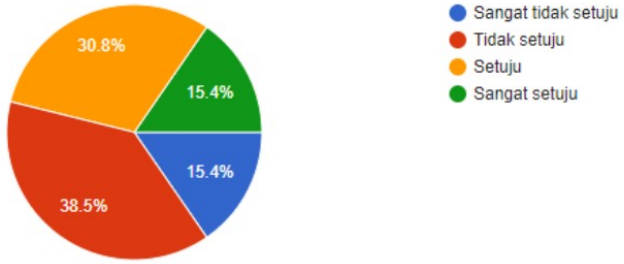
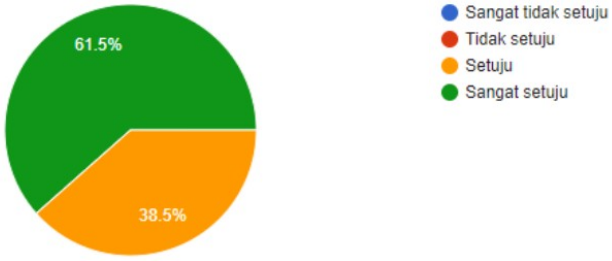
13 responses



Adakah anda rasa kita patut mengubah suai cawan getah yang sedia ada kepada Complex Rubber Cup ?

Copy

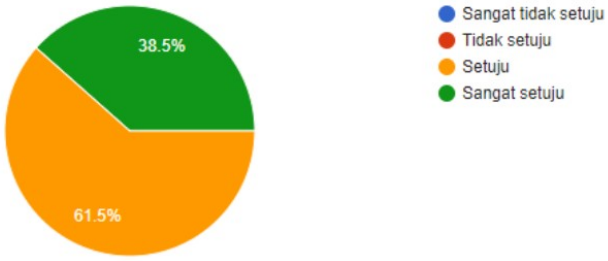
13 responses



Dengan adanya Complex Rubber Cup ini , adakah ia dapat mengurangkan beban penoreh getah dari segi tenaga dan pendapatan ?

Copy

13 responses



Dengan adanya Complex Rubber Cup ini , adakah ia dapat meningkatkan kualiti getah ?

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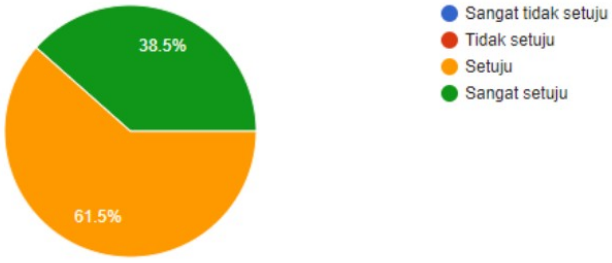
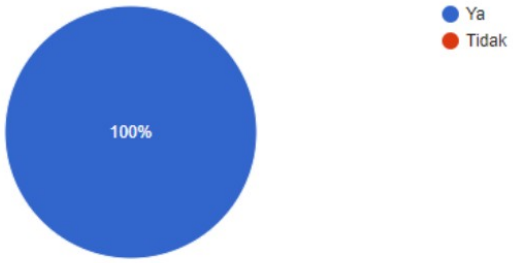
13 responses



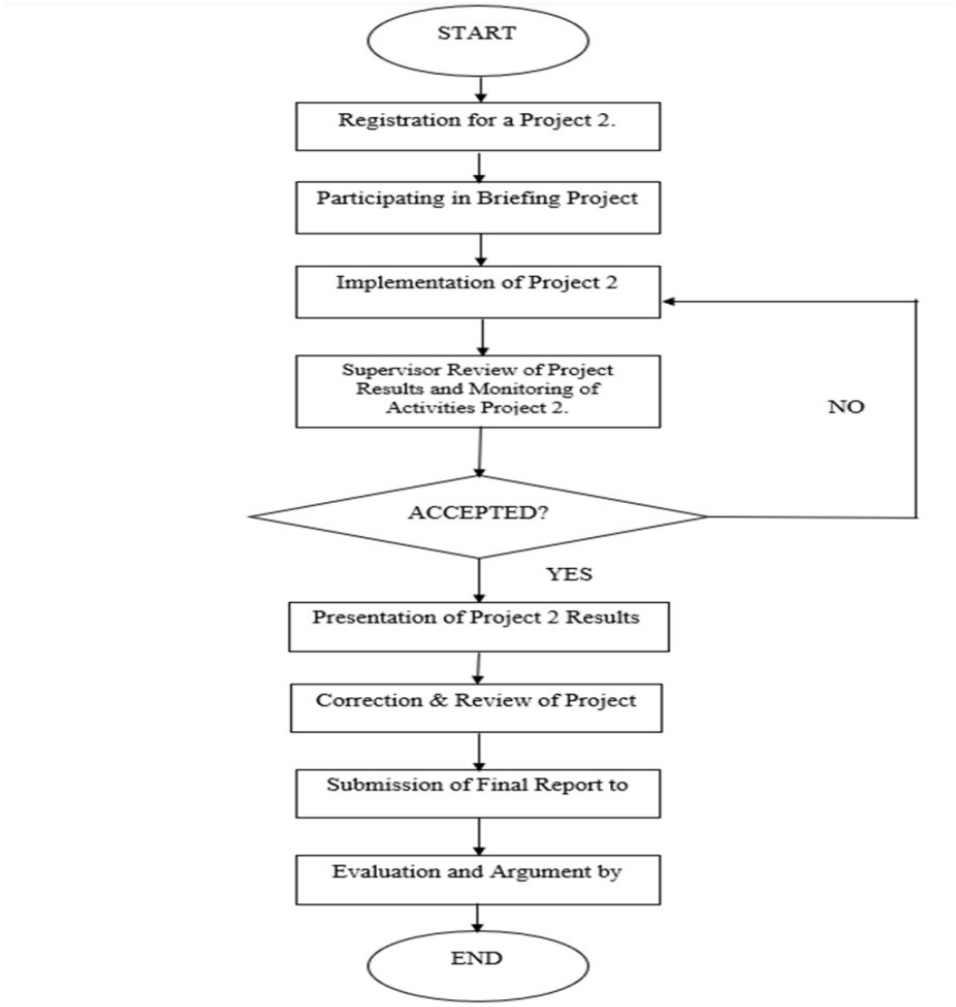
Adakah kamu berminat dengan fungsi Compex Rubber Cup ?

Copy

1 response



FLOW CHAT


START
Registration for a Project 2.
Participating in Briefing Project
Implementation of Project 2
Supervisor Review of Project Results and Monitoring of Activities Project 2.
NO
ACCEPTED?
YES
Presentation of Project 2 Results
Correction & Review of Project
Submission of Final Report to
Evaluation and Argument by
END