POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

FLEXIBLE POWER CLEAN

NAMA	NO. PENDAFTARAN
MUHAMMAD HADI BIN HARUN	08DPB17F1121
AMIRUL NADZIM B. MOHAMMAD FATHIL	08DPB17F1244
MOHAMAD SYAFIQ RIDZUAN BIN RAMLI	08DPB17F1160
MUHAMMAD PUTRA DANIAL BIN MOHD SALEH	08DPB17F1248

JABATAN KEJURUTERAAN AWAM

JUN 2019

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

JABATAN KEJURUTERAAN AWAM

JUN 2019

AKUAN KEASLIAN DAN HAK MILIK

TAJUK : FLEXIBLE POWER CLEAN

SESI : JUN 2019

1. Kami 1. MUHAMMAD HADI BIN HARUN
2. AMIRUL NADZIM BIN MOHAMMAD FATHIL
3. MOHAMAD SYAFIQ RIDZUAN BIN RAMLI
4. MUHAMMAD PUTRA DANIAL BIN MOHD SALEH

Adalah pelajar tahun akhir **Diploma Kejuruteraan Perhidmatan Bangunan,** Jabatan Kejuruteraan Awam, Politeknik Sultan Salahuddin Abdul Aziz Shah yang bertempat di Persiaran Usahawan, 40150 Shah Alam, Selangor.

2. Kami mengaku bahawa "Flexible Power Clean" dan harta intelek yang ada didalamnya adalah hasil karya\reka cipta asli tanpa kami mengambil atau meniru mana-mana harta intelek daripada pihak lain.

3. Kami bersetuju melepaskan pemilikan harta intelek 'Projek tersebut' kepada Politeknik Sultan Salahuddin Abdul Aziz Shah bagi memenuhi keperluan untuk penanugerahan Diploma Kejuruteraan Perkhidmatan Bangunan kepada kami.

Disemak oleh:-

Nama penyelia : PUAN HAJAH JAMILAH BINTI HAJI ABBAS

T/ tangan penyelia :

Tarikh :

Diperbuat dan dengan sebenar-benarnya diakui oleh yang tersebut ;

a) MUHAMMAD HADI BIN HARUN
(No. Kad Pengenalan : 991102-11-5475) …….

b) AMIRUL NADZIM BIN MOHAMMAD FATHIL
(No Kad Pengenalan : 990604-01-5787) …….

c) MOHAMAD SYAFIQ RIDZUAN BIN RAMLI
(No Kad Pengenalan : 990812-03-5627) ……..

d) MUHAMMAD PUTRA DANIAL BIN MOHD SALEH
(No Kad Pengenalan : 990906-01-5977) …….

Di hadapan saya HAJAH JAMILAH BINTI HAJI ABBAS
(No Kad Pengenalan :) …….
Sebagai penyelia projek pada Tarikh :

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PENGHARGAAN

Bersyukur ke hadrat Ilahi serta selawat ke atas junjungan besar kita iaitu Nabi Muhammad SAW dapatlah kami menyiapkan projek akhir dengan cemerlang dalam tempoh ynag telah ditetapkan iaitu selama 6 bulan tanpa menghadapi sebarang masalah yang sukar diselesai sebagai syarat penganugerahan Diploma Kejuruteraan Perkhidmatan Bangunan sesi Jun 2019. Sekalung penghargaan kami ucapkan kepada semua pihak yang terlibat secara langsung mahupun tidak langsung terutamanya penyelia kami Puan Hjh Jamilah Binti Hj Abbas yang telah banyak memberi segala tunjuk ajar, nasihat, dorongan serta kritikan membina kepada kami sehinggakan kami berjaya menyiapkan laporan projek akhir ini. Penghargaan ini juga ditujukan kepada keluarga , rakan-rakan serta pensyarah-pensyarah yang telah banyak membantu dan menolong kami secara langsung atau tidak langsung dalam penghasilan projek ini. Tidak lupa juga buat kedua ibubapa kami di atas segala sokongan dan galakan mereka sepanjang tempoh kami belajar di Politeknik Sultan Salahuddin Abdul Aziz Shah ini terutamanya semasa kami dalam proses penghasilan projek tahun akhir yang diberi nama “Flexible Power Clean” ini.

Dengan ini kami bersyukur ke hadrat Allah SWT maka siaplah projek akhir ini. Harapan kami semoga laporan ini dapat dijadikan contoh dan panduan kepada pihak-pihak yang berkenaan pada masa hadapan.

ABSTRACT

Flexible Power Clean

Masalah paip tersumbat yang diakibatkan oleh sisa benda asing yang masuk kedalam saluran perangkap lantai. Ini menyebabkan ketidakselesaan dalam kalangan penguna kesan daripada masalah paip tersumbat. Masalah biasa yang dialami adalah perangkap lantai di tandas ataupun bilik mandi tersumbat dan menyebabkan air di bilik mandi melimpah dan penuh akibat daripada saliran perangkap lantai yang tidak baik. Perangkap lantai di asrama, rumah dan premis makanan sering tersumbat kerana sisa dari bahan asing memasuki saluran seperti tisu, rambut dan sabun yang jatuh dan terperangkap didalam saluran tersebut. Kebanyakan rumah-rumah kediaman atau bangunan-bangunan asrama mengalami masalah tersumbat. Mereka tidak mempunyai alat khusus untuk menyelesaikan masalah ini, mengakibatkan mereka terpaksa memanggil syarikat pembersihan dari luar untuk menyelesaikan masalah tersebut dan terpaksa menanggung kos yang tinggi. Masalah ini boleh menjejaskan keadaan pengguna jika proses pembaikan tidak dilakukan. Contohnya jika masalah tidak diselesaikan, air tersebut akan mengakibatkan bakteria membiak, serangan seperti lalat dan lipas dan juga bau busuk akan menyebabkan ketidakselesaan terhadap pengguna. Masalah ini juga boleh menyebabkan nyamuk membiak kerana meninggalkan air secara bertakung. Masalah ini sebenarnya boleh diselesaikan dengan memanggil syarikat pembersihan tetapi kos yang terlibat akan agak tinggi dan akan membebankan dari segi kewangan. Di samping itu, proses pembersihan memerlukan sedikit masa kerana proses pembersihan agak rumit. Tujuan alat ini adalah untuk membolehkan masalah saluran tersumbat di rumah atau bangunan diselesaikan dengan proses yang mudah, efektif dan kos yang rendah. Ia berfungsi sebagai alat yang boleh membantu masalah saluran tersumbat dengan mudah dan tanpa kos yang tinggi. Produk ini berfungsi untuk melepaskan sisa asing yang terdapat di dalam saluran perangkap lantai dengan pergerakan atau putaran yang berlaku di hadapan alatan ini, apabila bahagian depan (mata mesin) berputar, sisa asing dalam saluran akan dileraikan kerana mata mesin mempunyai berus yang boleh menangkap sisa asing tersebut. Contohnya seperti rambut atau tisu. Putaran yang berlaku di mata hadapan

mesin ini adalah satu cara untuk memudahkannya melekat pada mata mesin. Dengan reka bentuk alatan yang fleksibel ini, ianya akan lebih mudah untuk memasuki saluran paip kerana perangkap lantai mempunyai "sesiku" di dalamnya.

Kata kunci - perangkap lantai, tersumbat, paip, limpahan, perangkap, pergerakan, fleksibel.

Flexible Power Clean

A clogged pipe is from foreign waste that enters the floor trap, causing users to worry about the clogged pipe problem. The most common problem is the bathroom floor trap clogging and causing the water to overflow and causing the bathroom to flood due to poor drainage. Floor traps in dormitories, homes and food premises are often clogged due to waste from foreign substances entering the channels such as tissues, hair and soap that fall and cause traps. Most homes or buildings have clogged problems. They do not have the specific tools to solve the problem so they call an outside cleaning company to solve the problem at a high cost. This problem can be harmful if the repair process is not performed, if not resolved problems such as bad odor will start to develop and cause discomfort. This problem can also cause mosquitoes to breed because they leave water intact. This problem can actually be solved by calling a cleaning company but the costs involved will be quite high and will cost you money. In addition, the cleaning process takes a while because the cleaning process is quite complicated. The purpose of this tool is to allow clogging problems in the home or building to be solved with a simple and cost-effective process. It works as a tool that can help with clogging problems easily and at no cost. This device works to release the foreign waste present in the path by movement or rotation that occurs in front of the device, when the front (machine point) rotates, the foreign waste in the channel will be attached to the machine eye because the machine eye has a brush that can capture those foreign remains. Rotation occurring in the foreground is one way to make it easier to attach it to the eyes. With the flexible body design of this tool, it is easier to enter the pipeline as the floor trap has a bend in it.

Keywords- floor trap, clogged, pipe, overflow, traps, movement, flexible.

1.1CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

In this globalization, in Malaysia there are many different ways to eliminate saturated fats / fatty traps trapped in the pipeline. This problem is very diminished and extremely harassing for affected people in the situation this clogged pipe problem. Therefore, the main purpose of this tool was created for ease and solve problems instantly easily. With the study more profoundly, the creation of this pipe cleaner can have a positive effect for every user. Therefore, we want to put a close emphasis on the problem of blockage pipes so we can know more about-about this problem. This is because of the tools which is in the market there are many weaknesses for every user. Therefore, we want to innovate the pipe cleaner so that it looks more quality and useful. We hope this project will solve the problem and help the community.

In buildings no matter a small building or large building has a place for floor traps, such as toilets, kitchens and sinks. In addition, each building needs to have drain. In the trap channel and floor drain play a very important role in the water of the ducts from the building to the sewage tank. According to our observations, toilets are often clogged as foreign remnants enter the floor trap channel until eventually the remains will accumulate on one side of the channel and cause drainage and water from the toilet cannot be discharged to the drainage tank properly.

Consequently, we create tools that can be used on floor stalks and drains to ensure clogging drain can be overcome by using the Flexible Cleaner Engine. This ensures that the floor traps and drainage channels are no longer clogged and will become cleaner than the residual waste.

1.2 PROBLEM STATEMENT

Clogged pipe problems in dormitories, houses and food premises are often clogged because the waste from foreign materials enters the channel like tissue, hair and soap that fall and cause the waste to be trapped. most homes or places where ever a clogged pipe and a way to solve the problem is somewhat complicated. the existing tools in the market are mostly not helpful because of their own weaknesses.

In addition, the problem of blockage pipes often occurs because the attitude of someone who does not respond to the waste in the pipe causes the water to not drain into the exhaust tank. due to blockage of the smell of contaminating pipes will occur by removing bad odour in the surrounding area and will also cause insects to multiply in the area.

1.3 OBJECTIVES OF THE PROJECT

The objective of this project is to make clean up and solve clogged problems due to accumulated remnants in floor trap traps for example hair, tissues and soap that include or fall into the trunk and cause water to not flow properly. To prevent air pollution and clogged drainage problems caused by food waste always thrown in the trap floor until the food fat is attached to the edges of the channel.

I. To solve clogged pipe problems.
II. To avoid the problem of pollution and the problem of pests.
III. to save time and money
IV. To facilitate housekeeping when a blockage is blocked.

1.4 SCOPE PROJECT

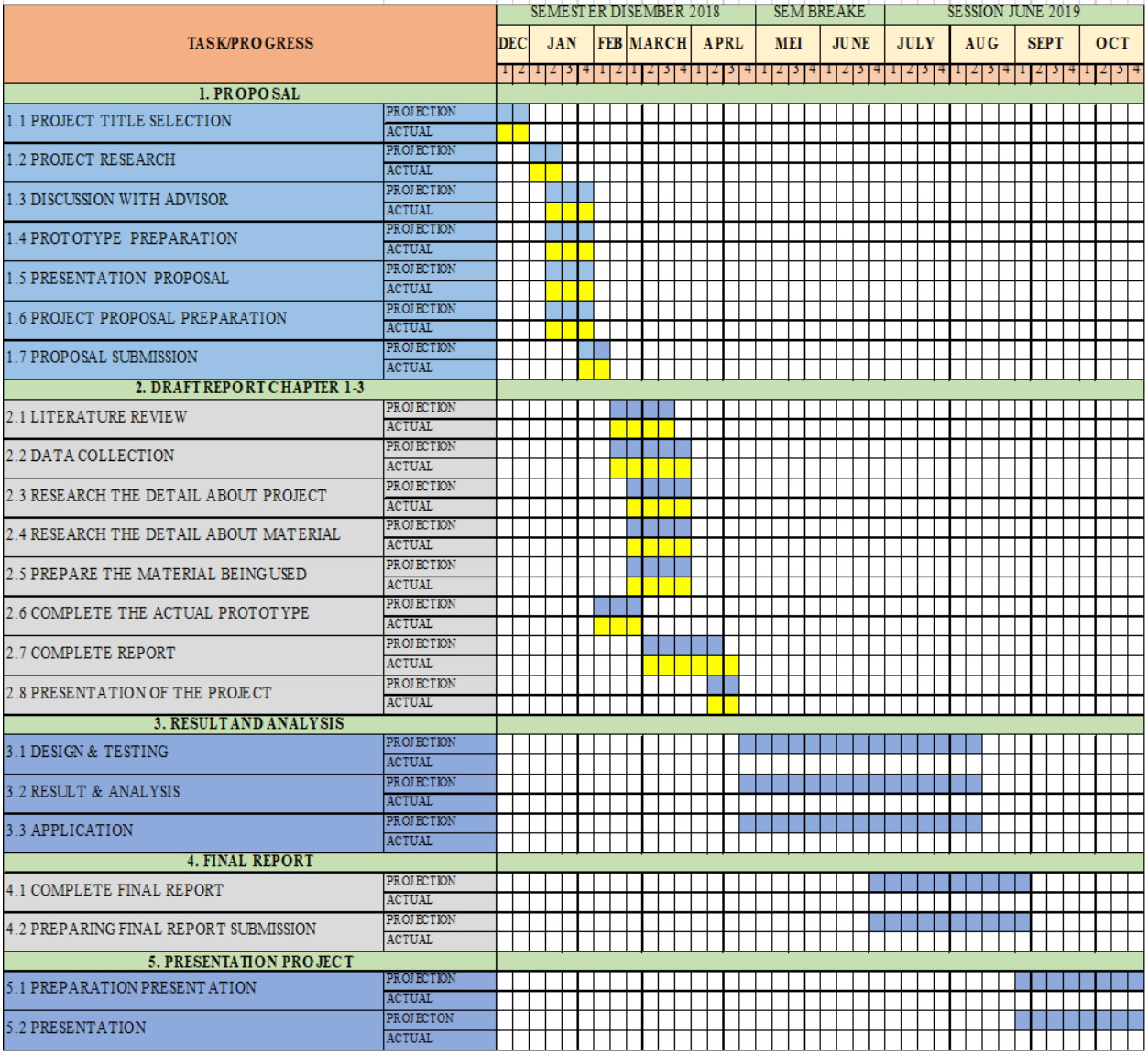
The scope of this study is devoted to residents living in residential areas such as terrace houses that have not been modified in their home plumbing system. Home the terrace is always experiencing this kind of problem, where the main channel is on the kitchen floor overflowing with sewage air. This will cause daily work in the kitchen stunted.

i) Focused on the unplaced terraced housing of the pipeline system.

ii) solve the problem of pipe cloggin.

1.5 PROJECT PLANNING SCHEDULE (GANT CHART)

1.5 PROJECT PLANNING SCHEDULE (GANT CHART)



1.6 MATERIAL, APPARATUS AND COSTING

MATERIAL	QUANTITY	PRICE
DC motor generator (12v 3000++ rpm)	1	RM 40.00
Flexible pipe	1 meter	RM100
Battery enrgizer A23 (12)	2	RM 20.00
Connected wire	0.5 meter	RM 10
HANGBO Push Button	1	RM 20
Brush (plastic)	2	RM 20

1.7 CONCLUSION

The conclusion is that the Project was created to facilitate the cleaning and settlement of drainage and drainage problems caused by foreign remnants that had entered the floor traps and drainage channels at home. With this tool we also can handle the problem of water pollution / odori in the home area and thus avoid the breeding of pests such as cockroaches, mice, mosquitoes that will cause harmful diseases. besides avoiding pest infestation in the clogged area, so that we can make a clean house environment

CHAPTER 2

LITERATURE REVIEW

2.1. INTRODUCTION

What is flexible?

Flexible means is bleaching or portable and easy to mold. In our day-to-day flexibility we are familiar to our daily lives and even the flexible words we hear and see in everyday life. Another word for flexibility which means easily bent or flexible. Flexible we usually see in everyday life such as in flexible pipe toilets and so on. Flexible has many ingredients to make things can be traced as plastic samples. Plastic is one of the ingredients that can be processed to become something to be flexible. Flexible is very important in everyday life because flexibility can be helpful in everyday life. So we apply flexible material to facilitate the process of production and fogging of the tools we will create.

Besides that, it can also be said flexible, flexible, elastic, flexible, flat can withstand tension permanently. Elasticity implies the nature of resisting deformation via stretching. Elastic waist resistance implies the ability to quickly restore shape when the deformed force or pressure is discarded. a strong pressure in good pressure with something that produces pressure and speed of return to the natural form. The cakes are made when the top is flexible springy occurs on something that may or may not be durable or elastic but can be bent or folded without breaking. Soft flexible plastic tubes apply to something easily bent, twisted, or folded without any signs of injury soft skin

What is power?

Much like energy, the word power is something we hear a lot. In everyday life it has a wide range of meanings. In physics however, it has a very specific meaning. It is a measure of the rate at which work is done (or similarly, at which energy is transferred). The ability to accurately measure power was one of the key abilities which allowed early engineers to develop the steam engines which drove the industrial revolution. It continues to be essential for understanding how to best make use of the energy resources which drive the modern world. The standard unit used to measure power is the watt which has the symbol W. The unit is named after the Scottish inventor and industrialist James Watt. You have probably come across the watt often in everyday life. The power output of electrical equipment such as light bulbs or stereos is typically advertised

One watt is the power resulting from an energy dissipation, conversion, or storage process equivalent to one joule per second. When expressed in watts, power is sometimes called wattage. The wattage in a direct current (DC) circuit is equal to the product of the voltage in volts and the current in amperes. This rule also holds for low-frequency alternating current (AC) circuits in which energy is neither stored nor released. At high AC frequencies, in which energy is stored and released (as well as dissipated or converted), the expression for power is more complex.

What is clean?

Cleaning is the process of removing undesirable substances, such as dirt, infectious agents, and other impurities, from objects or surroundings. Cleaning takes place in many different contexts, and uses many different methods. Some jobs are focused on cleaning. Cleaning also uses a lot of tools such as brushes, soap and so on. This help tool is used to facilitate the cleaning process in dirty places. For example a bathroom, if you want to clean it we must use soap and brush to facilitate the cleaning

process. If a cleaning tool is created, it is easy to clean up and save time and energy. But also with the aid of tools we can clean the dirt in narrow places.

Cleaning is extremely important for an individual to ensure a clean area of dirt that can lead to the breeding of aide's mosquitoes, rats and so on. Each individual needs to take on the role and awareness of hygiene challenges in the area, in the office, and in public places. A common problem if cleanliness is not maintained, the pipe will be clogged due to the foreign waste coming in due to the garbage disposal everywhere. This may cause the pipe to be blocked and water should not flow to the place of attachment.

What is flexible power clean?

After identifying problems, advantages of research, objectives, scope and terminologies, literature review will be conducted first to ensure that further steps can be taken. In this chapter we will discuss about terms related to the project to be carried out. Concepts and theories will also be explained about this project. These terms are very important to know and understand before a more detailed description of a project called "FLEXIBLE POWER CLEAN"

Generally, we know that block trap flow problems often occur in our daily lives through waste dumps in flow traps that result in a long time in the garbage that accumulates in the water and cannot flow, for example in the bathroom, in wash basin is always clogged and causes water to not flow well and water flow cannot be discharged to waste tan

The tools we want to create can clean up dirty areas including water flow trap. By using a flexible stick can fit into the tap easily and according to the form of pipe passage without any excavation that allows the stem to stop, next to the front of the appliance we meet the brush to make it easier for the cleaning process to make the clogged stools decomposed and the garbage can be described. To save time, in the interior we place DC motor to ease and depress the workforce and save time. So this tool is very good in terms of cleaning and block trap stuff.

Flexible power clean consists of plastic brushes, dc motors, flexible sticks that will be connected and become a tool that helps human beings to facilitate any cleaning process in the environment.

2.2 CONCEPTS / THEORIES

CONCEPTS

An idea or interpretation that is extruded from concrete events. Concept also means as a result of project, process or anything outside the language, used by reason to understand other things. Abstract is a universal thing that refers to a category or class of things or events, or relationships. Understanding the concept itself is universal where it is usually applied extensively to every addition.

THEORIES

Opinions based on research and discovery, supported by data and discussions. The theory is also an analysis of the relationship between one fact and the other facts that will be collected and made into data. Theoretical statements are generally only accepted temporarily and are not conclusive definitions.

Concept and Theory for FLEXIBLE POWER CLEAN

power clean is the name of the combination of the handle of the handle which can be driven according to the user's wishes and power because this device uses the power of dc motor and the battery able to move the brush before it, while clean because this tool is used for cleaning and cleaning drainage area and flow trap. This tool can clear the flow trap that is clogged due to salts such as tissues, hair, and oil and so on because the foreign band is too big and they will gather in a place and cause water cannot flow as much. Due to the problem, with the help of this tool we provide the brush on it and the motor dc to move the brush to describe the assembled foreigner. Furthermore, the iron rod is flexible because in order to facilitate the front entrance process, the flow trap side has a bend, so the function of this iron rod can be according to the flow trap without a lot of obstacles.

To ensure that this tool can be used properly, we will use quality products and good connections to avoid removing the appliance during the cleaning process. In this tool we use dc motors and batteries, so we are very concerned about the tool, because the cleaning process of course this tool will be hit on the water, so we will make sure the water cannot fit into the engine and battery parts. We use materials that water cannot enter through so it does not want any unwanted things to happen. Waterproof and durable containers are very important in the construction of our tools to ensure water problems can be overcome.

This tool is easy to carry everywhere because the tool is not too heavy and not too big. This tool can be used for all groups including housewives. Typically, trap traps will block the company that can clean it, but if any of these gadgets home alone can solve this problem easily and quickly without the help of the company that clean it and once it can save money to clean it.

THEORY OF CLOGGED PIPE

The pipe cleaner, sometimes referred to as pipe resistance, is a solution poured into a pipe hole or clogged in an effort to clean the duct. This solution is made to remove human hair, human feces, or food particles that are stuck so that the kitchen sink or drain and the shower becomes clogged. Some are powders, but the most popular ones are liquids that can be poured directly into the channel. There are two types of pipe cleaners available today.

The chemical cleaning pipes are the most popular types of cleaners sold in the United States as they are far more effective than biodegradable pipe cleaners. There are two types of chemical pipe cleaners produced in the United States. One type is acid-based and includes chemicals such as sulfuric acid. These are cleaner for the pipeline and are most effective for both types of cats but are the most dangerous. This means that effective acids in human and hair shit are in the pipeline quickly. So, if a pipeline cleaner splits on users, users have a bit of time to wash acid before it burns on the skin. Other types of chemical pipe cleaners are made of caustic sodium hypochlorite. Famous chemical pipe

cleaners are made by large national companies primarily producing caustic tapes. The caustic tap washing is cheaper to remove from acidic pipe cleaner and is a bit safer to use as sodium hypochlorite can be cleaned before significant damage occurs.

2.3 MATERIALS OF FLEXIBLE POWER CLEAN

2.3.1. DC MOTOR

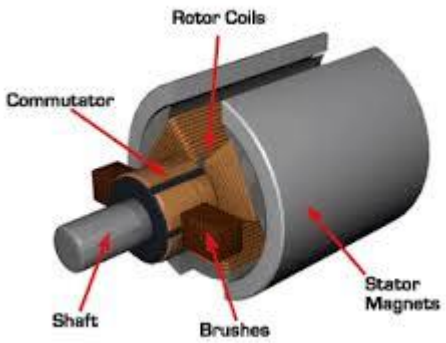
The use of DC motors in scale model trains goes back to the 1920's at least. DC quickly overtook AC (although AC continued to be used). In the U.S., according to this history, Mantua (later to be known as Tyco) first advertised their six-volt model 100 DC motor in a hobbyist magazine in 1930. While they also made AC motors, by January 1935 Model Railroader (MR) could note that "most" modelers in the then-new HO scale were using DC motors. The majority of these early motors, although not all, were permanent-magnet motors, and initially 6V was the standard voltage.

Other early motors were "universal" motors, which used a wound field that could operate on either AC or DC power. This was attractive at a time when modelers were converting from one system to the other.

In May of 1936 Mantua advertised their first motor purpose-built for HO scale modelers, a 7/8" x 1 1/2" x 2 1/2" (22mm x 37mm x 64mm) 6-volt open-frame DC permanent-magnet design. It sold for $4 and came with a money-back guarantee. It was so unique it didn't have a model number, it was just described as "the HO motor". A typical design for this motor (per Building a Locomotive by Frank Taylor in the November 1936 issue of MR) used a 30:1 reduction gearing with 79" (scale) driving wheels to build a USRA Pacific locomotive. Typical top speed for the prototype of these locomotives was 75 mph (in part due to wartime restrictions; the USRA was in use during the First World War), which implies that the motor needed to be able to turn at about 9,600 RPM under load to achieve a prototypical top speed. These two numbers (30:1 gear ratio for a steam locomotive and operating speeds of around 10,000 RPM) continue to be common today.

DC motor has 4 types, that is permanent magnet DC motor, series DC motor, shunt DC motor and compound DC motor. But this tool we use Permanent magnet DC motor.

Permanent magnet DC motor



The *permanent magnet DC motor* (also known as a PMDC motor) consists of an armature winding as in case of an usual motor, but does not necessarily contain the field windings. The construction of these types of DC motor are such that, radially magnetized permanent magnets are mounted on the inner periphery of the stator core to produce the field flux.

The rotor on the other hand has a conventional DC armature with commentator segments and brushes. The diagrammatic representation of a permanent magnet DC motor is given below.

Used for high power load switch motors. The construction is to replace the opening and closing of the pure manual with an electric control device. For open and close electrical switches, after manually pressing the "open" or "close" button on the

control panel, the electrical control section of the switch receives a signal, and then the electric actuator realizes opening and closing.

2.3.2. BATTERY

Batteries have been around longer than you may think. In 1938, archaeologist Wilhelm Konig discovered some peculiar clay pots while digging at Khujut Rabu, just outside of present-day Baghdad, Iraq. The jars, which measure approximately 5 inches (12.7 centimeters) long, contained an iron rod encased in copper and dated from about 200 B.C. Tests suggested that the vessels had once been filled with an acidic substance like vinegar or wine, leading Konig to believe that these vessels were ancient batteries. Since this discovery, scholars have produced replicas of the pots that are in fact capable of producing an electric charge. These "Baghdad batteries" may have been used for religious rituals, medicinal purposes, or even electroplating**.**

In 1799, Italian physicist Alessandro Volta created the first battery by stacking alternating layers of zinc, brine-soaked pasteboard or cloth, and silver. This arrangement, called a voltaic pile, was not the first device to create electricity, but it was the first to emit a steady, lasting current. However, there were some drawbacks to Volta's invention. The height at which the layers could be stacked was limited because the weight of the pile would squeeze the brine out of the pasteboard or cloth. The metal discs also tended to corrode quickly, shortening the life of the battery. Despite these shortcomings, the SI unit of electromotive force is now called a volt in honor of Volta's achievement.

The next breakthrough in battery technology came in 1836 when English chemist John Frederick Daniell invented the Daniell cell. In this early battery, a copper plate was placed at the bottom of a glass jar and a copper sulfate solution was poured over the plate

to half-fill the jar. Then the zinc plate was hung in the jar, and a zinc sulfate solution was added. Because copper sulfate is denser than zinc sulfate, the zinc solution floated to the top of the copper solution and surrounded the zinc plate. The wire connected to the zinc plate represented the negative terminal, while the one leading from the copper plate was the positive terminal. Obviously, this arrangement would not have functioned well in a flashlight, but for stationary applications it worked just fine. In fact, the Daniell cell was a common way to power doorbells and telephones before electrical generation was perfected.

CADMIUM NICKEL CELLS.

Usually used for wireless equipment such as mobile phones, gaming gadgets, digital cameras, radios and so on. The goodness of this cell is that the charge is not lost even if it is used for a long time, not easily leaked, the electrolytes are not spilled, water does not need to be added, produces constant voltage, lasts longer than lead acid accumulator, easy to carry as small size, and rechargeable again. The weakness of this cell is its price.

The active components of a rechargeable NiCd battery in the charged state consist of nickel hydroxide (NiOOH) in the positive electrode and cadmium (Cd) in the negative electrode. For the electrolyte, usually caustic potash solution (potassium hydroxide) is used. Due to their low internal resistance and the very good current conducting properties , Ni-Cd cells can supply extremely high currents and can be recharged rapidly.

2.3.4. SWITCH

In the electronic field, the switch is a type of tool that can decide on an electric circuit, stop the flow of electric current or divert the flow from one conductor to another conductor. The most common type of switch is the type of electromechanical with one or more electric set of contacts. Each set of contacts can be one of two situations - whether 'closed' which means both contacts are in contact and allow the electrical flow, or 'open' which means the contact is separate and does not drain the electricity.

Since the discovery of digital logic pens in the 1950s, the term switches are also used as active devices such as transistors and obtain a logic that works to change the output state between two logic levels or also connect different digital signals, even computers, switch networks, which serve to provide connections between different computer ports in a computer network. The term 'switching' is also used on telecommunications networks, indicating that the network is of a circuit switching type, providing a special circuit communication between the end of the node, such as a public telephone switching network. The common feature for all of these uses refers to the

device that controls the binary state: whether it is live or dead, closed or open, directly or indirectly.

SINGLE POLE SINGLE THROW SWITCH (SPST)

- This is the basic ON and OFF switch consisting of one input contact and one output contact.
- It switches a single circuit and it can either make (ON) or break (OFF) the load.
- The contacts of SPST can be either normally open or normally closed configurations .

Symbol

SPST Switch

The number of poles on a switch defines how many separate circuits the switch can control. So a switch with one pole, can only influence one single circuit. A four-pole switch can separately control four different circuits.

Knowing how many poles and throws a switch has, it can be more specifically classified. Commonly you'll see switches defined as "single-pole, single-throw", "single-pole, double-throw", "double-pole, double-throw", which are more often abbreviated down to SPST, SPDT, and DPDT, respectively.

2.3.5. BRUSH

A toilet brush is a tool for cleaning a toilet bowl. The modern plastic version invented in 1932 by William C. Shop of Huntington Park, California, US and later patented in 1933 by the Addis Brush Company.[citation needed]

Generally the toilet brush is used with toilet cleaner or bleach. The toilet brush can be used to clean the upper area of the toilet, around the bowl. However, it cannot be used to clean very far into the toilet's U-bend and should not be used to clean the toilet seat .In many cultures it is considered impolite to clean away biological debris without the use of chemical toilet cleaning products, as this can leave residue on the bristles. By contrast, others consider it impolite not to clean away biological debris immediately using the toilet brush.

A typical toilet brush consists of a hard bristled end, usually with a rounded shape and a long handle. Today toilet brushes are commonly made of plastic, but were originally made of wood with pig bristles or from the hair of horses, oxen, squirrels and badgers. The brush is typically stored in a holder, but in some cases completely hidden in a tube. An electric toilet brush is a little different from a normal toilet brush. The bristles are fastened on the rotor of a motor which works similar to an electric tooth brush. The power supply is attached without any metal contact via electromagnetic induction.

brushes are used as a frequently used cleaning tool. Brushes are widely used in various places such as bathrooms, kitchens and so on. Brushes are used to clean dirty areas or in areas where they are cleaned.

2.3.6. FLEXIBLE STEEL

The flexible steel I use is a non-magnetic flexible sheet type but can attach to it and can be stuck with magnetic stickers. This is because it is possible that the object of the small object in the hole or trap of the floor is of a smooth iron. The iron is also unlike other solid iron and this flexible iron can be used on any irregular surfaces such as the scope of my study is drains, sink holes and floor traps. The iron is about 5 cm in diameter which cannot exceed the floor trap and sink hole. The iron is also durable and is not easy to rust as this product will be tested in a water-filled place. Then the iron can also be bent by the hole or trap of the floor because to facilitate the cleaning process to run smoothly and it can be re-established as usual.

2.4 OLDER RESEARCH

2.4.1 CHEMICAL MATERIAL

Washing pipes have no extensive history. Before that, it was used by pouring the air from the main channel into the hole pipeline to wash. Less hazardous ingredients such as vinegar and baking soda have been combined and this is another how to clean the pipeline. Flexible flexible pipe pipes pushing through barriers in the pipeline. The great bleach manufacturer in the country is realized by the mid-twentieth century The sodium hypochloride they produce for bleach can also be used for make fluid pipe solution. Generated in strength is somewhat larger than bleach. The caustic pyrostic cleaner affects organic matter. Washing Pipe acidic, somewhat more expensive to make and harm to the

user, it is produced by special or smaller firms and often sold to plumbers or for commercial use.

2.3.2 PIPE STRIKING WIRE

Before our tool was created, the tool was used in 2000, at this time, this tool is very popular because it is easy to use and is reasonably priced at other prices. the material to make these tools does not just use a flexible stick as the main ingredient for cleaning the blocked pipe. the tool uses the push and pull method, when the appliance is inserted, the user must pull the appliance so that the clogged place can be solved and the water can flow well. the second method to use this tool is to plug the wire into the pipe and turn the handles so that it removes the clogged stuff inside the pipe.

2.5 CONCLUSION

The pipe cleaner, sometimes referred to as pipe resistance, is a solution poured into the pipe hole or clogged in order to clean channel. This solution is made to remove human hair, human stool, or food particles stuck to a kitchen sink or drain and shower become clogged. There are powders, but the most popular ones are liquids that can be poured directly into the channel.

Besides, there are also tools designed to facilitate the cleaning of the blockage pipe as well as the use of existing chemicals in the market. there are some tools on the market that can make it clear to clean this pipe, but the tool we created is able to solve easily and save time.

The pipe cleaner must be used with caution and not too much. Manufacturers recommend using gloves and glasses as a result chemicals have been known to splash into the face and the eyes cause damage to the eyes. Bio-degradable pipe cleaners just clean the pipe because it's not so effective for consuming organic matter Finally, chemicals need to be stored away of children.

CAPTER 3

METODOLOGI

3.1 INTRODUCTION CHAPTER

Methodology can be defined as a method or step used to develop and improve a project as well as a whole project according to the suitability and passage of time. The first process for a project is by identifying the problem. The project has its objectives and direction which remains. If a project does not achieve the objective, the project considered failure. Additionally, brainstorming ideas from members of the group play an important role in successfully implementing a project. Selection of the title of the ideas it is the earliest step that must be implemented before start the next job in the project. The title of the project must be sought and selected according to the type of project.

According to the Dictionary of the Fourth Edition of the Methodology the methodology refers to the system which includes the methods and principles used in an activity or discipline. Other methods of methodology are methods, paths, techniques, styles, variants, rhythms, patterns and systems. Methodology also means the knowledge of the method or discipline used during a particular study to achieve a particular purpose. The research methodology refers to the most appropriate method of conducting research and determining an effective procedure to answer the problem of study.

3.2 RESEARCH DESIGN

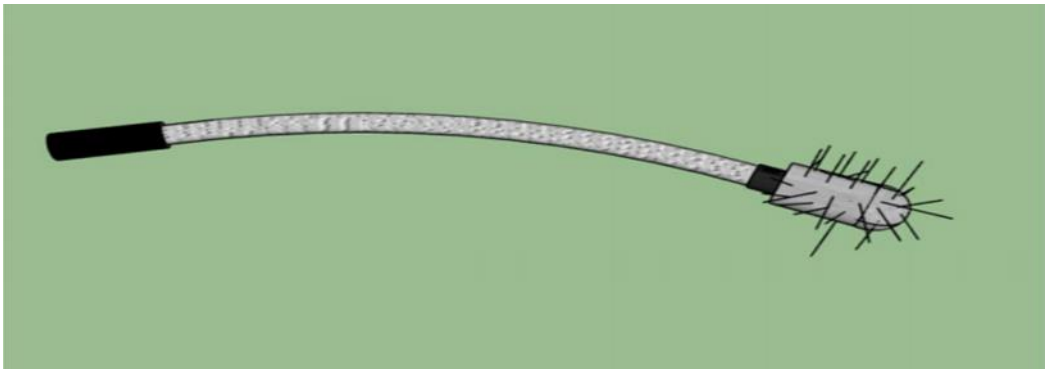


Diagram 1

SketchUp is the software for which users are easier to draw a project description more accurately and neatly. It is a kind engineering drawing that guarantees the exact size of the suit users or engineers.

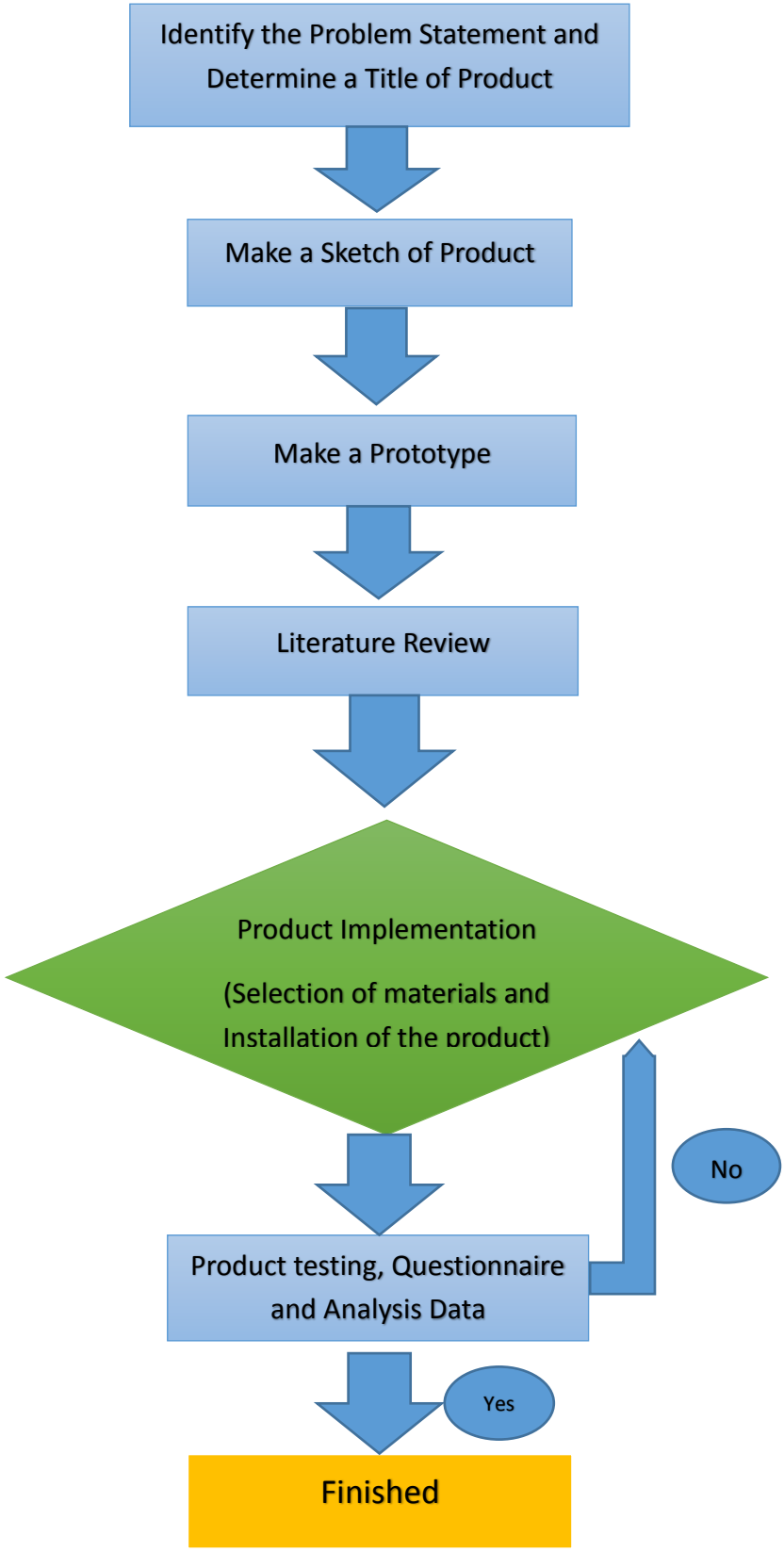
For this project, we use the SketchUp app to illustrate the 'flexible power clean' picture before it is created with the real picture. It is implemented according to part by piece. Then combined into one designated design.

On diagram 1 shows a sketch on the flexible power clean tool from the side sketch, if you all see the sketch has 3 parts, head, body and back handle. the front (head) there is that the DC motor will be placed and the brush will rotate to clean the blocked pipe. in the middle of the body there is a flexible place where the stick will be flexible to facilitate the tool into the pipe and can follow the movement of the pipe if it has a bend and the last is the back (tail) there is the place where we will hold the tool.

The picture above shows the work and steps for the construction of a flexible power clean tool, where dc motors are used inside the tool and placed on the bottom of the tool and connected to the bottom of the machine tool to ensure that the brush can move smoothly and safely.

The picture above shows that the pvc pipe used as an elbow example, the tee attached to the tool can be connected in good condition and neat. pvc is used as it saves costs as well as easy use. using glue only

3.3 DATA COLLECTION



3.4 RESEARCH INSTRUMEN

In our project we use DC motors used as easy to get and easy to install in the parts of the appliance, as well as batteries, switches, brushes and flexible shafts also play a very important role in the construction of this tool. the item completes between the other glaze.

3.4.1 DC MOTOR

The DC engine is a simple to-mount material in an apparatus and is equipped for being utilized for light work and can be traveled using batteries just, yet the batteries utilized should be as per the fixed spots of the DC engine itself. in the meantime the DC engines can turn at the speed controlled by the DC engine itself

3.4.2 BATTERY

Usually used for wireless equipment such as mobile phones, gaming gadgets, digital cameras, radios and so on. The goodness of this cell is that the charge is not lost even if it is used for a long time, not easily leaked, the electrolytes are not spilled, water does not need to be added, produces constant voltage, lasts longer than lead acid accumulator, easy to carry as small size, and rechargeable again. The weakness of this cell is its price.

3.4.3 SWITCH

The switch is applied to this tool for use to control the flow of electricity into the DC motor to be ON / OFF switch. with this switch the device user will be safe from being exposed to electricity.

3.4.4 BRUSH

brushes are used as a frequently used cleaning tool. Brushes are widely used in various places such as bathrooms, kitchens and so on. Brushes are used to clean dirty areas or in areas where they are cleaned.

3.4.5 PVC PAIP

pvc pipe is used to connect the parts of the machine, pvc pipe is used because it is relatively low cost and is safe to use in water area because it cannot supply electricity. Black spikes are used because they are flexible and easy to get into the floor traps that are easy to bend without breaking them.

3.5 STUDY INSTRUMENTS.

In order to carry out this process, the project must be ensured in a state of affairs good and safe to test. The electrical wires that are on the appliance are necessary sure to be well connected with no leakage on the wires connected to an electric socket. Having ensured the machine is in a state of affairs which is safe, testing is started. The switch will be switched on for the moving device to function as desired. The tool is tested by recording a purification time taken by this pipeline to clean up the process manual purification. After examining the test, it proved the purification of the tool pipe cleaner is cleaner than manual purification because of a pipe cleaner is the most suitable to use and it takes the shortest time. In addition, that any damage or defect on the project should be viewed repeatedly and posted on a book or paper to do a repairing process suffered damage at the end of the research process.

3.6 DATA ANALYSIS METHOD

The analysis method used in this tool is through the testing of the experiments on the effectiveness of the tool and also the collection of feedback-related data target users against the specifications, advantages and disadvantages of the project. This analysis will be is implemented so that the project can be done perfectly.

3.7 CONCLUSION

Conclusions can be made in this chapter, after conducting a study for chapter three and get the knowledge and how to make the project more clearly, detailed and easy. This makes it easier to do the work for development project. The data that has been collected and analyzed are data that is very important in making this final project. These data are all collected through various kinds of examples by browsing the internet, reading some books relevant, in stores and through information from lecturers. This chapter also explaining the cost of materials, quantities, prices and the total amount provided for the completion of this project. The design study is helpful simplifies the process of determining how appropriate design and not it costs a lot and the material you want to use is easy to get. In addition, in this chapter it is also possible to know the specification of the material that is in markets and prices vary by types of shops. Factor Material selection is also very important in the production of this project. This is because of the election Unsuitable items will harm the resulting project. Failure in the appropriate selection also does not only bring harm to the project but it will also cost a lot more to buy new material as a result of damage caused by mistake selection of appropriate materials.

CHAPTER 4

FINDINGS

4.1 INTRODUCTION CHAPTER

Once all the data and information was obtained, the analysis was performed to see the effectiveness of Flexible Power Clean around the PSA toilet. The results obtained in this chapter are the results obtained from the questionnaire and experimentation conducted in the study area. The results of the experiments in the study area are analyzed in more detail to draw conclusions based on the stated objectives of the study.

The study was conducted based on the link (https://docs.google.com/forms/d/e/1FAIpQLScwZDTBlHcWjh1mSFrfllo3q3HJNOmoYeaTysLIwntEnD8dPg/viewform) that has been distributed to the polytechnic of Shah Nature and nearby.

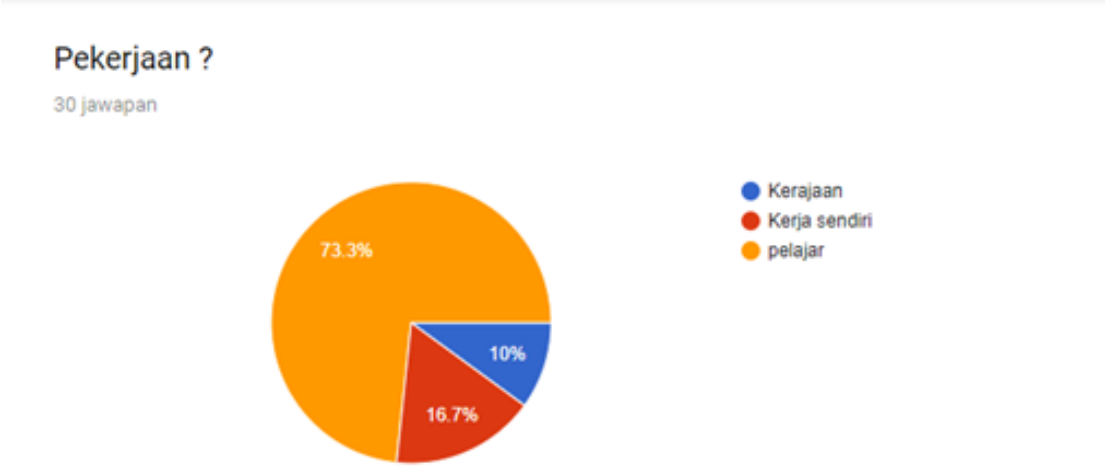
The link has some questions including

1) Respondent Demographics (jobs)

2) General view of the study

3) Respondents' perspectives on flexible power clean

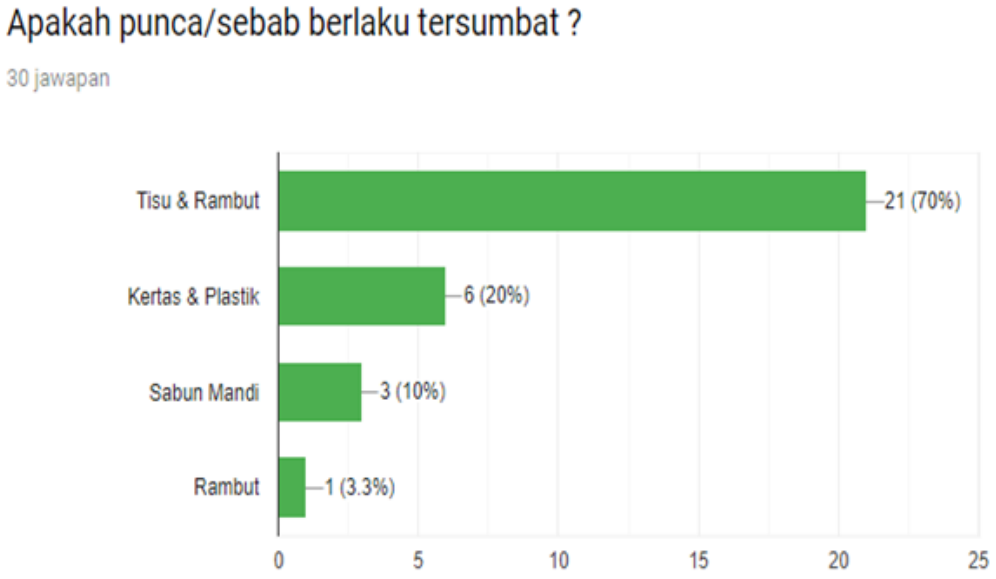
4.2 **RESPONSE RATE.**



Shows that 73.3% are from PSA students themselves, while 16.7% are from self-employed and 10% from the government sector. It is intended that students answer these questions more than their own work and government. The number of student respects indicates that they are more likely to use the toilet in the PSA environment.

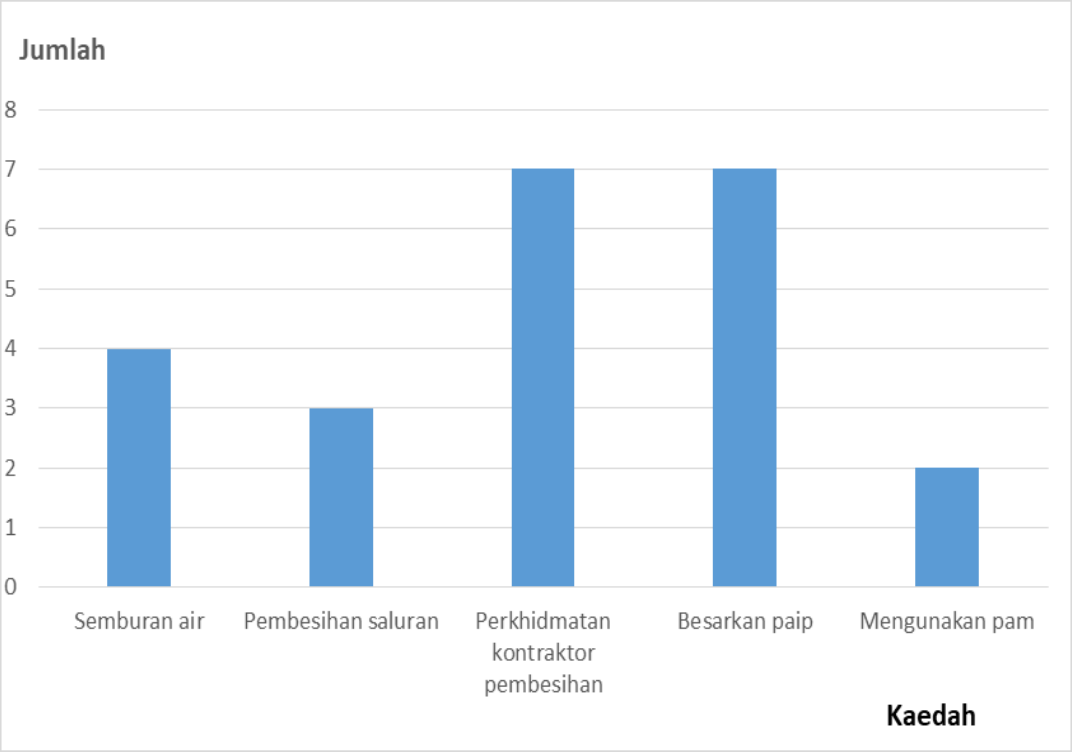
The next question we had was about the clogged pipe problem in the toilet area, and the answer to that question was 80% of YES who had experienced clogged pipe problems and only 20% answered NO. So here we can see that this clogged pipe problem is familiar to the local community in the PSA and surrounding areas.

Therefore, tools for launching clogged pipes should be introduced to the public so that the problem can be minimized and resolved quickly



From the results of this survey on the cause or cause of clogging, according to tissue & hair responders were the highest contributor to 70% blockage, which is why most floor traps in the toilet are often clogged by hair and tissue. The second is only 20% of paper and plastic since paper and plastic are rarely dumped into floor traps. While soap baths are only 10%, as most still use the bath during baths.

Kaedah mengatasi masalah paip tersumbat



This bar graph shows respondents' methods of solving clogged floor drainage problems. The method of service of the contractor for cleaning and extinguishing the pipe recorded the highest amount of 7 and the value of both methods was the same. The water spray recorded the second highest amount of 4. Next was the pipe cleaning method, which was 3 times. The method of pump use is the lowest in that there are only two ways respondents respond to the problem of clogged floor traps at home and food premises.

The pie chart shows the percentage based on the question 'Does existing tools help market?' In solving clogged floor drainage problems. The orange color of 66.7% represents No answer that proves that existing tools in the market are less helpful in solving the problem of floor trap drainage. However, there is also no doubt that respondents who claim that the existing tools sold in the market helped solve the problem by 33.3%.

The immediate question we were asking the respondents was about the cost of repairing the floor trap channel. Most stated that the cost of repairing the clogged channels was high, while 83.3% said the costs incurred were due to the complicated work done. Another 16.7% said the cost was low. So this question proves that the cost of launching a blocked channel is relatively high.

In this question, we ask about the time taken in the event of a heated floor trap. The lowest is 53.3%, which is over 3 hours, which indicates that the time taken for the pipe to return is well over 3 hours. Next is 26.7% which is over an hour, and 20% is over 24 hours. So the average is that it takes more than 3 hours to resolve the problem.

4.3 CONCLUSION

From the survey and survey of our respondents we have collected data and information to be used as data and data, so we can know the average of the problem of clogged floor traps in our study area in the hostel and residential. From that question we can also tell the average time it takes to solve a clogged pipe problem. Also, we can tell about the costs incurred if the outside contractor does the cleaning work.

CHAPTER 5

DISCUSSION AND SUMMARY

5.1 INTRODUCTION

The discussion is based on the findings of the research and some of the issues that arise and the discussion is brought together to provide an effective solution to all the issues discussed, a new alternative or a solution can be created to provide a solution to ensure that any issues that arise done well and smoothly.

5.2 DISCUSSION

The following is a discussion of the results obtained and the problems that have arisen during the research conducted on “Flexible Power Clean” and can be easily solved as consumers can use our products created in their daily use.

5.3 CONCLUSION

The objective of the Flexible Power Clean project was to achieve the initial goal of designing and building it for 10 months in research where this product could help users clean floor and drain trap in a shorter time. This product also saves users energy to clean impurities in floor traps. With this 'Flexible Power Clean', the cost can also be saved as a user needs to call the person responsible for cleaning if the floor trap is clogged or dirty. With our product, cost savings can be limited and users can do it themselves.

The production of a project must also include a number of steps before the project is completed. This step must be done carefully and efficiently in order to produce high quality and quality projects from various aspects such as durability.

Also, the cost required to produce this product is also not very high and reasonable. The test done by the respondents can also help them solve the problems they face in daily use.

The initial investigation is the first phase of the product development process. This phase involves the process of identifying problems faced by users from various points of view. This phase defines the objectives and scope of the study and examines areas related to this product. This phase is important to provide an overview of the product needs and the purpose of the product to be created.

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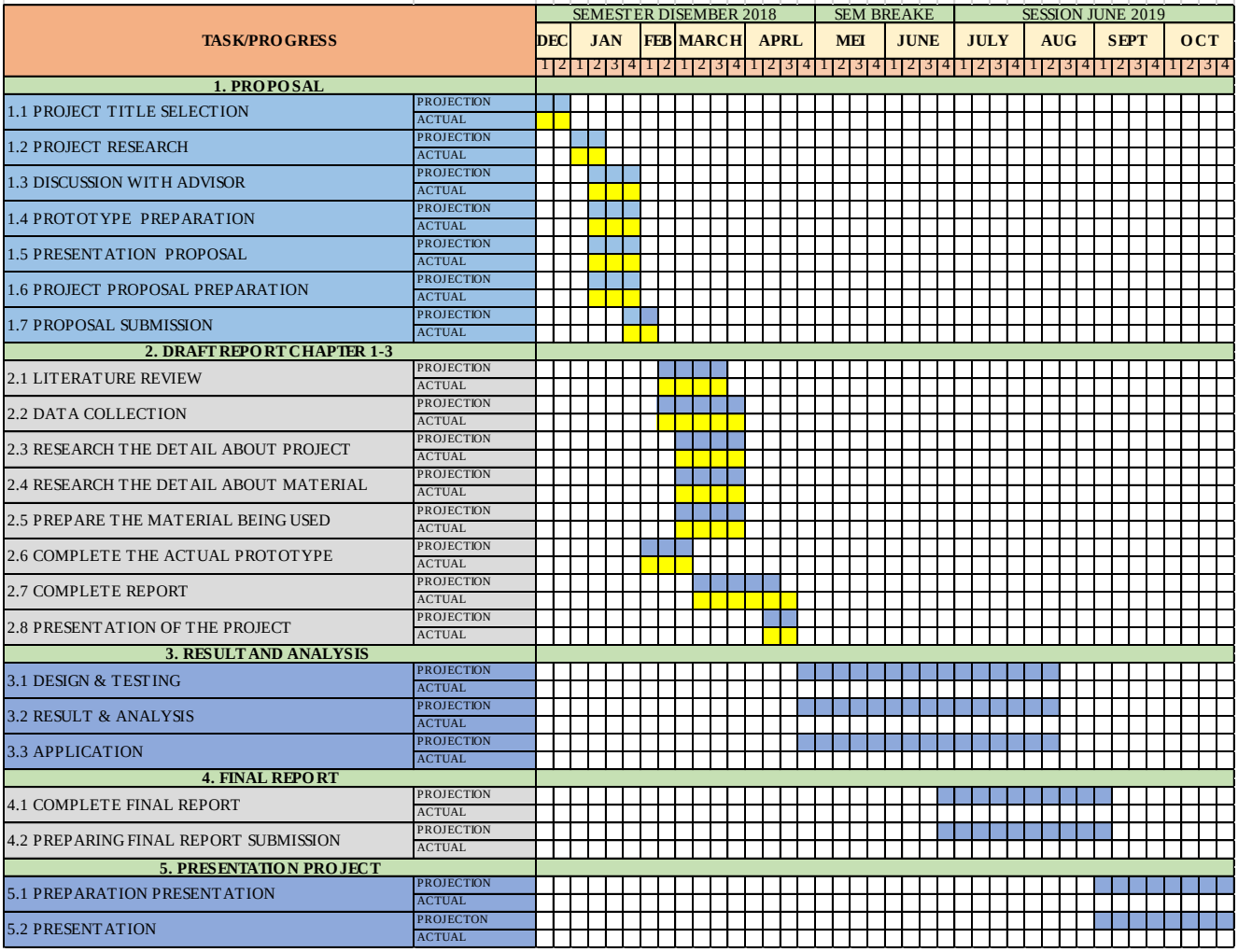
APPENDIX

GANTT CHART

1.5 PROJECT PLANNING SCHEDULE (GANT CHART)



The study was conducted at the JKA Polytechnic Shah Alam toilet.

Next we did a study on TTDI, Mayang Sari.

MATERIAL	QUANTITY	PRICE
DC motor generator (12v 3000++ rpm)	1	RM 40.00
Flexible pipe	1 meter	RM100
Battery enrgizer A23 (12)	2	RM 20.00
Connected wire	0.5 meter	RM 10
HANGBO Push Button	1	RM 20
Brush (plastic)	2	RM 20