POLITEKNIK MALAYSIA

SULTAN SALAHUDDIN ABDUL AZIZ SHAH

BATH WASTE FILTER (BWF)

NAMA	NO PENDAFTARAN
SITI NABILAH BINTI AZIZAN	08DPB17F1119
NURUL FADLIN SYAZWANI BINTI NORASMADI	08DPB17F1146
NUR FARZANA BINTI NAZRI	08DPB17F1158
NUR ANISA SYUHANIZ BINTI ABDUL IZHAM	08DPB17F1231

JABATAN KEJURUTERAAN AWAM

JUNE 2019

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

JABATAN KEJURUTERAAN AWAM

JUNE 2019

AKUAN KEASLIAN DAN HAK MILIK

TAJUK : BATH WASTE FILTER (BWF)

SESI : JUN 2019

1. Kami, **1. SITI NABILAH BINTI AZIZAN**
2. NURUL FADLIN SYAZWANI BINTI NORASMADI
3. NUR FARZANA BINTI NAZRI
4. NUR ANISA SYUHANIZ BINTI ABDUL IZHAM

adalah pelajar tahun akhir **Diploma Kejuruteraan Perkhidmatan Bangunan, Jabatan Kejuruteraan Awam, Politeknik Sultan Salahuddin Abdul Aziz Shah,** yang beralamat di **Persiaran Usahawan, Seksyen U1, 40150, Shah Alam, Selangor.**

2. Kami mengakui bahawa BATH WASTE FILTER (BWF) dan harta intelek yang ada didalamnya adalah hasil karya/ reka cipta asli kami tanpa mengambil atau meniru mana-mana harta intelek daripada pihak lain.

3. Kami bersetuju melepaskan pemilikan harta intelek BATH WASTE FILTER (BWF) kepada Politeknik Sultan Salahuddin Abdul Aziz Shah bagi memenuhi keperluan untuk penganugerahan **Diploma Perkhidmatan Bangunan** kepada kami.

Diperbuat dan dengan sebenar-benarnya diakui

oleh yang tersebut;

a)	SITI NABILAH BINTI AZIZAN (No. Kad Pengenalan: 990724-02-5306)	……. (SITI NABILAH BINTI AZIZAN)
b)	NURUL FADLIN SYAZWANI BINTI NORASMADI (No. Kad Pengenalan: 990529-06-5548)	……. (NURUL FADLIN SYZAWANI BINTI NORASMADI)
c)	NUR FARZANA BINTI NAZRI (No. Kad Pengenalan: 990409-02-5146)	…… (NUR FARZANA BINTI NAZRI)
d)	NUR ANISA SYUHANIZ BINTI ABDUL IZHAM (No. Kad Pengenalan: 990118-06-5500)	……. (NUR ANISA SYUHANIZ BINTI ABDUL IZHAM)

di Politeknik Sultan Salahuddin Abdul Aziz Shah, pada ……..

Di hadapan saya,	SARAH AFZAN BINTI ABD KARIM (820904-06-5696)	…….. (SARAH AFZAN BINTI ABD KARIM)

sebagai penyelia projek pada tarikh:……

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TTDI	Taman Tun Doktor Ismail
BWF	Bath Waste Filter

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 Awam sesi Jun 2019. Sekalung penghargaan kami ucapkan kepada semua pihak yang terlibat secara langsung mahupun tidak langsung terutamanya penyelia kami Puan Sarah Afzan Binti Abd Karim yang telah banyak memberi segala tunjuk ajar, nasihat, dorongan serta kritikan membina kepada kami sehinggakan kami berjaya menyiapkan laporan projek akhir ini. Tidak lupa juga kepada rakan-rakan dan ahli keluarga yang banyak membantu dari segi pandangan dan kewangan dalam menyiapkan tugasan projek akhir 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.

ABSTRAK

Kebanyakkan pengguna bilik mandi mengalami masalah bilik mandi yang bertakung kerana perangkap lantai seringkali tersumbat oleh sisa buangan (rambut, partikel sampah kecil) yang menyebabkan laluan perangkap lantai menjadi sempit. Keadaan akan menjadi lebih rumit apabila melibatkan rumah kediaman jenis kondominium / apartment / flat di mana sekiranya laluan perangkap lantai tersumbat, jadi penyelenggaraan laluan air perlu melibatkan unit rumah di bawah. Objektif utama kajian ini ialah untuk mereka bentuk satu perangkap sampah bagi memerangkap sisa buangan (rambut, partikel sampah kecil) yang melalui perangkap lantai di bilik air dan mengenalpasti kos penjimatan yang boleh diperolehi dalam menyenggara perangkap lantai di bilik air tersebut. Skop kajian ini meliputi pada keberkesanan penyenggaraan serta kaedah soal selidik yang dilakukan bagi memastikan perangkap sampah yang dibina mengikut kriteria yang ditetapkan iaitu praktikal serta berkesan. Kajian ini juga merangkumi kajian literatur, penggumpulan maklumat dari soal selidik, lawatan ke lokasi kajian, penganalisaan maklumat yang diperolehi dan akhir sekali penulisan laporan kajian. Hasil daripada rekabentuk tersebut, ianya dapat berfungsi untuk menjaga bilik mandi daripada bertakung. Berdasarkan keputusan yang diperolehi, rambut dan partikel sampah kecil banyak tersumbat di perangkap lantai. Proses pembersihan perangkap sampah ini didapati dilakukan selepas 3 minggu atau mengikut kehendak pengguna bagi mengelakkan berlakunya kepadatan sampah sarap. Secara keseluruhannya, perangkap sampah Bath Waste Filter (BWF) ini berupaya memerangkap sampah dalam kuantiti yang banyak.

ABSTRACT

Most bathroom users experience stagnant bathroom problems due to traps, floors are often clogged by waste (hair, small particles of debris) that causing the floor trap path to narrow. Things will get more complicated when it comes to residential such as condominium/ apartment/ flat if the floor trap path is blocked, so maintenance of the waterway should involve the house unit below. The main objective of this study was to design a trap waste (hair, small particles of waste) through the floor traps in the bathroom and identify the cost savings that can be obtained by trapping the floor traps in the bathroom. The scope of this the product is designed to female bathroom in Blok Damai (KAMSIS), Female house at Apartment Perdana and male house at terrace house TTDI Jaya. The study also includes literature reviews, information gathering from investigators, visits to study sites, analysis of information obtained and finally the writing of the research report. As a result of the design, it works to keep the bathroom from stagnating. Based on the results obtained, the hair and particles of small waste were clogged in the trap. This process of cleaning up the waste trap is done after 3 weeks or according to the user's wishes. In general, this Bath Waste Filter (BWF) can trap large quantities of waste.

Keywords — Bathroom, Floor trap, Waste, Residential, Questionnaire, Literature Reviews

PRODUCT DESCRIPTION

A Bath Waste Filter is a plumbing fixture that is installed in the floor of a structure, mainly designed to remove any standing water near it. They are usually round but can also rectangular or square. They usually range from 2 to 12 inches (5.1 to 30.5 cm); most are 4 inches (10cm) in diameter. The size of these Bath Waste Filter is 180mm height x 68mm diameter. They have gratings that are made of metal or plastic. The material that we are using for this product is stainless steel and stainless-steel floor grating.

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

When the floor trap is clogged, the water will be slow to drain directly into the drain pipe. The water flow will take a while longer than usual. This stuck water problem will produce an unpleasant odour. This small problem can make us face the bigger problem of clogged water drainage. These problems need to be addressed immediately otherwise, you may be faced with other problems such as breaking the pipe or dealing with a bathroom that cannot function properly.

1.2 BACKGROUND OF THE PROJECT

Most toilet users are currently experiencing stagnant bathroom problems because floor traps are often clogged by waste (hair, dust, small waste particles) causing the floor trap path to be narrow. This will be more complicated when it involves condominium / apartment / flat type dwelling where the floor trap is block, so the waterway maintenance should involve the housing unit below.

Therefore, through our discussions and observations we have an idea of creating this innovative product in order to help toilet users to carry out floor trash cleaning work easily. This is because toilet users can reduce the workforce because of its easy to wash Bath Waste Filter (BWF).

1.3 PROBLEM STATEMENT

Many wastes are clogged in the floor trap pipes that cause stagnant and dirty bathroom floors, which cause difficulties for the users to wash dirt thrown into the floor traps. Most users simply leave or remove dirt or trash into the floor traps.

1.4 OBJECTIVE OF THE PROJECT

We decided to design a waste trap, which works to trap waste through the floor trap in the bathroom and identify the cost savings that can be obtained in maintaining the floor trap in the bathroom.

1.5 SCOPE OF THE PROJECT

This product is designed to female bathroom in Blok Damai (KAMSIS), Female house at Apartment Perdana and male house at terrace house TTDI Jaya.

1.6 IMPORTANCE OF THE PROJECT

This product is important and useful to all bathroom users in the to facilitate the maintenance of pipes to the bathroom users. This can reduce the problem of stagnant and clogged flooring that often occurs and keep clean in the bathroom so that no health problems occur to the dorm users. This also creates a clean bathroom atmosphere.

1.7 DEFINITION/TERMS

Floor trap – A plumbing fixture that is installed in the floor of a structure, mainly designed to remove any standing water near it.

Clogged – Blocked with an accumulation of wet matter

Odour – A distinctive smell

Drain – Cause the water or other liquid to run out

Stagnant – Having no flow and often having an unpleasant smell as a consequence

Waterway – Route for travel by water

Dwelling – Place of residence

Workforce – The people engaged in or available for work

Dormitory – A large bedroom for several people in an institution

1.8 SUMMARY

What we can summarize in this project is that we have acquired a lot of knowledge about clogged floor trap, so in this project we have done the result of our research and surveys. It is important for a project to conduct research and surveys before starting the project. This is to know whether the project is being implemented to benefit the users of the toilets.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Literature research is a study based on true theories and applies in areas related to research such as journals, articles, books and newspaper studies. Therefore, in this chapter several theories related to this study such as floor trap system. When the floor trap is clogged, the water will be slow to drain directly into the drainpipe. The water flow will take a while longer than usual. This stuck water problem will produce an unpleasant odour. This small problem can actually make us face the bigger problem of clogged water drainage. These problems need to be addressed immediately otherwise, you may be faced with other problems such as breaking the pipe or dealing with a bathroom that cannot function properly.

Producing a literature review may also be part of graduate and post-graduate student work, including in the preparation of a thesis, dissertation, or a journal article. Literature reviews are also common in a research proposal or prospectus (the document that is approved before a student formally begins a dissertation or thesis).

ca2.2 CONCEPT/THEORY

Traps are an important component of a plumbing system. They prevent ingress of foul air, insects and vermin from the sewers into the building and resist the spread of disease. Traps are constructed, so that they retain a body of water, which acts as a water seal. Traps should be of the self-cleansing type. They should generate enough velocity from the available flow to have a self-cleansing effect, a smooth finish and a full uniform bore. Foul gasses produced in the sewers, drains, waste pipes may cause a nuisance by entering in houses through house-connecting pipes if some suitable devices do not check their passage. The appurtenances, which are used to stop entering of foul gasses inside the houses, are known as traps. Floor is provided to prevent the foul gasses entering into the building by providing the water seal. Minimum 50 mm depth of water seal should be provided. Whether waste water is flowing or not, floor trap prevents the foul gases (bad smells) to enter in to the building. To collect waste water from the bathroom, wash area, washbasin, kitchen sinks etc., floor trap is provided into the floor. Floor traps are available in PVC, UPVC and CI. They are without vent pipe, but removable grating is provided at the top of traps. Floor traps come in a variety of shapes, sizes and outlet conditions. Many do not have a water seal at all and have a non-uniform and rough bore. Floor traps are a source of major leakages due to their poor design, casting and poor quality. It is prevented by using only deep seal P traps with multi-inlet fitting/traps with connections from washbasins and other fitting to provide a positive joint. Traps installed in the areas not in normal use may lose their water seal due to evaporation.

Provision must be made to renew the seal by adding water periodically and this can be done by connecting a waste appliance to the trap (e.g. a washbasin, etc.). Replenishment is also achieved by installing a sophisticated water supply valve with a back-flow prevention device that is connected to the trap. Care has to be taken to prevent installation of traps that are exposed to freezing conditions. The length of floor trap is 310 mm, with minimum 80 mm diameter at the inlet end, 30 mm diameter near outlet end and 73 mm diameter outside the outlet of floor trap. In addition, 95 mm grating size provided at the top of floor trap with 8 mm diameter holes.

2.3 PREVIOUS REASEARCH

The study conducted by Reuben Saltzman (2018) is related to floor traps. The related thing is the smell of the trap. In cases where this unpleasant smell is, often the problem can be attributed to what is caused by user abuse, but in many cases the smell is due to the lack of trap seals in the floor trap. We all know that public utilities are not always well maintained, but with proper maintenance and primary use of traps, waterways and other floors need not be the source of unfair and unpleasant conditions. The main purpose of the trap is to eliminate the possibility of exhaust gas from entering the space or building. The water seal, or seal trap, effectively resolves it by creating a barrier between two to four inches of water that prevents the sewer gas from entering the room. Secondary benefits are that it prevents the access of pests to trenches, as well as access to buildings through equipment by the sewer system. Traps on the floor drain that are not connected to water supply resistance will tend to evaporate. Other traps that are not used regularly or installed in too dry areas will also lose their seals with easy evaporation. The result of this loss enables the health hazards of life. Vikas Kamble and Dr. G. A. Hinge (2017) conducted a study to

determine alternative economics for bottle traps. Bottle trap is an essential element in sanitary piping system. It is installed under a dishwasher or kitchen sink to remove the inclusion of coarse waste material into the drainage system and causes the incidence of rotten gas from the drain into the house. The objective of this research is to design innovative, efficient and economical hydraulic bottle traps to overcome the problem of leakage of trap seals due to evaporation to prevent pipe obstruction between floor traps in the bathroom. It traps the smell of odours, gases and pests that can cause harm to our health. The waste water flows from the washbasin to the bottle trap, forces the existing water in it to drain out into the drain, and replaced by the existing water. Therefore, the seal trap always remains with a certain amount of water. Bottle traps can be cleaned easily, simply by opening the bottom of the main body and washing. Then screw the bottom back into place. Bottle traps can be found on the market in various materials such as chromium coated, steel, copper, PVC and so on. Bottle trap should have enough water seal all the time. It must be non-absorbent material. The internal and external surfaces of the bottle trap should be seamlessly completed so that the dirt and others are not attached to it. Bottle traps are suitable for all types of piping systems such as single pipe system, double pipe system, single system & one stack semi-ventilation system. It is preferred because it has a natural depth of 15mm in its shape. Evaporation test is carried out to check whether new designed bottle traps are effective against existing old bottle traps in terms of loss of trap seal due to evaporation. For smooth water flows through the bottle trap without many obstacles caused by dirt, should wash and rinse the bottle trap after at least 15 days. Therefore, an efficient hydraulic bottle trap model is made to overcome the problem of losing the seal trap due to evaporation & to prevent the choke of the pipe. The discharge after every 7 days interval shows a certain amount of

dirt assembled or attached to the bottle trap. So, finally concluded to wash and rinse the bottle trap from the bottom after at least 15 days. This will prevent the blockage of any drainage system components.

Tony Marcello (2015) conducted a study on tap traps. The water in the trap is the one that prevents the sewer from entering the building. The traps on the floor drains are located beneath the surface of the floor. Home inspectors often look for floor drains and other plumbing fixtures in the basement that have never flowed water, so the water in the trap eventually dries up and allows the smell of stench gas, into the house. Therefore, pipe fixtures are always listed as hazardous or necessary repairs. If the floor drain does not have water flowing there regularly, the water in the trap will dry up. Trash trap is designed based on the suitability of the channel and the purpose of its use. The trash can also vary in size, density and physical properties. Therefore, garbage traps also have different types and features. Trash trap consists of two main groups of manual and mechanical types. It is categorized based on how the traps are managed. Trash trap is a water treatment system that is used to improve the quality of clean water through the channel system. In particular, the function of this trash trap is as it can prevents the drainage system from being clogged, avoid flooding or overflowing and reduce pollution. Trash trap is a tool that is used to withstand

large waste from polluting the channel system. In general, garbage traps will contain large waste materials. Waste materials that are too small such as bacteria cannot be detained by trash. However, indirectly some of these substances will be stacked together with large sized waste and this will prevent it from continuing to flow. There are several criteria for designing a garbage trap system. The purpose of this criterion is to get maximum effect on the effectiveness of this trash trap system. Among the criteria required are areas with small and slow flow rates require a small-scale garbage structure compared to areas with large flow rates. Two water conditions need to be emphasized in the design of trash trap i.e. normal and critical condition. Normal condition is the condition where the water will flow to normal flow while the critical condition is the water flow condition when it reaches maximum speed. Flowing water in low flow does not carry waste capacity and vice versa. Typically, water will carry waste capacity after the rainy season. Each garbage trap is designed in critical water conditions to ensure that the traps are capable of accommodating the maximum load. Next is maintenance of traps built is necessary so that it can function properly. Therefore, during the design process, the maintenance aspects of the trap should be considered whether it is convenient and secure to be maintained. Maintenance work for small size garbage traps may be easier than maintenance work for large-scale traps. In addition, estimates of waste quantities are needed to design waste traps so that traps can accommodate the quantity of waste that will come in. The built-in traps are considered to be well functioned if the quantity of waste collected is large and does not prevent the flow of water. Marek Telejko and Dorota Koruba (2019) do research about Microclimate in Bathrooms of Multi-Family Buildings and the analyses of the obtained test results clearly showed that in all the bathrooms under study, the variability amplitude of the measured microclimate parameters had the

same character. On the days when the bathrooms were used, the RH level fluctuated continually, with an upward trend of this parameter observed in the daytime. At night, the relative humidity decreased gradually to reach the minimum values in the early morning hours. During bathing, taking a shower or drying the laundry in the bathrooms, the level of relative humidity increased rapidly to the maximum values, and then began to drop to the initial values. The time needed to arrive at the initial value depended on the type of activity. The longest time was recorded during laundry drying, while the shortest time was observed in the case of taking a shower.

Lee Clifton (2011) state the principle of circuit venting is that the flow of drainage never exceeds a half-full flow condition. The air for venting the fixtures circulates in the top half of the horizontal branch drainpipe. The flow velocity in the horizontal branch is slow and non-turbulent, thereby preventing pressure differentials from affecting the connecting fixtures. The circuit-vented fixtures must connect to the circuit-vented branch in the horizontal plane to limit the amount of turbulence created by fixture discharge. The circuit venting method is similar to wet venting except that it allows you to combine eight fixtures on a single floor, not limited to two-bathroom groups. However, it might be easier to explain by examining how circuit venting differs from wet venting. The fixture drains shall connect horizontally to the horizontal branch being circuit vented. Again, the fixture drains are limited in length. Because circuit venting is only to be used on horizontal applications, as opposed to wet venting, which can be used in both horizontal and vertical installations, the maximum slope for a circuit vent is one unit in 12 units horizontally, or an 8 percent slope. The entire length of the circuit vent portion of the horizontal branch shall be sized for the total drainage discharge to the branch there is not a unique sizing table for circuit venting as there is for wet venting or common venting. The circuit vent

connection must be located between the two uppermost fixture drains and shall connect to the horizontal branch. It cannot serve as a drain for other fixtures; it is truly a dry vent. Where a circuit vent consists of four or more water closets and discharges into a drainage stack that also receives the discharge of upper horizontal branches, a relief vent shall be connected to the horizontal branch ahead of the connection to the drainage stack and after the downstream fixture drain of the circuit vent. Additional fixture drains may be connected with the circuit vented branch, but they need to be vented by means other than the circuit vent. Also, the fixture unit values would be added to the total fixture unit discharge into the horizontal branch. Such fixtures must be located on the same floor as the circuit vent to which they connect. Where the relief vent receives the discharge of other fixtures, the maximum discharge allowed is drainage fixture units.

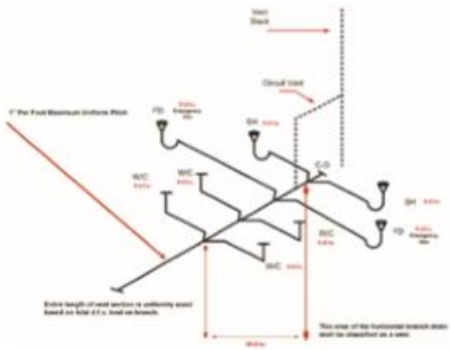


Figure 1 Sizing a circuit venting system

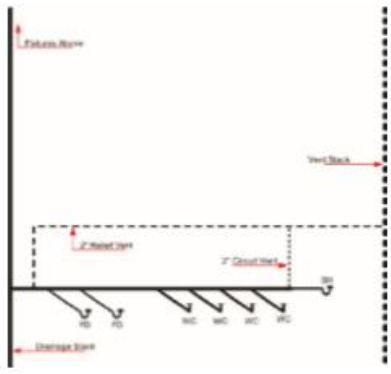


Figure 2 Circuit vent with relief vent connection

Floor drain trap and strainer. A floor drain shall be considered a plumbing fixture and shall be provided with a trap seal and are movable strainer. The open area of the strainer shall be at least equal to the cross-section area of the drain line to which it connects. Basement floor drains or floor drains installed in floors which are laid directly on the ground shall be provided with either an integral trap constructed with a spigot outlet or a "P" trap of cast iron or other approved materials compatible with the drainage pipe with a spigot outlet and provisions for a caulked connection to the drain body. A vacuum breaker shall be installed on the water supply to flush rim floor drains. Provision for evaporation. Where floor drains are subject to evaporation, they shall be of the deep seal type, with a minimum water seal of three inches and may be provided with a water supply through an air gap, from a plumbing fixture, automatic priming device, or other approved means, to maintain the minimum water seal. Venting of floor drains. Floor drain fixture branches that are less than 25 feet in length and connect to a vented Mainor branch do not require an individual vent. The following shall be vented in accordance with parts floor drains receiving liquid waste flows that could siphon the trap seal; trench drains and floor sinks used as a receptor; and floor drains used for shower drains, recessed slop, or similar receptors. Garage and parking area floor drains. Floor area drains in open parking areas, including open areas of parking ramps, must discharge to the storm sewer if available. Floor drains in parking areas which are enclosed, and floor drains in areas open or enclosed which are used for maintenance or as a vehicle wash bay, must discharge to the sanitary sewer if a municipal sewer is available. Oil and flammable liquid separators must be provided if required by part. S.C.Chung, Cheng-Li Cheng, Wan-Ju Liao and S.Y. Chen (2012) According to the existing research point out the bathtub. In order to assure the performance of the bathtub with full water and bubble to test drainage load

in drain. The result depth and the bubble has not back-flow. Besides, the trap installation will use a test tower as well as the performance of the new style trap depletion by centralizes water supply design. Besides, this device filter impurities which can help us maintain drainage system. According to the existing research point out, the max flow rate of sanitary equipment is order to assure the performance of the new style trap, we use all water and bubble to test the performance of trap seal result shows that the new style trap has the steady blew has not back-flow in low-rise building the installation and cleaning is more easily. In the future, this research well as an existing building (around 40-meters high) of the new style trap in high-rise building. Besides, this device drainage system more, the max flow rate of sanitary equipment is we used the seal when full steady seal water to confirm. The major function of the building drainage system is to ensure proper operation and to keep a clean and health interior space for human's life. Therefore, there usually exists an interior health problem from trap seal depletion in general building Trap in drainage systems acts as an integral part of a hygiene system in high-rise residential building and provide an essential component in order to minimize the possible infection risk due to the transmission of contaminants from the drainage system. Generally, a drain trap is constructed with a minimum depth of 50mm seal water. Inappropriate design of the drainage system within existing buildings can cause some sanitary problems including air transient caused by discharges in the drainage stack and trap seal depletion. Building drainage system is one of the most essential facilities in building service engineering. The importance of building drainage system, which is a humble but very substantial issue, must not be ignored. However, Inappropriate design of the drainage system within existing buildings can result in some sanitary problems including air transient caused by discharges in the drainage stack and trap seal

depletion. Therefore, the fundamental requirement of a building drainage system is to carry away sanitary appliance drainage and preventing foul odours into the habitable space from drainage network, which is important for the healthiness and comfort of living environment. Trap seal water in a drainage system acts as an integral part of a hygiene system in existing residential buildings and provides an essential component in order to minimize the possible infection risk due to the transmission of contaminants and to safeguard occupied space from stench and vermin from the drainage network. Therefore, the building Technical regulations require that all sanitary equipment must install the trap. Sakaue K, Fujimura K (2017) Seal water in trap plays a crucial role in preventing foul-smelling toxic gas in drainage pipes from entering indoors. Induced siphonage is the most important of the phenomena associated with seal break and seal loss. This phenomenon occurs when seal water level changes rapidly in response to air pressure fluctuations in drain and gets lost. Though there have been several studies on numeric analyses and motion equations of seal water fluctuation, none of them addressed the issue of seal water fluctuation analysis in response to air pressure fluctuation in drain. Water is used in several ways in buildings. Its main use involves appliances for water usage such as sanitary fixtures. Water, together with wastes, is discharged through drainage pipe into the sewer or septic tanks. The drainage pipe is usually filled with foul-smelling toxic drainage gas and if such gas enters indoors through drain outlets of sanitary fixture, it may contaminate air and cause health damage. In order to prevent this from happening, fixture drainage pipes are equipped with traps, which contain seal water. Seal water plays an important role to stop drainage gas from entering the room. However, seal water may be lost for many reasons leading to a condition called seal break. Induced siphonage is one of the most important seal break phenomena. In

induced siphonage, air pressure inside drainage pipe fluctuates when discharge is made, and seal water also starts to fluctuate in response to pressure fluctuation precipitating seal loss and seal break. To prevent seal break due to this phenomenon, various precautions such as an addition of vent pipes and the use of appropriate diameter pips are stipulated in the design method. The design method is based on a proportional relation that regards the causal relationship of discharge flow rate and air pressure fluctuations to seal loss as a static phenomenon. Floor drains can mix many sources of waste, including wash water, used oil, chemicals, and sediments into a single difficult-to-manage semi-liquid stream. Many floor drain systems include trenches, also known as a sediment trap, and use an oil/water separator, also known as a flammable trap, to segregate these wastes. Dewatering it into your floor drain system and then disposing of the solids as an industrial solid waste. Do not dewater sludge on the ground. Do not use sludge as fill on your site or spread it on the ground. If managing it as a solid waste, place it into your solid waste collection container. Daniel W.T. Chan and T.C. Liu, Eric S.W. Wong (2003) Floor traps in the bathrooms and kitchens are short falls in keeping them filled up because people now only mop floors for cleaning rather than wet it. More often, floor traps are left dry when the occupants take a week-long vacation. It reduces the risk of contaminated air flow from drainage stacks into indoor spaces if the floor drains can hold water for a longer drying period without increasing the currently adopted size of the drain in practice. This paper describes a new design of floor traps which increases the drying period. This paper also describes the design of a test rig which facilitates the test of floor traps for its drying up performance. Buildings absorb heat and convent to floor slab and wall. When air-conditioning adjusts cooler temperature inside the flat, it causes high temperature difference inside and outside the building. Floor traps being heated

outside have a higher evaporation rate and are easy to get dry. Many people aware about the height of water seal which is decreased by excess air pressure inside the drainage stack. The deep-water seal is recognized as 70 mm and the minimum is 50mm. However, many people ignore floor trap which can be dried because of evaporation. Smart trap is a bell type floor trap. The most significant difference with the above mentioned one is that it has larger buffer space to recover the loss of evaporation. Safety of floor trap not only depends on the height of water seal. It considers the contact surface of water to atmosphere. An innovated design of minor consumed trap. When the floor traps are placed outdoor, they suffer higher wind speed at surface of inlet. Temperature at the inlet is higher than the surface of water seal. Good design of floor traps benefits the health of our living environment. Smart trap provides a new concept of 2 tier water seals. Two water seals are not standalone and have different sizes. Front water seal contacts the outside atmosphere and suffer from various conditions (e.g. wind speed, temperature difference). The back-water seal is larger than the front so that it can back up the loss in the front water seal. A new concern for water trap is water retention period apart from the height of water seal. Maintaining a trap seal can be accomplished by periodic automatic replenishment of the water in a trap. Depending upon the floor drain size and location manual replenishment is allowed only in limited residential single-family applications. Consider the manual replenishment is not considered acceptable where floor drain traps are inaccessible for manual replenishment (residential applications only) after the installation of equipment or appliances.

Investigation and case study of floor trap:

• In recent years, due to the improvement of building technology and upgrade quality of the life, the function of building not only provide a shelter for external climate but

also must satisfy all demands for daily life. As we know, the construction needs to combine with the equipment system effectively in the building which can offer the convenience and comfort. Therefore, this research is focused on the new style trap developing and confirms the performance of this new style trap through investigation and experiment. To compares the drainage performance between the different kinds of the trap.

According to investigate result point out, the new style trap has been used in new buildings since 2006. Designer must take into account overall drainage system design for the new style seal trap in design stages. So, the new style tarp mostly used in new buildings which cases is no more than 10 years and concentrated.

(1)S.C.Chung, (2) C.L. Cheng, Dr. (3) W.J.Liao, Dr (4) S.Y. Chen, Mr. (2012)

The floor trap:

• A debris trap for a floor drain includes a rim defining an outer diameter, an inner diameter, and a radial centre. A plurality of prongs is integrally formed with the rim and spaced along at least part of the inner diameter. At least some of the prongs are arranged to extend order an inlet of a drain body and have approximal portion connected to the rim and extend ingradilly inward from the rim, and a fredistal portion that is only upwardly curved from the proximal portion toward the radial centre of the rim.

Lawrence G. Meyers (2018)

Trap device and piping system:

• Figure 1 shows the plumbing drainage design for toilet which was usually adopts “one sanitary with one trap”. If the sanitary equipment not be used about 4-5 days, it

will cause the seal depletion and the sewage odour into the interior environment through the drain. Figure 2 shows the new plumbing drainage design for the new style trap in toilet. All sanitary equipment which is used only one new style trap in a toilet.

And this device adopted centralizes water supply mechanism by collect the sewage from all sanitary equipment for improve the seal depletion problem. This device has steady seal water and simple drainage system design. If needs to install the new style trap, it must increase the thickness of floor and this device shall be installed among the floor or exposure pipe design which can let us maintain drainage system more easily. The overall drainage system design is simpler as shows in figure 3. It can reduce the waste plumbing materials and complicated drainage system.

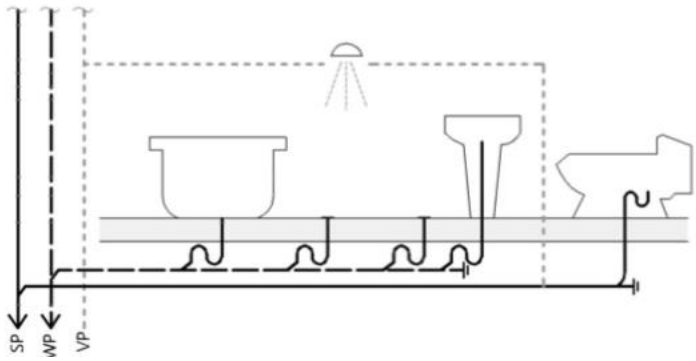


Figure 1

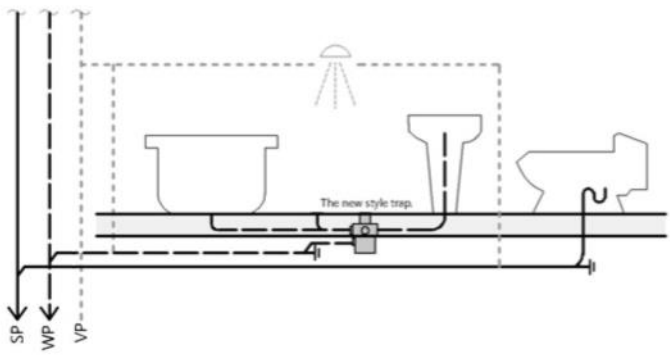


Figure 2

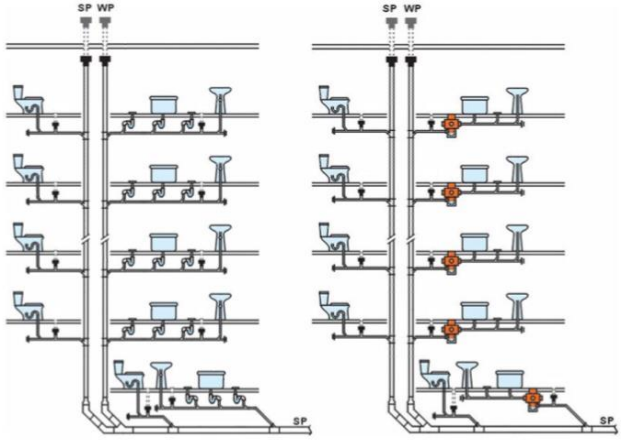


Figure 3

Structure and construction:

• There are four installed type in new style trap which can accord the user needs to select the construction method. Designer must consider overall drainage system design for the new style trap in design stages.

First, the construction of the embedded type which is must increase the thickness of floor and the new style trap shall be installed among the floor as shows in figure 4. On the other hand, if the trap breakdown or water-tightness reduced, it will be difficult to find drainage system problem and maintain as shown in the Figure 4.

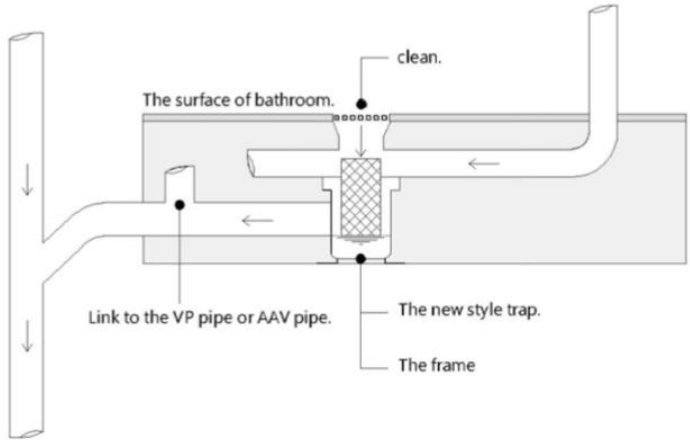


Figure 4

Second, this type adopts the double-floor and the trap shall be installed above the second floor as shows in figure 5. The second floor can be as partition for the householder in one story below. So, in order to assure the performance of drainage system, person can open floor drain cover to make routine maintenance which cannot affect the residents in one story below. It's more suitable for householder with high indoor environmental quality space and more frequent interior design updates.

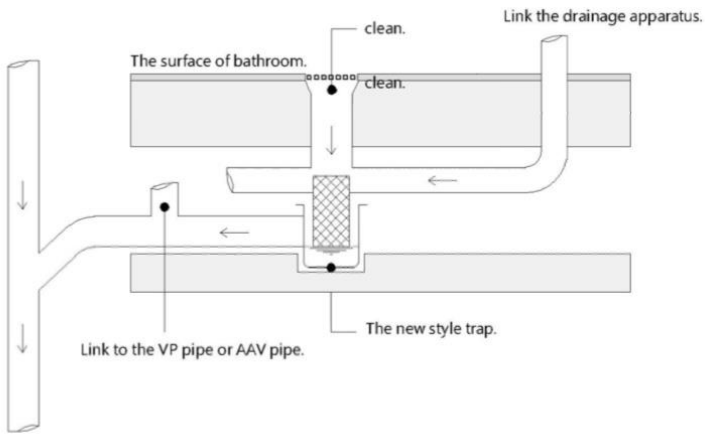


Figure 5

According to the existing research point out, some country often adopts exposure pipe design which can easily find drainage system problem and maintain. In this construction method, it adopts the suspended type as shows in Figure 6. The new style trap shall be installed under the floor. But limited in residential floor height in Taiwan, the exposure pipe which would affect use of interior space; lead to the interior space is uncomfortable. It's more suitable for the space with enough the indoor height, such as office building or department store. Finally, figure 7 shows the half-buried type. The plumbing design is similar with the suspended type. The half part of trap shall be installed among the floor. It's more suitable for residence house use.

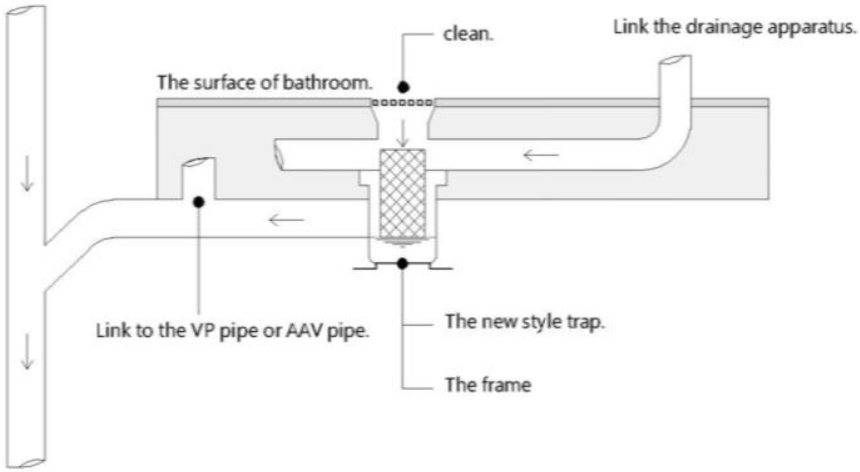


Figure 6

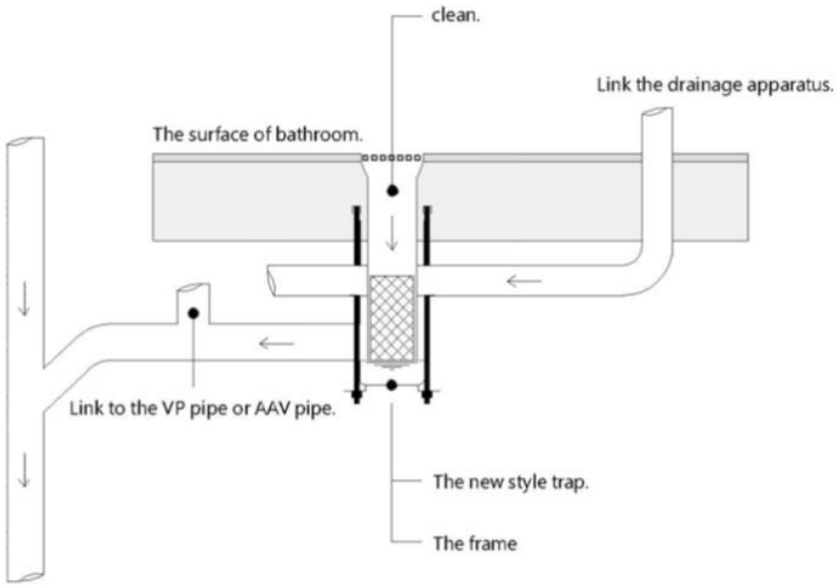


Figure 7

(1)S.C.Chung, (2) C.L. Cheng, Dr. (3) W.J.Liao, Dr (4) S.Y. Chen, Mr. (2012)

Method and apparatus for installing floor drain:

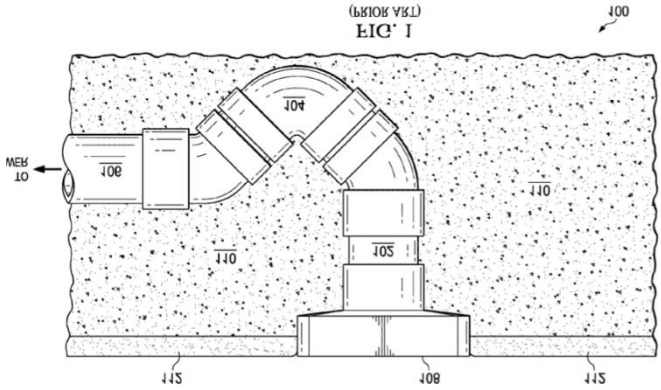
• Most homes use basic systems for plumbing and drain systems. A main water line usually comes into a home through its foundation. From this location, the waterline may run to a water heater, which generate hot water.

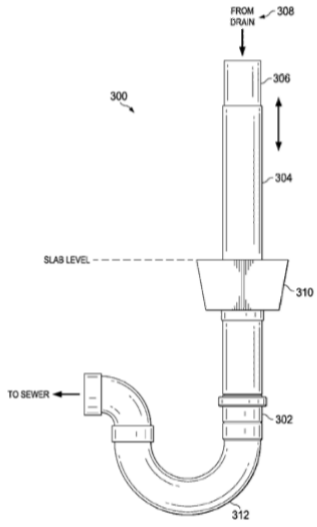
A plumbing drain trap is a shaped pipe located below or within a plumbing fixture. Such as a toilet, a sink, or ab-shower drain. A trap can be a U-, S-, or J-shaped trap, although U- and J-shaped traps are the most common traps used today. The various shapes are each named for the bends in the traps, which are used to prevent sewer gases from entering buildings through drain pipes. The bends in the traps are shaped to retain a small amount of water after use of the fixture. The water in the trap creates a seal that prevents sewer gases from passing from the drain pipe back into the building.

However, known plumbing traps have certain disadvantages. Many installations require shallow traps in order to fit against a concrete floor, whether that concrete florison a first floor or a basement floor, or for a second storey installation. In the United States, basement floors are typically concrete floors so a shallow trap must be used for basement drain fixtures. The height of a traps measured from the bottom of a trap arm at an outlet to the top of the trap dip, also known as the crown weir. A standard trap height maybe 50mm, for example, but a shallow trap may only have a trap height of 15mm, for example. When a shallow trap is used, however, the amount of water in the trap is decreased compared to the amount in a regular trap, and regular evaporation of water in the trap may cause the water seal to be broken more quickly, thereby allowing sewer odours and gases to enter into the building.

• Further, installing floor drains can be difficult because more than one professional typically involved in the installation process. In a standard installation, a plumber will install the Sub-floor plumbing components and then leave a drain pipe extending above an estimated floor height that will extend to a desired fixture. Then, a flooring specialist will finish the flooring above the sub-floor plumbing. Concrete is often poured around the drain pipe and then a finish flooring surface is installed above the concrete. Once the concrete is poured, however, it is difficult, if not impossible, to remove the drain pipe to cut it to the proper height. In order to cut the drain pipe below the flooring surface after the concrete is poured, the flooring specialist must chisel the cement around the drain pipe so that there is enough clearance for tools to cut the drain pipe below the flooring surface. But if the drain pipe is cut before the concrete is poured, it is difficult to determine the desired length of the drain pipe necessary to make the floor drains it flush on the finished flooring surface. Thus, an

improved method for installing a floor drain to the correct height above a flooring slab and a plumbing trap is desired.



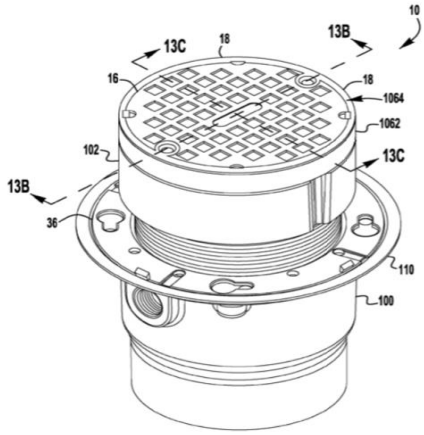


Eduard Coronado,NuevoLeon (MX); JavierCanales,Monterrey

(MX):PedroGonzalcz,Monterrey HumbertoFlores-Villarreal (6 APRIL 2017)

Floor drain assembly and method:

•The present application discloses exemplary embodiment of a drain assembly for providing a drain in a floor. The drain assembly includes a drain conduit, a strainer and an adaptor. The drain conduit has an inner surface that defines a fluid flow path and an outer surface. The strainer is disposed above the drain conduit and has openings in fluid communication with the fluid flow path of the drain conduit. The adaptor may be securable in the drain conduit and may be connected to the strainer. Prior to securing the adaptor in the drain conduit, a position of the adaptor in the drain conduit may be moveable to allow a top surface of the strainer to be substantially aligned with the floor. An exemplary embodiment of a method of assembling a drain in a floor is also disclosed.



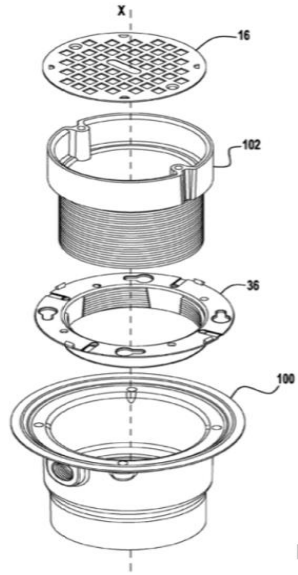
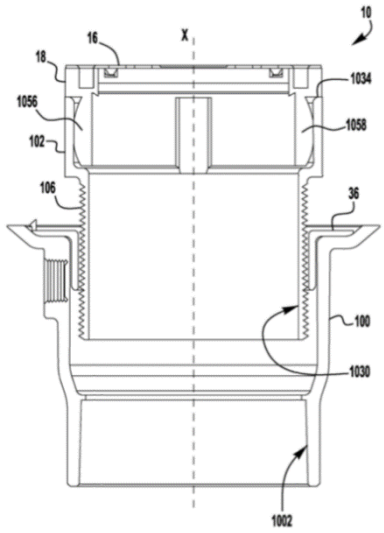
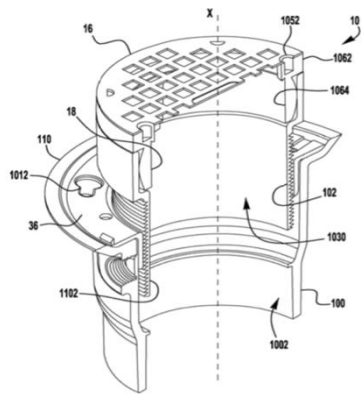


FIG.





EricHull,AvonLake,OH(US) (23 August 2016)

Floor drain assembly system and method of forming the same:

•In various embodiment, Subfloor panel members are provided that may be selectively customized. For example, in certain embodiment, at least one of an upper Sub floor panel and a lower Sub floor panel as shown and described here in-comprise a honeycomb panel where in the panel may be shaved, cut, moulded, shaped, and/or compressed to provide a desired slope to the panel. For example, a honey comb panel may extend substantially horizontally as a flat flooring Surface along a portion of its area, while being shaped, angled, or tapered toward a drain feature Surrounded by the panel(s).

There is a need for a bathroom unit flooring solution that is not only lightweight and structurally durable, and further allows for authentic finishes such as marble, granite, tile, stone, epoxy, composite or vinyl to be installed over the sub-floor. Embodiment of the disclosure provide such a solution. The properties of the honeycomb material provide superb strength and structural support in the sub-floor materials. The honeycomb material also allows the bisected honeycomb upper sub-floor to be easily fabricated with a controlled, designed, tapered slope towards the drain unit to ensure that liquids will be gravity fed to the drain unit. In various embodiment, lower and upper Sub-floor panels can be machine fabricated to provide increased accuracy and precision of fit as well as efficient modular production. The adhesives used are intended to be industry accepted materials for adhering and securing the component materials in position. The use of a waterproof membrane in certain embodiment ensures that any water introduced in to the environment will be

collected and guided to the drain unit without causing damage to the main floor system component.

•In one embodiment, a drain assembly is provided for a gravity fed floor drain, the assembly comprising a subfloor panel, a drain member comprising a drain outlet extending downward into the Subfloor panel, and a flange extending laterally away from the drain outlet over at least a portion of the subfloor panel. An adhesive layer is provided to secure an underside of the flange to the subfloor panel. A flooring Surface is provided, the flooring Surface comprising a material that is substantially non-permeable to liquids, the flooring Surface extending outwardly away from the drain member, and where in the flooring surface comprises a first slope and a second slope. The first slope is provided at a location distal to the drain member, and the second slope is provided at a location vertically above and/or within an area defined by the flange, and the second slope is greater than the first slope to promote drainage into the drain member.

It is anticipated that the honeycomb Sub-floor panels can be fabricated as a single piece floor unit or as an assemblage of Smaller section that when combined create a complete floor unit.

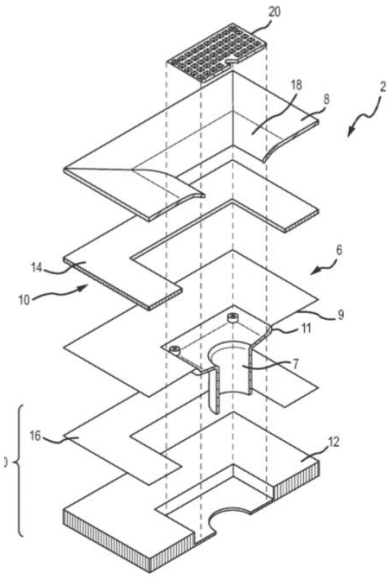


FIG.1

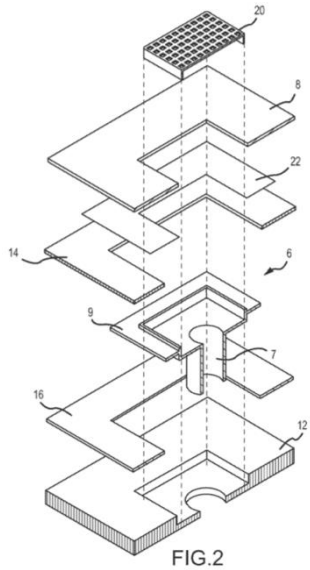


FIG.2

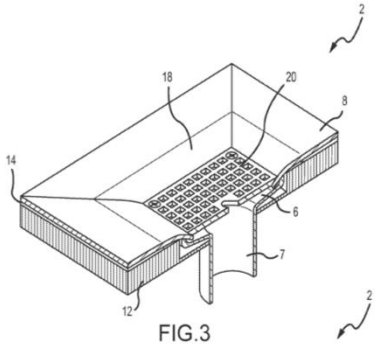


FIG.3

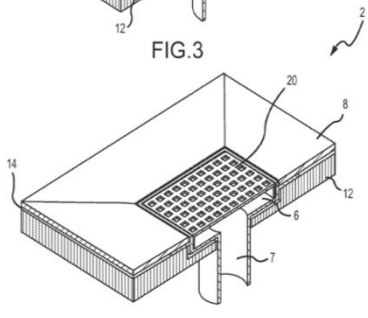


FIG.4

DanielNyce,Perkasie, PA(US) (12 FEBRUARY 2017)

2.4 SUMMARY

Overall, derived from this chapter is an experiment to be made in reference to the sources of previous studies to complete the work. Additionally, some information from trash in floor traps is identified by its function. This implementation can preserve and conserve the floor trap system.

We can summarize in this project is that we have acquired a lot of knowledge about clogged floor trap, so in this project we have done the result of our research and surveys. It is important for a project to conduct research and surveys before starting the project. This is to know whether the project is being implemented to benefit the users of the toilets.

This section collects all observations and data obtained through interviews, magazines, catalogs, books and internet resources. Clear description of each section and the question of project has been described in this chapter. Explosive ideas and referral sources have been widely taken on the internet as our main source. All the filling in the literature review section is based on the deeds cited in the research study which has taken place on the internet in the last 5 years. Long research has proved to us that so many applications related to our topics and projects. This literary study gives us the opportunity we try to meet with officials and companies to make our main source of reference with only our high courage and confidence. This section also explains the concepts and theories of our study.

In an exemplary embodiment, an improved method of installing a drain fixture is disclosed. The method comprises installing a Sub-floor plumbing system. Installing the Sub-floor plumbing system comprises connecting a first end of a plumbing trap to a main drain outlet and connecting a first end of a removable drain pipe to a second end of the plumbing trap. The method next comprises sliding a sleeve over the removable drain pipe. Next, the method comprises building a flooring Surface above and a round the plumbing trap, the removable drain pipe, and the sleeve. Once the floor is built, the method comprises partly or fully removing the removable drain pipe from the sleeve, cutting the removable drain pipe to the desired length and re-inserting the removable drain pipe through the sleeve and in to the plumbing trap.

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CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

The effectiveness of this study is to ascertain whether the trash traps are influenced by several factors such as waste capacity, physical characteristics of solid waste and trash type. In ensuring that this trash can work properly, it should be monitored and systematically managed from time to time. With this, the use of waste traps can last longer while saving costs and to facilitate the maintenance of pipes to the toilet users. This can reduce the problem of stagnant and clogged flooring that often occurs and can creates a clean bathroom atmosphere.

The methods section describes actions to be taken to investigate a research problem and the rationale for the application of specific procedures or techniques used to identify, select, process, and analyse information applied to understanding the problem, thereby, allowing the reader to critically evaluate a study's overall validity and reliability. Additionally, to help understand more about (more detail) about the application of the method by making a description of the review process.

This chapter also gives an outline of research methods that were followed in the study. It provides information on the participants, that is, the criteria for inclusion in the study, who the participants were and how they were sampled. The researcher describes the research design that was chosen for the purpose of this study and the reasons for this choice. The instrument that was used for data collection is also described and the procedures that were followed to carry out this study are included. The researcher also discusses the methods used to analyse the data. Lastly, the ethical issues that were followed in the process are also discussed.

3.2 RESEARCH DESIGN

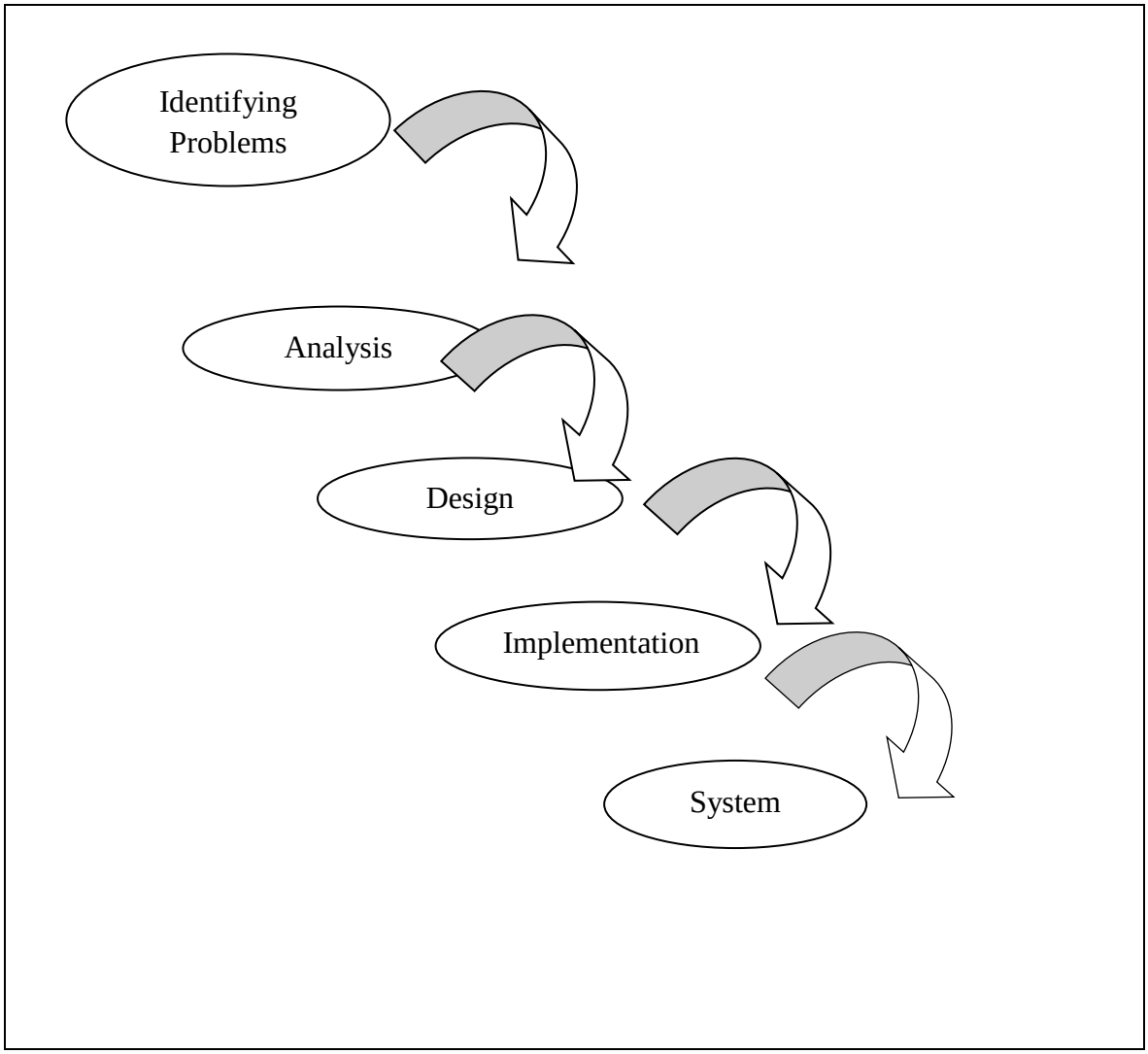


Figure 3.2 Methodology flow chart

3.2.1 Identifying Problems

At the beginning of this study, it was to identify the problem many wastes are clogged in the floor trap pipes that cause stagnant and dirty bathroom floors, which cause difficulties for the users to wash dirt thrown into the floor traps in the community at Blok Damai 1, 2, 3 and 4 (KAMSIS). Hence, careful planning has been undertaken to address the problem by designing a trash trap into the floor trap. This is due to the most users simply left or throw dirt or trash into the floor traps on the toilets.

3.2.2 Analysis

The data collected are collected, processed and analysed to enable the next steps to be taken and the determination of the research done as required in the objective.

3.2.3 Design

Before a trash trap was implemented, the product was design to know the dimension of the floor trap in Blok Damai (KAMSIS) In fact, this design is intended to be prior to execution, it can be illustrated before the project is implemented and even this design will provide more detailed information to build a trash trap that are operating well.

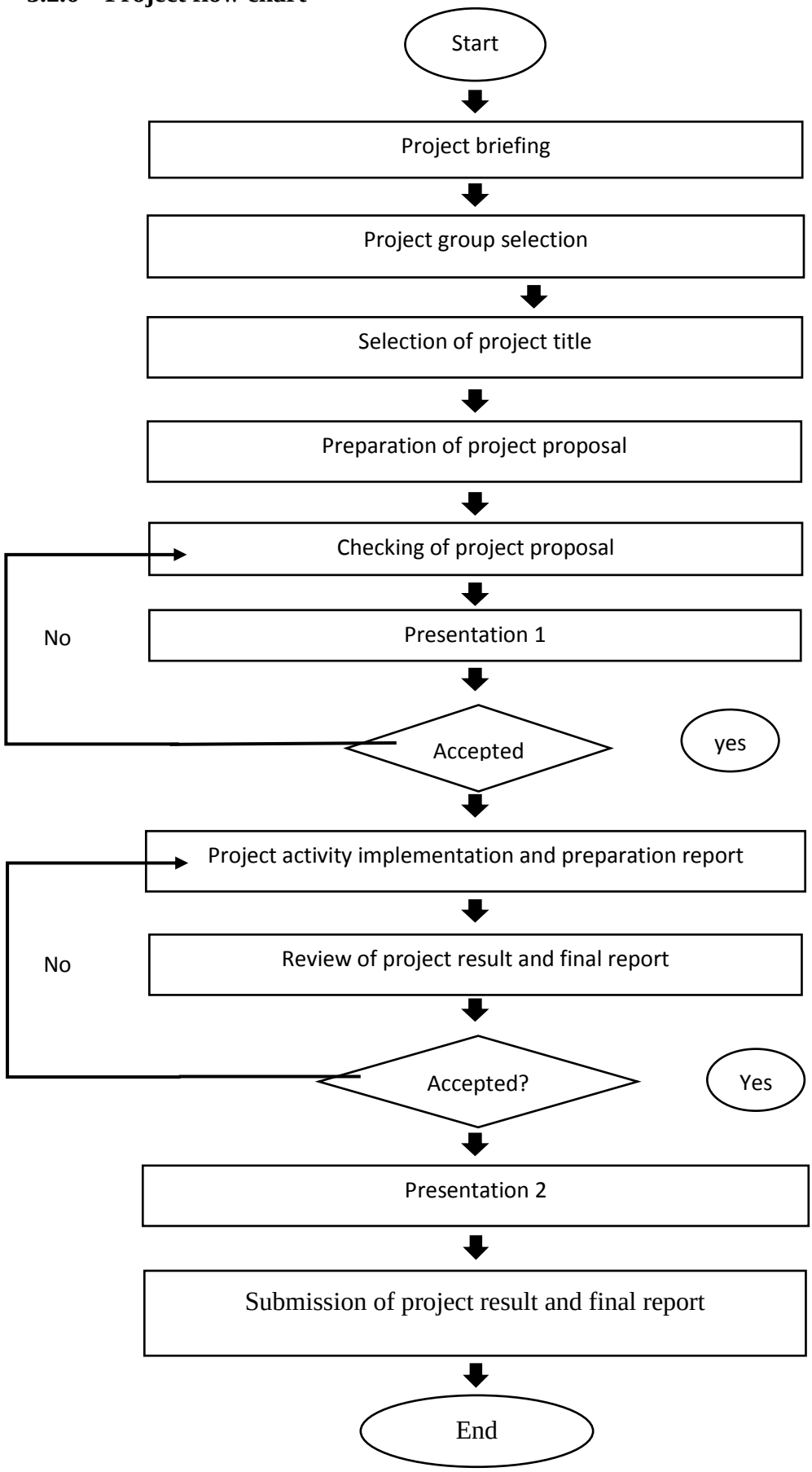
3.2.4 Implementation

When a trash trap has been completed, the trash trap must be tested on the floor trap to determine whether it is stable or vice versa to the floor trap and easily to make maintenance of the trap. Subsequently, the use of plat iron and wire mesh stainless steel was selected to build the trash trap.

3.2.5 System

When the Bath Waste Filter (BWF) has achieved its desired objectives, the product will be placed on the Blok Damai (KAMSIS) and the reduction of trash can be overcome to avoid health problems occur to the toilet users.

3.2.6 Project flow chart



3.3 DATA COLLECTION METHODS

To carry out this study, data collection methods have been practiced obtaining the data that are essential for the analysis stage. Among the methods of data collection is the questionnaire. Data collection can be classified into 3 types, primary data, secondary data and sampling.

3.3.1 Primary Data

Primary data are important data in the study. Without the main data, the objective of the study will not be achieved. The data collection process was carried out through the distribution of questionnaires to respondents.

3.3.2 Secondary Data

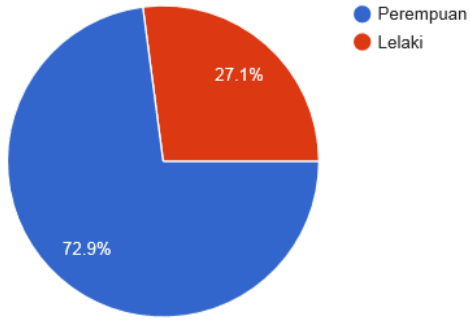
Secondary data comprises literature studies and other sources such as books related to study field, journals and other publications related to research conducted. These materials are analysed accordingly and become the basis of reference to this study.

3.3.3 Sampling

The sampling involves the provision of waste to be tested on trash traps. The types of waste for this study are hair and other waste that could inside the floor trap. This waste is first weighed to determine the original weight of the waste. Then, trash trapped on the trap is taken and dried before weighed. Furthermore, the percentage of retained waste will be calculated. This sampling is to determine the quantity of trash trapped in the trap.

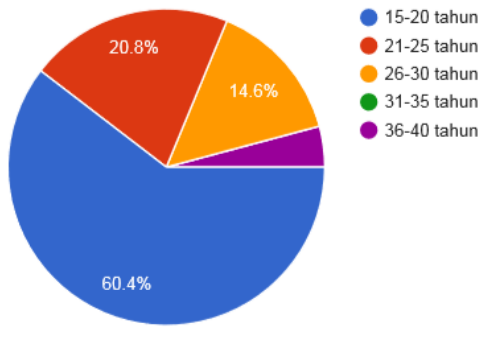
1. Nyatakan jantina anda.

48 responses



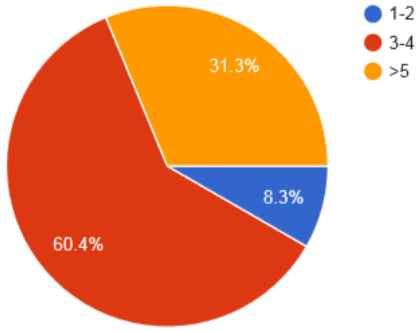
2. Nyatakan linkungan umur anda.

48 responses



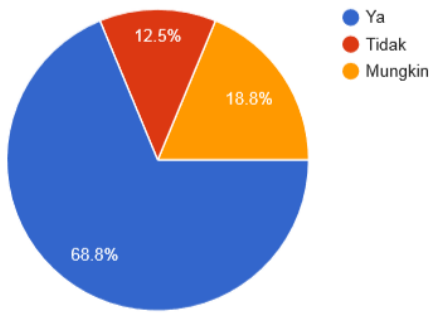
3. Nyatakan kekerapan anda menggunakan bilik air dalam sehari.

48 responses



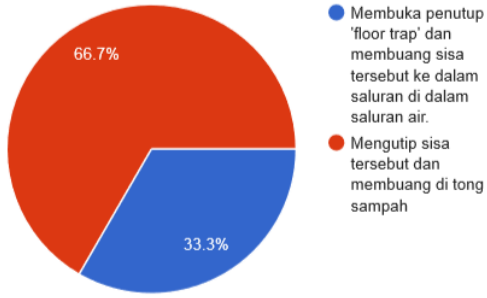
4. Adakah anda mengetahui tentang kewujudan perangkap lantai atau (floor trap) di dalam bilik mandi ?

48 responses



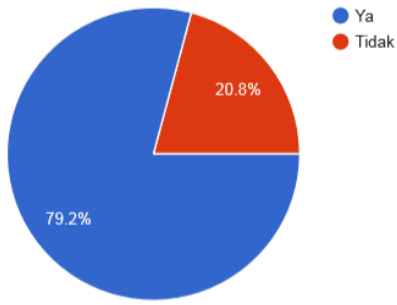
5. Pilih kaedah anda membuang sisa yang terperangkap seperti rambut, plastik dan lain-lain di atas lantai di dalam bilik mandi.

48 responses



6. Pernahkah anda mengalami masalah saluran air di dalam bilik air tersumbat ?

48 responses



3.4 STUDY INSTRUMENTS

In this research instrument, the questionnaire was selected. Respondents' selection consists of Polytechnic Sultan Azlan Shah. The questionnaire used consists of 7 question. The questionnaires consist:

a) Respondents Demographics (Gender, Age)

b) A general view of the study

c) The respondent's perspective on the product

3.4.1 Product Income

Here is how to produce a Bath Waste Filter (BWF)

Figure 3.4.1 (i)

Figure 3.4.1 (i) shows the first step in producing Bath Waste Filter (BWF). The iron plate is first set according to the designated size. The next step is to cut the iron plate in the shape of a circle (diameter 8cm) to make the holder to the floor trap. This concept was created to facilitate the product to be washed.

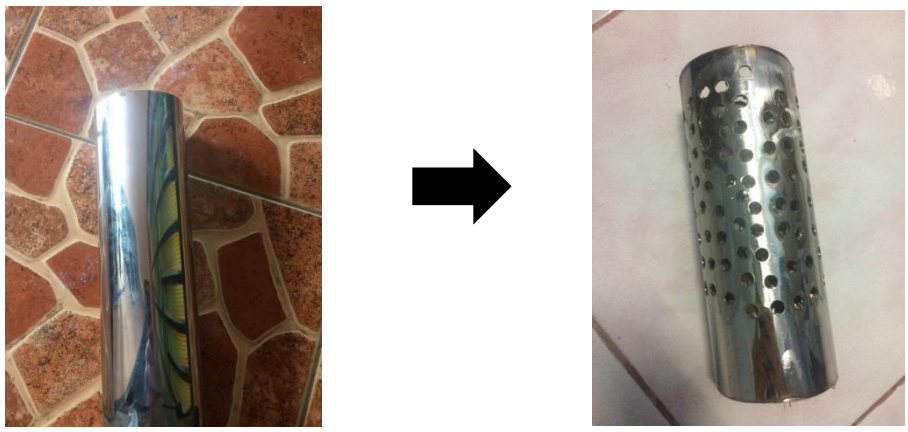


Figure 3.4.1 (ii)

After completion of the iron plate part, proceed with the round stainless steel (23cm length) with welding as shown in figure 3.4.1 (ii).

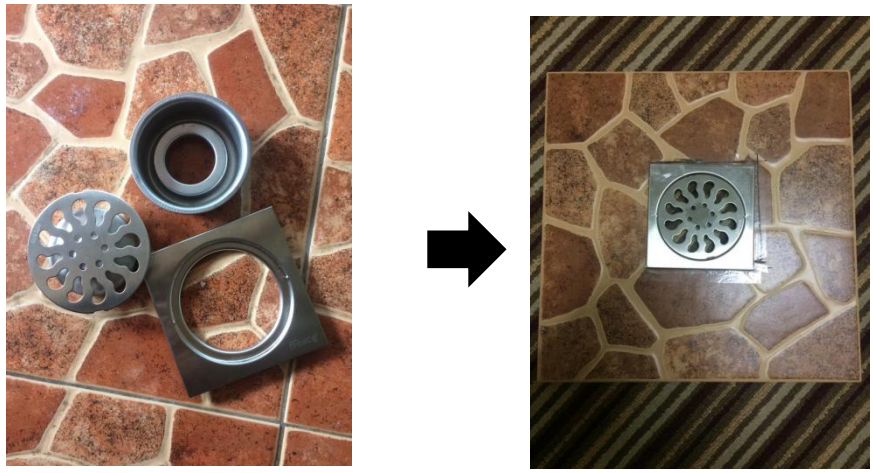
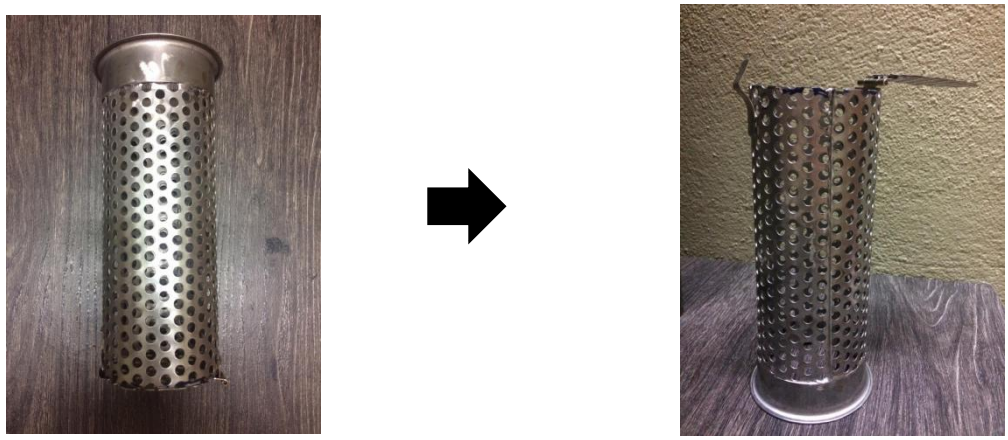


Figure 3.4.1 (iii)

The next step is cutting the wire mesh (23cm length) and welding the iron plate that have iron rod around the iron plate with wire mesh as shown in figure 3.4.1 (iii).



Lastly, this filter is designated with an opener at the bottom of the filter. This will make it easier for users to remove and clean this filter. The filter is complete as in the Figure 3.4.1 (iv) and ready to use.

3.5 SAMPLING TECHNIQUE

After collecting data through questionnaire and sampling, data analysis was made using the Google Forms. The software will analyse the questionnaires containing 7 questions related to the study. Data analysers can be divided into two parts: forming analytical and quantitative analysis models.

3.5.1 Analysis Model

In doing this analysis model, mathematical model is used. It aims to facilitate data analysts. The applied mathematical model refers to a predictive model. Given the effectiveness and relevance of the model, the technique of recreation is used. It was able to control the variability of variability with other variables of variability that were also tested in analysts. The findings of this study will be presented using a pie chart, bar graph and table. Selection of the method is done because the assessment is easy to do, and the results obtained are easy to understand.

3.5.2 Quantitative Analysis

For quantitative analysis, the data collected must have a uniform distribution. It is aimed not to have extreme values that would cause the bias and inaccuracies in the analysis. To carry out this analysis, Google Forms is used.

3.6 DATA ANALYSIS METHOD

In the process of analysing this, the data collected will be analysed and the results will be presented in the form of pie charts and tables.

3.7 SUMMARY

In the initial stages, the design of the study, data collection methods, research instruments, data sampling techniques and data analysis methods were systematically made in the methodology study to find out the facts and information to support the research instrument and illustrate more clearly in this study. After analysing the data, it is important to make conclusions on the results and hypotheses whether the trap is effective or not. From chapter 1 and chapter 2, information about existing floor trap filter were being searched to get ideas for this project and comparison is made. In this chapter is also about the methods on how to make the bath waste filter project.

CHAPTER 4

RESULTS

4.1 INTRODUCTION

Once all the data and information has been obtained, the analysis is done to see the effectiveness of the installation of waste traps installed on premises such as residences, hostels and public toilets.

The results obtained in this chapter are the results obtained from the questionnaire and experiments conducted in the study area. The results of the experiments in the study area are analyse in more detail to draw conclusions based on the stated objectives of the study.

The study was conducted using 46 respondents from the users. There are several aspects that are the focus:

1) Respondent Demographics (gender and age)
2) General view of the study
3) Respondents' perspectives on the Bath Waste Filter Platform: -
    i. Shape
    ii. Functions
    iii. Materials used

iv. Advantage

4.2 DEMOGRAPHIC PROFILE OF RESPONDENTS

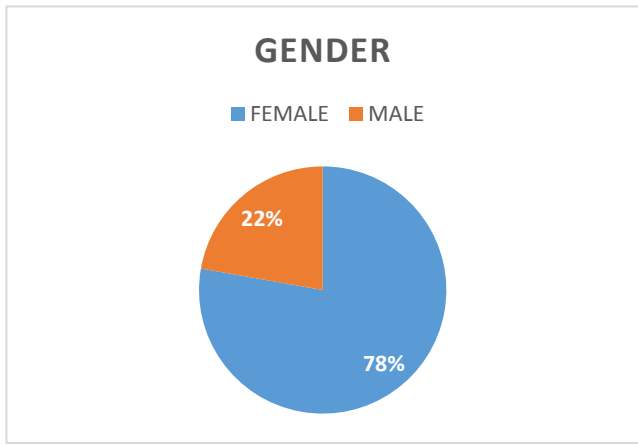


Figure 4.2 i: Gender

Figure 4.2 is showing the number of users who responded to the survey conducted. A total of 22% of the respondents were 2 males while 78% of the respondents 7 were female. The number of female respondents is high because most women have long hair and the hair loss factor is higher than that of men.

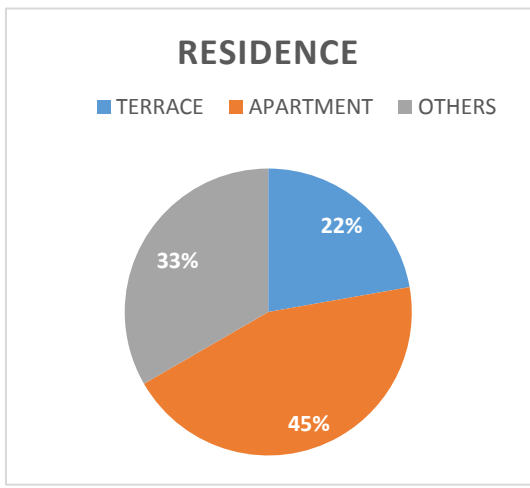


Figure 4.2 ii: Residence

Furthermore, the results of the study found that 4 respondents, of whom 45% were lived at apartment, answered this questionnaire. In addition, a total of 3 respondents were lived at others building of whom 33%, which is at hostel block. Other than that, 2 respondents, of whom 22% lived at terrace house.

4.2.1 Component cost

NO.	ITEM	QUANTITY	TOTAL (RM)
1.	Stainless steel	1	RM45
2.	Stainless steel floor trap	1	RM22
3.	Welding	1	RM50
4.	Stainless steel Hinge	1	RM1
TOTAL			RM118

Table 4.2.1: Component cost

Table 4.2.1 shows the cost of materials allocated to implement the 'Bath Waste Filter' (BWF) project. We use stainless steel plates that are mould into cylinders. Later, we also hired in-store to weld iron to form our products. Next, we bought a stainless-steel floor trap.

4.3 FINDINGS

4.3.1 Site Survey Data

The data obtained during the site study activities will be evaluated based on the weight of the waste that was successfully collected in this floor trap filter. These data will eventually be displayed in the form of tables and graphs of toilet weight. The rest of the baths will be weighed and recorded in the data table. In addition, the weight of this bath will be absorbed and displayed in the table provided.

4.3.2 Data analysis

The process of analyse the study data will be presented in the form of tables and charts. This floor trap filter analysis includes the amount of waste found in the

filter. The results of the data analysis results will be presented in the form of data scheduling. In the method of observation, the method for removing wastes collected on floor traps is to drain them through open floor traps.

4.3.2.1 Research questionnaire

To further strengthen this research, the questionnaire was conducted by involving PSA students and a family. The data obtained will be formatted as a table for easy information analysis and analysis. The following is information related to the survey conducted.

Figure 4.3.2.1 i:

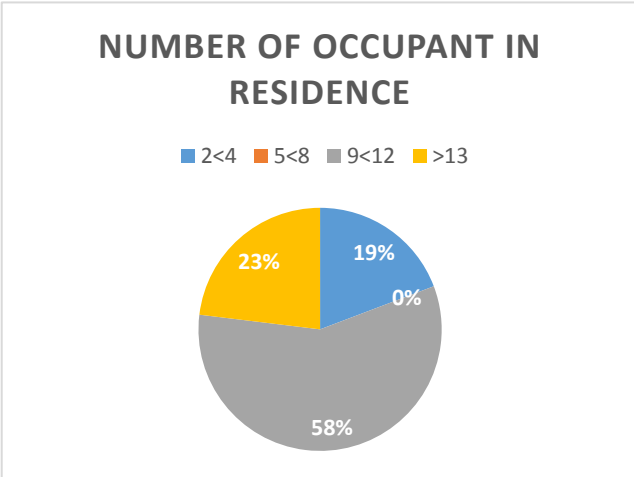


Figure 4.3.2.1 i: shows that there are 58% occupants in a residential area of 9 to 12 people, while there are 23% occupants in a residential area of more than 13 people and 19% occupants in a residential area of 2 to 4 people.

Figure 4.3.2.1 ii:

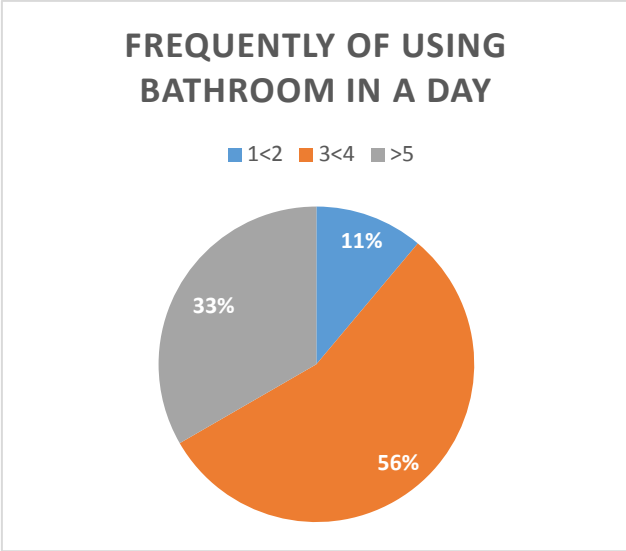


Figure 4.3.2.1 ii: shows 3 to 4 times the occupants use the bathroom in their home, of which 56%. Whereas, 33% occupants use more than 5 time the occupants of the bathroom in their home, and at least 11% occupants use the bathroom1 to 2 times.

Figure 4.3.2.1 iii:

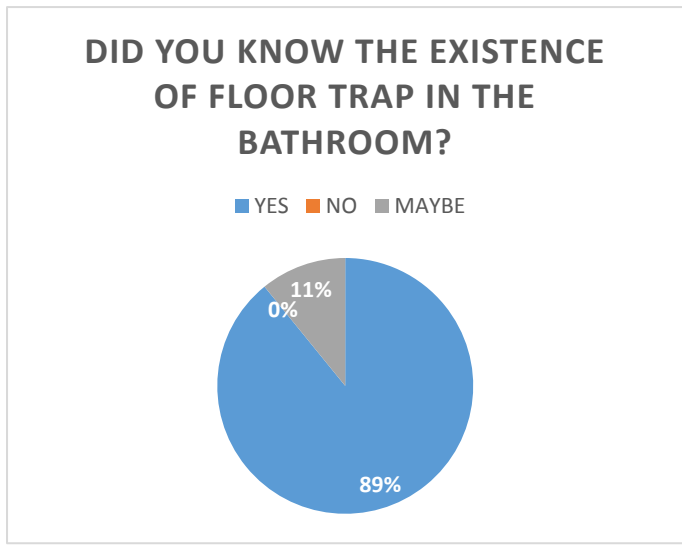


Figure 4.3.2.1 iii: shows 89% occupants at their house aware the existence of floor traps in their bathroom and only 11% occupants of their home may be aware of floor traps in the bathroom.

Figure 4.3.2.1 iv:

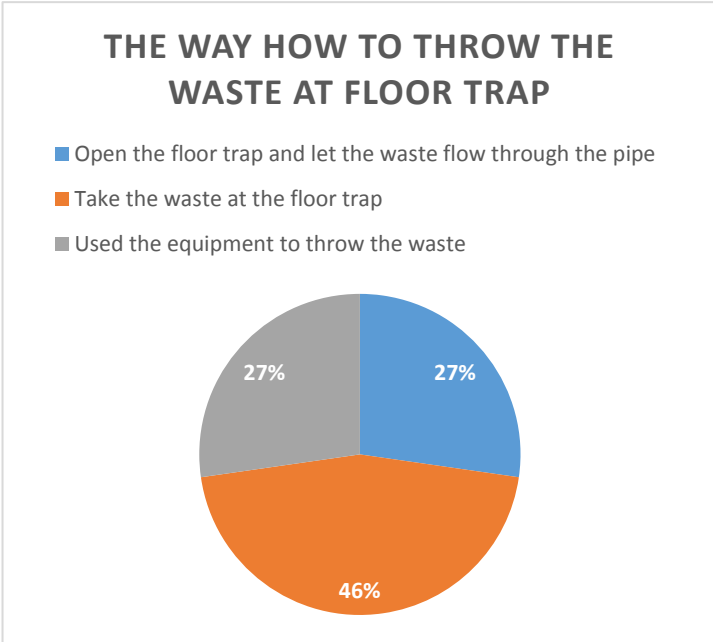


Figure 4.3.2.1 iv: shows how the occupants dispose of the waste on the floor traps and 46% of them collect the waste, while 27% occupants open the traps and allow the waste to enter the pipeline and use equipment to dispose of waste.

Figure 4.3.2.1 v:

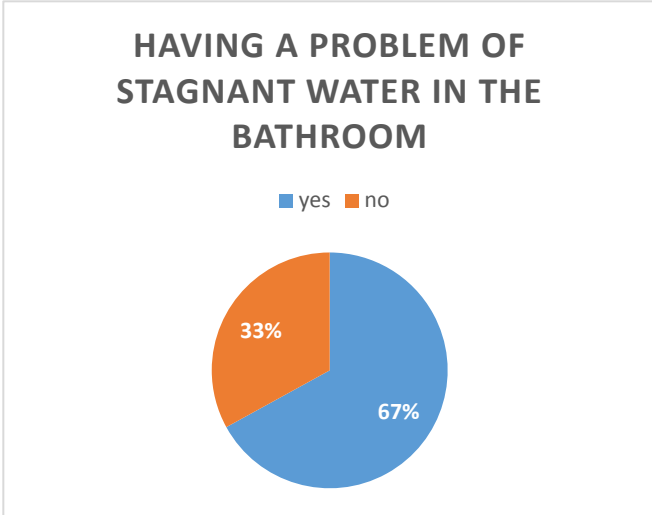


Figure 4.3.2.1 v: shows 67% occupants having stagnant bathroom problems due to residue on floor traps and 33% occupants not having stagnant bathroom problems.

Figure 4.3.2.1 vi:

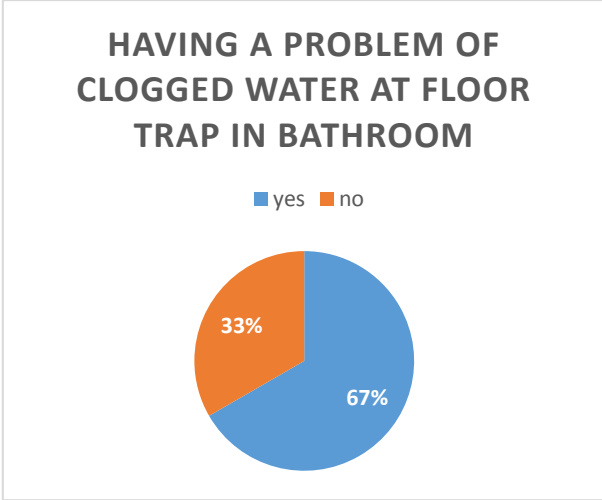


Figure 4.3.2.1 vi: shows 67% occupants having clogged bathroom problems as a result of waste or hair accumulating in floor trap pipes. While, 33% of the residents had no problems.

Figure 4.3.2.1 vii:

Figure 4.3.2.1 vii: shows whether 100% occupants or users agree on a product that is capable of trapping waste to facilitate the work of cleaning waste located on floor traps.

The questionnaire conducted on the occupants of the residence is to know the general opinion of the study. From the results of the study, it is known that:

i. 46% of residents say they collect garbage or waste found on a floor trap.
ii. 67% of residents said they had problems with the bathroom clogging and stumbling around in the bathroom.

4.3.2.2 Data capture

i. Data capture in three homes:

Date: 1 September 2019 - 23 September 2019

PLACE	WEEK 1	WEEK 2	WEEK 3	TOTAL
Girl's occupants at Kamsis Damai	12g	7g	16g	35g
Girl's occupants at Perdana Apartment	12g	12g	14g	38g
Boy's occupant at Terrace House TTDI Jaya	1g	2g	2g	5g

Figure 4.3.2.2 a:

Figure 4.3.2.2 a) that is 38g of data that can be weighed and collected for three weeks from the scope of the premises in Apartment Perdana.

Figure 4.3.2.2 b:

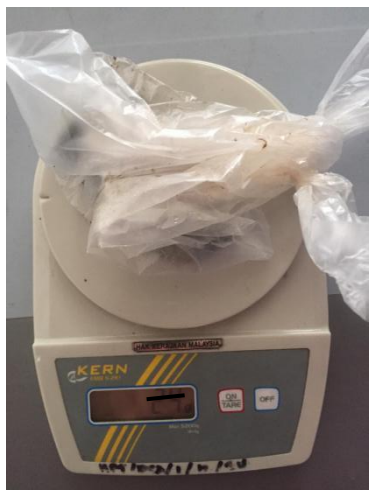


Figure 4.3.2.2 b) is that there is 5g of data that can be weighed and collected for three weeks from the scope of the TTDI Terrace house.

Figure 4.3.2.2.c:

Figure 4.3.2.2 c) is that there is 35g of data that can be weighed and collected for three weeks from the scope of the Peace Area.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

5.1 INTRODUCTION

For this chapter, the decisions made are based on all the results obtained from the experiments and discussions in the preceding chapters. In this chapter also, the relevant matters pertain to the objectives of the study as well as the recommendations of the study conducted. Moreover, conclusions have been drawn for this experiment.

5.2 DISCUSSION

For Bath Waste Filter, data collection tests have been conducted throughout this three-week process. The tests were carried out at selected locations, at Perdana Apartment, Damai Kamsis Block 4, and terrace house at TTDI. In addition, the effectiveness of this Bath Waste Filter is based on the amount of hair and waste collected.

5.3 CONCLUSION

The main objectives of this study were to identify the cost savings that can be obtained in maintaining the floor trap in the bathroom and designing a floor trap to trap the waste through the floor trap in the bathroom.

In this study, the effectiveness of Bath Waste Filter was more focused on the quantity and waste accumulated. Most of the residue that is trapped is hair and small particle of waste. In the assessment made, the overall Bath Waste Filter are effective and meet the design requirements and require low cost of manufacture.

In addition, the workforce needed in the process of making this product is four people. This Bath Waste Filter needs to be washed or cleaned if there is a lot of waste or hair accumulated in it to prevent clogging. If this happens, it is feared that the Bath Waste Filter will cause stagnant water in the bathroom.

Having a Bath Waste Filter makes it easier to clean the rest of hair or collect the hair at the floor trap. In addition, it will also help to release the duct system from being blocked by hair or small particles trapped at the floor trap.

5.4 PROPOSAL

The following are some of the things that are proposed to further enhance the research that will be done on Bath Waste Filter to find out its effectiveness: -

1) The holes at the filter should be smaller.

2) Using materials made of plastic.

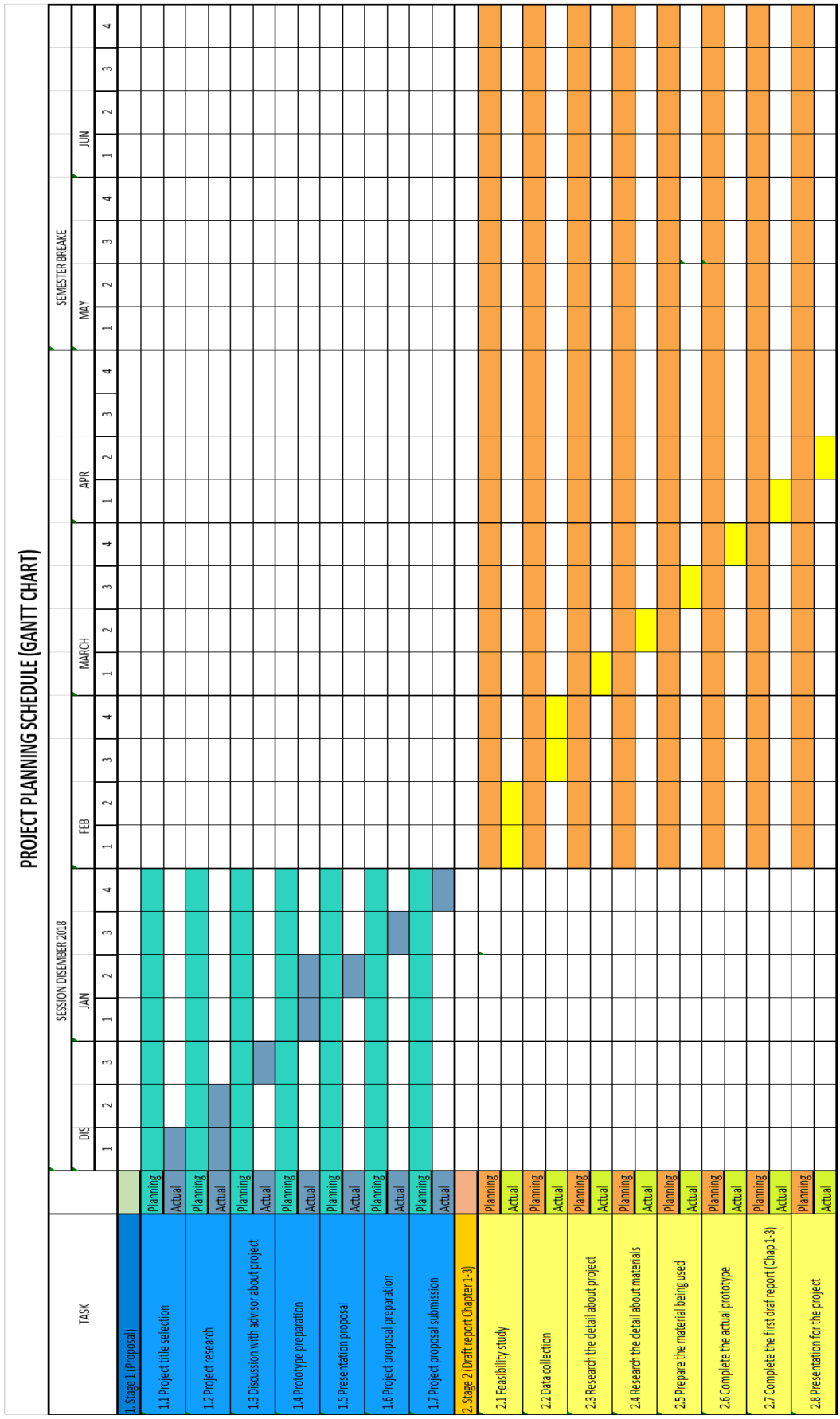
3) Provides a handle to make it easy for users to take out the Bath Waste Filter.

5.5 SUMMARY

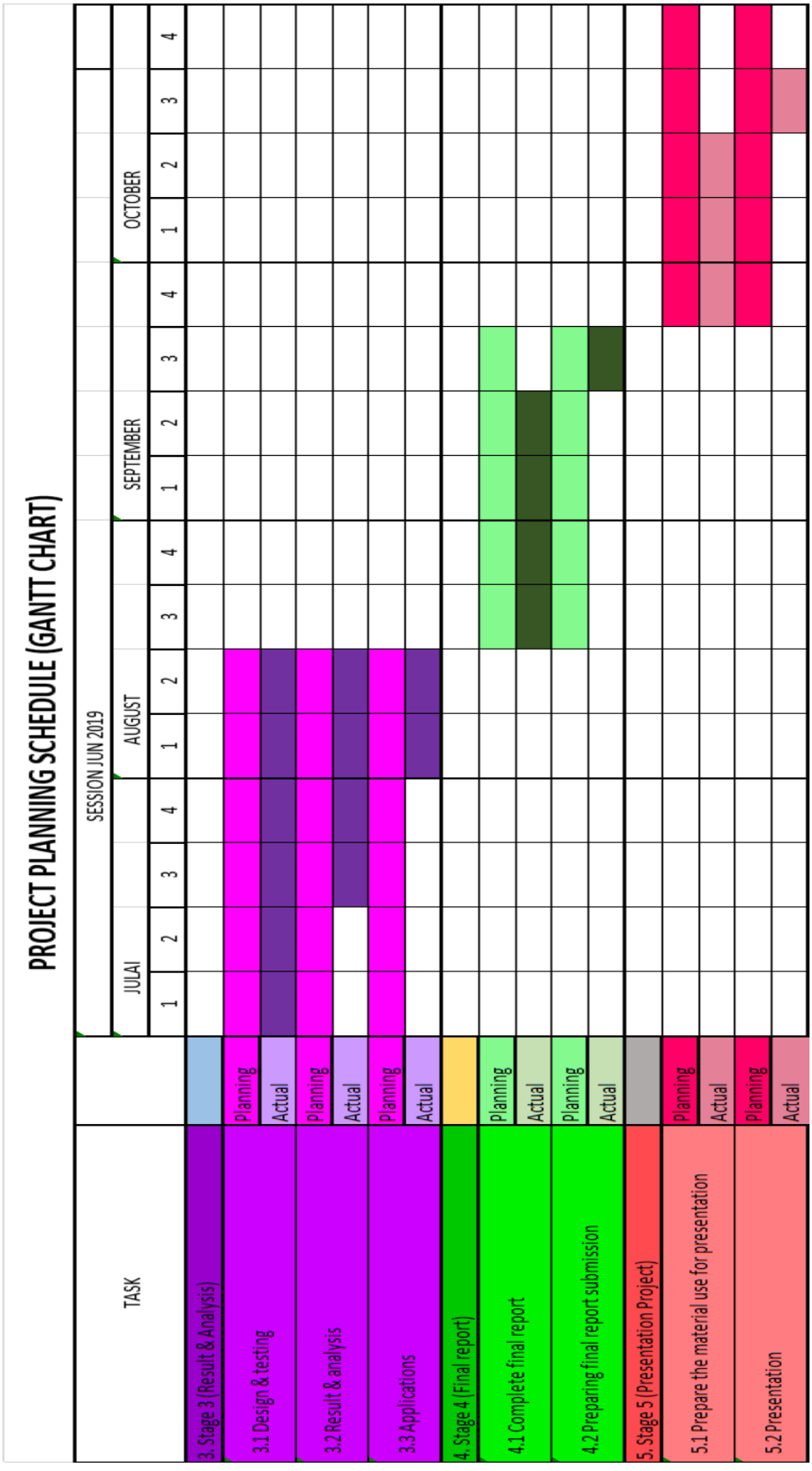
As a result of the experiments conducted on the Bath Waste Filter, it can be concluded that Bath Waste Filter has achieved its objective of saving cost maintenance and designing a floor trap to trap the waste through the floor trap in the bathroom.

Also, after a few weeks of being put in the bathroom in some places, it has been proven to be effective and useful to all occupants who use the bathroom as it facilitates the work of cleaning the small particle of waste or accumulated hair.

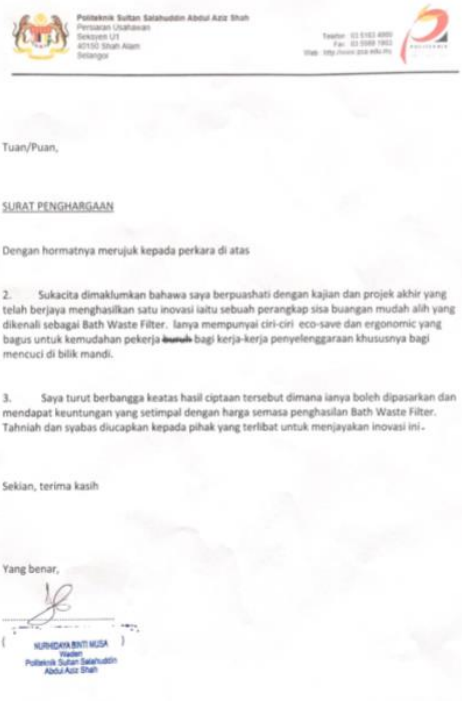
GANTT CHART


PROJECT PLANNING SCHEDULE (GANTT CHART)
TASK
SESSION DISEMBER 2018
DIS
JAN
FEB
MARCH
APR
SEMESTER BREAKE
MAY
JUN
1
2
3
4
1. Stage 1 (Proposal)
1.1 Project title selection
1.2 Project research
1.3 Discussion with advisor about project
1.4 Prototype preparation
1.5 Presentation proposal
1.6 Project proposal preparation
1.7 Project proposal submission
2. Stage 2 (Draft report Chapter 1-3)
2.1 Feasibility study
2.2 Data collection
2.3 Research the detail about project
2.4 Research the detail about materials
2.5 Prepare the material being used
2.6 Complete the actual prototype
2.7 Complete the first draf report (Chap 1-3)
2.8 Presentation for the project
Planning
Actual

GANTT CHART


PROJECT PLANNING SCHEDULE (GANTT CHART)
TASK
SESSION JUN 2019
JULAI
AUGUST
SEPTEMBER
OCTOBER
1
2
3
4
3. Stage 3 (Result & Analysis)
3.1 Design & testing
Planning
Actual
3.2 Result & analysis
Planning
Actual
3.3 Applications
Planning
Actual
4. Stage 4 (Final report)
4.1 Complete final report
Planning
Actual
4.2 Preparing final report submission
Planning
Actual
5. Stage 5 (Presentation Project)
5.1 Prepare the material use for presentation
Planning
Actual
5.2 Presentation
Planning
Actual

APPENDIX



Politeknik Sultan Salahuddin Abdul Aziz Shah
Persiaran Usahawan
Seksyen U1
40150 Shah Alam
Selangor

Tuan/Puan,

SURAT PENGHARGAAN

Dengan hormatnya merujuk kepada perkara di atas

2. Sukacita dimaklumkan bahawa saya berpuashati dengan kajian dan projek akhir yang telah berjaya menghasilkan satu inovasi iaitu sebuah perangkap sisa buangan mudah alih yang dikenali sebagai Bath Waste Filter. Ianya mempunyai ciri-ciri eco-save dan ergonomic yang bagus untuk kemudahan pekerja ~~buruh~~ bagi kerja-kerja penyelenggaraan khususnya bagi mencuci di bilik mandi.

3. Saya turut berbangga keatas hasil ciptaan tersebut dimana ianya boleh dipasarkan dan mendapat keuntungan yang setimpal dengan harga semasa penghasilan Bath Waste Filter. Tahniah dan syabas diucapkan kepada pihak yang terlibat untuk menjayakan inovasi ini.

Sekian, terima kasih

Yang benar,

(NURHIDAYA BINTI MUSA)
Warden
Politeknik Sultan Salahuddin
Abdul Aziz Shah

Politeknik Sultan Salahuddin Abdul Aziz Shah
Persiaran Usahawan
Seksyen U1
40150 Shah Alam
Selangor

Tuan/Puan,

PENGUJIAN DAN PENTAULIAHAN ALAT BATH WASTE FILTER (BWF)

Merujuk kepada alat Bath Waste Filter (BWF) yang telah direka oleh Pelajar Politeknik Shah Alam Jurusan Kejuruteraan Perkhidmatan Bangunan adalah berkaitan.

2. Pihak kami mengucapkan ribuan tahniah di atas kejayaan pelajar-pelajar tersebut merekacipta alat memerangkap sisa buangan dari perangkap lantai (floor trap) di mana nama bagi alat tersebut adalah "Bath Waste Filter". Penggunaan alat ini khususnya digunakan di bilik mandi yang berfungsi untuk memerangkap sisa buangan ke dalam perangkap lantai (floor trap).

3. Pihak kami bersama pelajar-pelajar tersebut telah menjalankan pengujian dan pertauliahan Bath Waste Filter pada 1 September 2019 bertempat di bilik mandi Kamsis Damai Politeknik Shah Alam. Pihak kami berpuas hati di atas reka cipta ini.

4. Ini kerana penghasilan produk yang inovatif ini adalah untuk mengelakkan penyumbatan paip saliran berlaku yang boleh menyebabkan bilik mandi menjadi bertakung dan mengakibatkan pencemaran bau. Kelebihan filter ini juga adalah ianya direka sebagai projek mesra pengguna dan bahannya yang terdiri daripada besi tahan karat. Oleh itu, ianya memudahkan kami sekiranya pihak kami ingin membersihkan filter ianya akan menjimatkan dari segi kos dan masa.

5. Sehubungan dengan itu, pihak kami berharap pelajar-pelajar tersebut terus maju dalam pembelajaran dan alam pekerjaan di masa akan datang. Sekian, terima kasih.

Yang benar,

(NURHIDAYA BINTI MUSA)
Warden
Politeknik Sultan Salahuddin
Abdul Aziz Shah

Politeknik Sultan Salahuddin Abdul Aziz Shah
Persiaran Usahawan
Seksyen U1
40150 Shah Alam
Selangor

Tuan/Puan,

KEBENARAN UNTUK MENJALANKAN KAJIAN PROJEK SEMESTER AKHIR DI BILIK MANDI KAMSIS DAMAI

Dengan hormatnya merujuk kepada perkara di atas.

2. Sukacita dimaklumkan bahawa pihak Warden Kamsis tiada halangan dan memberi kebenaran kepada pihak tuan/puan untuk menjalankan kajian projek semester akhir yang bertajuk Bath Waste Filter iaitu sebuah perangkap mudah alih. Semoga kajian tersebut memberi manfaat kepada semua pihak.

Sekian, terima kasih.

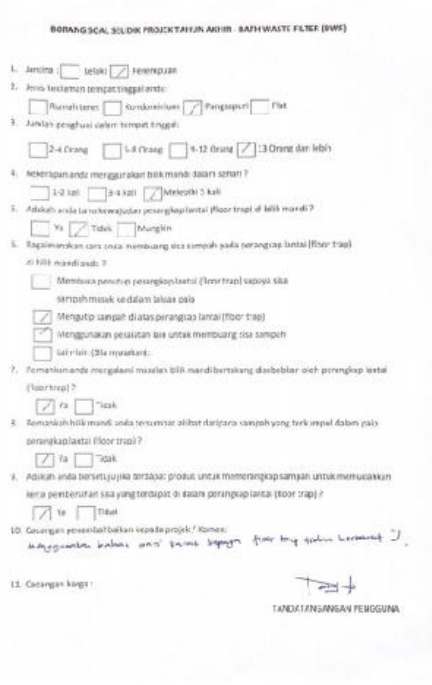
Yang benar,

(NURHIDAYA BINTI MUSA)
Warden
Politeknik Sultan Salahuddin
Abdul Aziz Shah

BORANG SOAL SELIDIK PROJEK TAHUN AKHIR - BATH WASTE FILTER (BWF)

1. Jantina : [✓] Lelaki [ ] Perempuan
2. Jenis kediaman tempat tinggal anda:
   [✓] Rumah teres [ ] Kondominium [ ] Pangsapuri [ ] Flat
3. Jumlah penghuni dalam tempat tinggal:
   [ ] 2-4 Orang [ ] 5-8 Orang [ ] 9-12 Orang [✓] 13 Orang dan lebih
4. Kekerapan anda menggunakan bilik mandi dalam sehari ?
   [ ] 1-2 kali [ ] 3-4 kali [✓] Melebihi 5 kali
5. Adakah anda tahu kewujudan perangkap lantai (floor trap) di bilik mandi ?
   [✓] Ya [ ] Tidak [✓] Mungkin
6. Bagaimanakah cara anda membuang sisa sampah pada perangkap lantai (floor trap) di bilik mandi anda ?
   [✓] Membuka penutup perangkap lantai (floor trap) supaya sisa sampah masuk ke dalam aliran paip
   [ ] Mengutip sampah di atas perangkap lantai (floor trap)
   [ ] Menggunakan peralatan lain untuk membuang sisa sampah
   [ ] Lain-lain (Sila nyatakan):
7. Pernahkan anda mengalami masalah bilik mandi bertakung disebabkan oleh perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
8. Pernahkah bilik mandi anda tersumbat akibat daripada sampah yang terkumpul dalam paip perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
9. Adakah anda bersetuju jika terdapat produk untuk memerangkap sampah untuk memudahkan kerja pembersihan sisa yang terdapat di dalam perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
10. Cadangan penambahbaikan kepada projek / Komen:
    - Mencari saiz yang lebih memerangkap lebih.
11. Cadangan harga : RM 10

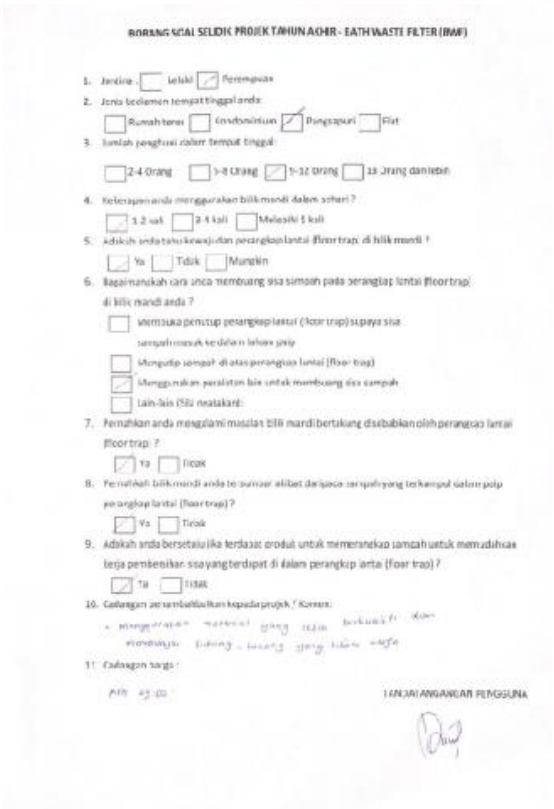
TANDATANGANGAN PENGGUNA



BORANG SOAL SELIDIK PROJEK TAHUN AKHIR - BATH WASTE FILTER (BWF)

1. Jantina : [ ] Lelaki [✓] Perempuan
2. Jenis kediaman tempat tinggal anda:
   [ ] Rumah teres [ ] Kondominium [✓] Pangsapuri [ ] Flat
3. Jumlah penghuni dalam tempat tinggal:
   [ ] 2-4 Orang [ ] 5-8 Orang [ ] 9-12 Orang [✓] 13 Orang dan lebih
4. Kekerapan anda menggunakan bilik mandi dalam sehari ?
   [ ] 1-2 kali [ ] 3-4 kali [✓] Melebihi 5 kali
5. Adakah anda tahu kewujudan perangkap lantai (floor trap) di bilik mandi ?
   [ ] Ya [✓] Tidak [ ] Mungkin
6. Bagaimanakah cara anda membuang sisa sampah pada perangkap lantai (floor trap) di bilik mandi anda ?
   [ ] Membuka penutup perangkap lantai (floor trap) supaya sisa sampah masuk ke dalam laluan paip
   [✓] Mengutip sampah di atas perangkap lantai (floor trap)
   [ ] Menggunakan peralatan lain untuk membuang sisa sampah
   [ ] Lain-lain (Sila nyatakan):
7. Pernahkan anda mengalami masalah bilik mandi bertakung disebabkan oleh perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
8. Pernahkah bilik mandi anda tersumbat akibat daripada sampah yang terkumpul dalam paip perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
9. Adakah anda bersetujujika terdapat produk untuk memerangkap sampah untuk memudahkan kerja pembersihan sisa yang terdapat di dalam perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
10. Cadangan penambahbaikan kepada projek / Komen:
    menggunakan bahan anti karat supaya floor trap tahan lebih lama.
11. Cadangan harga :

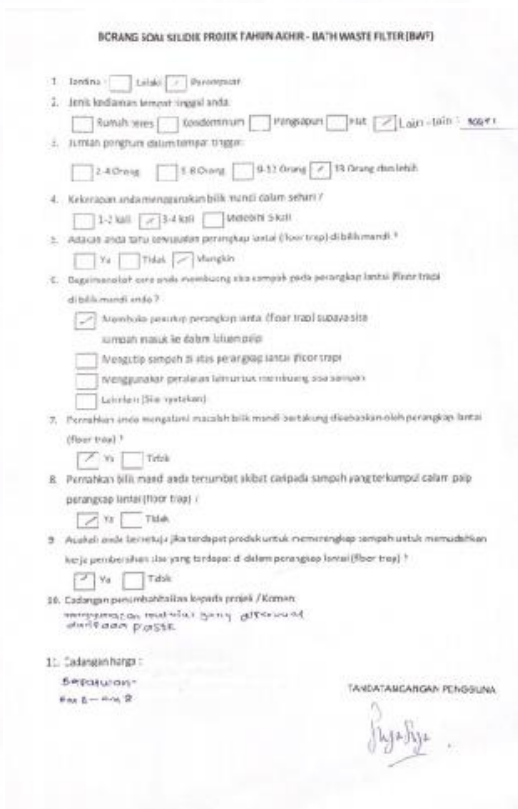
TANDATANGANGAN PENGGUNA



BORANG SOAL SELIDIK PROJEK TAHUN AKHIR - BATH WASTE FILTER (BWF)

1. Jantina : [ ] Lelaki [✓] Perempuan
2. Jenis kediaman tempat tinggal anda:
   [ ] Rumah teres [ ] Kondominium [✓] Pangsapuri [ ] Flat
3. Jumlah penghuni dalam tempat tinggal:
   [ ] 2-4 Orang [ ] 5-8 Orang [✓] 9-12 Orang [ ] 13 Orang dan lebih
4. Kekerapan anda menggunakan bilik mandi dalam sehari ?
   [ ] 1-2 kali [ ] 3-4 kali [✓] Melebihi 5 kali
5. Adakah anda tahu kewujudan perangkap lantai (floor trap) di bilik mandi ?
   [ ] Ya [ ] Tidak [✓] Mungkin
6. Bagaimanakah cara anda membuang sisa sampah pada perangkap lantai (floor trap) di bilik mandi anda ?
   [ ] Membuka penutup perangkap lantai (floor trap) supaya sisa sampah masuk ke dalam laluan paip
   [ ] Mengutip sampah di atas perangkap lantai (floor trap)
   [✓] Menggunakan peralatan lain untuk membuang sisa sampah
   [ ] Lain-lain (Sila nyatakan):
7. Pernahkan anda mengalami masalah bilik mandi bertakung disebabkan oleh perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
8. Pernahkah bilik mandi anda tersumbat akibat daripada sampah yang terkumpul dalam paip perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
9. Adakah anda bersetuju jika terdapat produk untuk memerangkap sampah untuk memudahkan kerja pembersihan sisa yang terdapat di dalam perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
10. Cadangan penambahbaikan kepada projek / Komen:
    - mengurangkan material yang lebih berkualiti dan
    - membuang bahan - bahan yang lebih ringan
11. Cadangan harga :
    RM 45.00

TANDATANGANGAN PENGGUNA



BORANG SOAL SELIDIK PROJEK TAHUN AKHIR - BATH WASTE FILTER (BWF)

1. Jantina : [ ] Lelaki [✓] Perempuan
2. Jenis kediaman tempat tinggal anda:
   [ ] Rumah teres [ ] Kondominium [ ] Pangsapuri [ ] Flat [✓] Lain - lain : kos
3. Jumlah penghuni dalam tempat tinggal:
   [ ] 2-4 Orang [ ] 5-8 Orang [ ] 9-12 Orang [✓] 13 Orang dan lebih
4. Kekerapan anda menggunakan bilik mandi dalam sehari ?
   [ ] 1-2 kali [✓] 3-4 kali [ ] Melebihi 5 kali
5. Adakah anda tahu kewujudan perangkap lantai (floor trap) di bilik mandi ?
   [ ] Ya [ ] Tidak [✓] Mungkin
6. Bagaimanakah cara anda membuang sisa sampah pada perangkap lantai (floor trap) di bilik mandi anda ?
   [✓] Membuka penutup perangkap lantai (floor trap) supaya sisa sampah masuk ke dalam laluan paip
   [ ] Mengutip sampah di atas perangkap lantai (floor trap)
   [ ] Menggunakan peralatan lain untuk membuang sisa sampah
   [ ] Lain-lain (Sila nyatakan)
7. Pernahkan anda mengalami masalah bilik mandi bertakung disebabkan oleh perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
8. Pernahkah bilik mandi anda tersumbat akibat daripada sampah yang terkumpul dalam paip perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
9. Adakah anda bersetuju jika terdapat produk untuk memerangkap sampah untuk memudahkan kerja pembersihan sisa yang terdapat di dalam perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
10. Cadangan penambahbaikan kepada projek / Komen:
    menggunakan material yang different
    ukuran pipe.
11. Cadangan harga :
    Berpatutan
    RM 5 – RM 8

TANDATANGANGAN PENGGUNA

BORANG SOAL SELIDIK PROJEK TAHUN AKHIR - BATH WASTE FILTER (BWF)

1. Jantina : [ ] Lelaki [✓] Perempuan
2. Jenis kediaman tempat tinggal anda
   [ ] Rumah teres [ ] Kondominium [ ] Pangsapuri [ ] Flat [✓] Lain-lain : ____________
3. Jumlah penghuni dalam tempat tinggal
   [ ] 2-4 Orang [ ] 5-8 Orang [ ] 9-12 Orang [✓] 13 Orang dan lebih
4. Kekerapan anda menggunakan bilik mandi dalam sehari ?
   [ ] 1-2 kali [✓] 3-4 kali [ ] Melebihi 5 kali
5. Adakah anda tahu kewujudan perangkap lantai (floor trap) di bilik mandi ?
   [✓] Ya [ ] Tidak [ ] Mungkin
6. Bagaimanakah cara anda membuang sisa sampah pada perangkap lantai (floor trap) di bilik mandi anda ?
   [ ] Membuka penutup perangkap lantai (floor trap) supaya sisa sampah masuk ke dalam laluan paip
   [✓] Mengutip sampah di atas perangkap lantai (floor trap)
   [ ] Menggunakan peralatan lain untuk membuang sisa sampah
   [ ] Lain-lain (Sila nyatakan)
7. Pernahkan anda mengalami masalah bilik mandi bertakung disebabkan oleh perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
8. Pernahkah bilik mandi anda tersumbat akibat daripada sampah yang terkumpul dalam paip perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
9. Adakah anda bersetuju jika terdapat produk untuk memerangkap sampah untuk memudahkan kerja pembersihan sisa yang terdapat di dalam perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
10. Cadangan penambahbaikan kepada projek / Komen:
11. Cadangan harga :

10. Gunakan material yang menggunakan lubang yang kecil.

11. Murah dan berpatutan RM 2 - RM5.

TANDATANGANGAN PENGGUNA

BORANG SOAL SELIDIK PROJEK TAHUN AKHIR - BATH WASTE FILTER (BWF)

1. Jantina : [ ] Lelaki [✓] Perempuan
2. Jenis kediaman tempat tinggal anda
   [ ] Rumah teres [ ] Kondominium [✓] Pangsapuri [ ] Flat
3. Jumlah penghuni dalam tempat tinggal
   [ ] 2-4 Orang [ ] 5-8 Orang [✓] 9-12 Orang [ ] 13 Orang dan lebih
4. Kekerapan anda menggunakan bilik mandi dalam sehari ?
   [ ] 1-2 kali [✓] 3-4 kali [ ] Melebihi 5 kali
5. Adakah anda tahu kewujudan perangkap lantai (floor trap) di bilik mandi ?
   [✓] Ya [ ] Tidak [ ] Mungkin
6. Bagaimanakah cara anda membuang sisa sampah pada perangkap lantai (floor trap) di bilik mandi anda ?
   [ ] Membuka penutup perangkap lantai (floor trap) supaya sisa sampah masuk ke dalam laluan paip
   [✓] Mengutip sampah di atas perangkap lantai (floor trap)
   [✓] Menggunakan peralatan lain untuk membuang sisa sampah
   [ ] Lain-lain (Sila nyatakan)
7. Pernahkan anda mengalami masalah bilik mandi bertakung disebabkan oleh perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
8. Pernahkah bilik mandi anda tersumbat akibat daripada sampah yang terkumpul dalam paip perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
9. Adakah anda bersetuju jika terdapat produk untuk memerangkap sampah untuk memudahkan kerja pembersihan sisa yang terdapat di dalam perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
10. Cadangan penambahbaikan kepada projek / Komen:
    saya setuju menggunakannya, air tinggal bergenang ... tidak lagi ternampak.
11. Cadangan harga : RM5

TANDATANGANGAN PENGGUNA

BORANG SOAL SELIDIK PROJEK TAHUN AKHIR - BATH WASTE FILTER (BWF)

1. Jantina : [ ] Lelaki [✓] Perempuan
2. Jenis kediaman tempat tinggal anda
   [ ] Rumah teres [ ] Kondominium [ ] Pangsapuri [ ] Flat [✓] Lain-lain : Hostel
3. Jumlah penghuni dalam tempat tinggal
   [✓] 2-4 Orang [ ] 5-8 Orang [ ] 9-12 Orang [ ] 13 Orang dan lebih
4. Kekerapan anda menggunakan bilik mandi dalam sehari ?
   [ ] 1-2 kali [✓] 3-4 kali [ ] Melebihi 5 kali
5. Adakah anda tahu kewujudan perangkap lantai (floor trap) di bilik mandi ?
   [✓] Ya [ ] Tidak [ ] Mungkin
6. Bagaimanakah cara anda membuang sisa sampah pada perangkap lantai (floor trap) di bilik mandi anda ?
   [ ] Membuka penutup perangkap lantai (floor trap) supaya sisa sampah masuk ke dalam laluan paip
   [✓] Mengutip sampah di atas perangkap lantai (floor trap)
   [ ] Menggunakan peralatan lain untuk membuang sisa sampah
   [ ] Lain-lain (Sila nyatakan)
7. Pernahkan anda mengalami masalah bilik mandi bertakung disebabkan oleh perangkap lantai (floor trap) ?
   [ ] Ya [✓] Tidak
8. Pernahkah bilik mandi anda tersumbat akibat daripada sampah yang terkumpul dalam paip perangkap lantai (floor trap) ?
   [ ] Ya [✓] Tidak
9. Adakah anda bersetuju jika terdapat produk untuk memerangkap sampah untuk memudahkan kerja pembersihan sisa yang terdapat di dalam perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
10. Cadangan penambahbaikan kepada projek / Komen:
    Lubang pada penapis lebih kecil
11. Cadangan harga : RM 15

TANDATANGANGAN PENGGUNA

BORANG SOAL SELIDIK PROJEK TAHUN AKHIR - BATH WASTE FILTER (BWF)

1. Jantina : [ ] Lelaki [✓] Perempuan
2. Jenis kediaman tempat tinggal anda
   [ ] Rumah teres [ ] Kondominium [✓] Pangsapuri [ ] Flat
3. Jumlah penghuni dalam tempat tinggal
   [ ] 2-4 Orang [ ] 5-8 Orang [✓] 9-12 Orang [ ] 13 Orang dan lebih
4. Kekerapan anda menggunakan bilik mandi dalam sehari ?
   [ ] 1-2 kali [ ] 3-4 kali [✓] Melebihi 5 kali
5. Adakah anda tahu kewujudan perangkap lantai (floor trap) di bilik mandi ?
   [✓] Ya [ ] Tidak [ ] Mungkin
6. Bagaimanakah cara anda membuang sisa sampah pada perangkap lantai (floor trap) di bilik mandi anda ?
   [ ] Membuka penutup perangkap lantai (floor trap) supaya sisa sampah masuk ke dalam laluan paip
   [✓] Mengutip sampah di atas perangkap lantai (floor trap)
   [ ] Menggunakan peralatan lain untuk membuang sisa sampah
   [ ] Lain-lain (Sila nyatakan)
7. Pernahkan anda mengalami masalah bilik mandi bertakung disebabkan oleh perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
8. Pernahkah bilik mandi anda tersumbat akibat daripada sampah yang terkumpul dalam paip perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
9. Adakah anda bersetuju jika terdapat produk untuk memerangkap sampah untuk memudahkan kerja pembersihan sisa yang terdapat di dalam perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
10. Cadangan penambahbaikan kepada projek / Komen: mengadakan langkah bagi memudahkan pengguna memasang bath waste filter dengan mudah dan bersih
11. Cadangan harga : RM 30

TANDATANGANGAN PENGGUNA

BORANG SOAL SELIDIK PROJEK TAHUN AKHIR - BATH WASTE FILTER (BWF)

1. Jantina : [✓] Lelaki [ ] Perempuan
2. Jenis kediaman tempat tinggal anda:
   [✓] Rumah teres [ ] Kondominium [ ] Pangsapuri [ ] Flat
3. Jumlah penghuni dalam tempat tinggal:
   [ ] 2-4 Orang [ ] 5-8 Orang [ ] 9-12 Orang [✓] 13 Orang dan lebih
4. Kekerapan anda menggunakan bilik mandi dalam sehari ?
   [ ] 1-2 kali [ ] 3-4 kali [✓] Melebihi 5 kali
5. Adakah anda tahu kewujudan perangkap lantai (floor trap) di bilik mandi ?
   [✓] Ya [ ] Tidak [ ] Mungkin
6. Bagaimanakah cara anda membuang sisa sampah pada perangkap lantai (floor trap) di bilik mandi anda ?
   [✓] Membuka penutup perangkap lantai (floor trap) supaya sisa sampah masuk ke dalam laluan paip
   [ ] Mengutip sampah di atas perangkap lantai (floor trap)
   [ ] Menggunakan peralatan lain untuk membuang sisa sampah
   [ ] Lain-lain (Sila nyatakan):
7. Pernahkah anda mengalami masalah bilik mandi bertakung disebabkan oleh perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
8. Pernahkah bilik mandi anda tersumbat akibat daripada sampah yang terkumpul dalam salur perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
9. Adakah anda bersetuju jika terdapat produk untuk memerangkap sampah untuk memudahkan kerja pembersihan sisa yang terdapat di dalam perangkap lantai (floor trap) ?
   [✓] Ya [ ] Tidak
10. Cadangan penambahbaikan kepada projek / Komen:
    Gunakan bahan yang boleh tahan karat
11. Cadangan Harga : RM 15

TANDATANGAN PENGGUNA

BROCHURE

Market Potentials

All bathroom users:

- Residential (Terrace house, Condominium, Apartment, Flat)
- Hostel

OBJECTIVE OF THE PROJECT

To identify the cost saving that can be obtained in maintaining the floor trap in the bathroom.

BATH WASTE FILTER

FINAL YEAR PROJECT
2019

PRODUCT DESCRIPTION

This size of Bath Waste Filter is 180 mm x 68mm diameter. The material that we are using for this product is stainless steel and stainless steel floor grating. A mesh strainer used to separating wanted elements from unwanted material. A strainer is a form of sieve used to separate solids from liquid.

This 'Bath Waste Filter' captured all solid waste that would otherwise clogged your floor trap. Simply remove your trap cover and drop in a 'Bath Waste Filter' floor trap filter. Now you can get rid of all the dangerous and expensive plumber maintenance. This filter eliminates flooded floors which can cause shutdowns, slip hazards and health code violation. Most importantly, for those who likes to save money, it reduces costly repairs to pipes.

RESULT AND ANALYSIS

To carry out this study, data collection methods have been practiced to obtain the data that essential for the analysis stage. Among the methods of data, collection can be classified into three types, primary data, secondary data and sampling.

- Primary Data- The distribution of the questionnaires to respondents.
- Secondary Data – Comprises literature studies and other sources.
- Sampling –The sampling involves the provision of waste to be tested on traps. The types of waste for this study are hair or small particles of debris. This waste is weighed to determine the weight of the waste. This sampling is to determine the

SCOPE OF THE PROJECT

This product is designed to female bathroom in Blok Damai (KAMSIS), Female house at Apartment Perdana and male house at terrace house TTDI Jaya.

PROBLEM STATEMENT

Many wastes are clogged in the floor trap pipes that cause stagnant and dirty bathroom floors, which cause difficulties for the users to wash dirt thrown into the floor traps. Most users simply leave or remove dirt or trash into the floor traps.

Metodologi (Methodology)

Choose the idea
↓
Do trial test
↓
Do the research
↓
Design project
↓
Choose material
↓
Do second trial test
↓
Survey with questionnaire
↓
Project completion