POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

WATER TANK CUT OFF

NAMA	NO. PENDAFTARAN
NUR ADZA BINTI KAMAROLZAMAN	08DMP18F1144
NUR SABRINA SYAHIRAH BINTI MD NAZARI	08DMP18F1151
NURFATHIAH HANANI BINTI NORMAN	08DMP18F1153

JABATAN KEJURUTERAAN MEKANIKAL

JUN 2019

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

JABATAN KEJURUTERAAN MEKANIKAL

JUN 2019

TAJUK : WATER TANK CUT OFF

SESI : JUNE 2019

1. Kami, **1. NUR ADZA BINTI KAMAROLZAMAN (08DMP18F1144)**

2. NUR SABRINA SYAHIRAH BINTI MD NAZARI (08DMP18F1151)

3. NURFATHIAH HANANI BINTI NORMAN (08DMP18F1153)

Adalah pelajar tahun **akhir Diploma Kejuruteraan Mekanikal, Jabatan Kejuruteraan Mekanikal, Politeknik Sultan Salahuddin Abdul Aziz Shah**, yang beralamat di **Persiaran Usahawan, 40150, Shah Alam, Selangor**. (Selepas ini dirujuk sebagai 'Politeknik tersebut').

2. Kami mengakui bahawa "Projek tersebut di atas' dan harta intelek yang ada di dalamnya adalah hasil karya/reka cipta asli kami tanpa mengambil atau meniru mana-mana harga intelek daripada pihak-pihak lain.

3. Kami bersetuju melepaskan pemilikan harta intelek 'projek tersebut' kepada 'Politeknik tersebut' bagi memenuhi keperluan untuk peanugerahan **<u>Diploma Kejuruteraan Mekanikal</u> kepada kami.**

Diperbuat dan dengan sebenar-benarnya diakui

Oleh yang tersebut;

a)	NUR ADZA BINTI KAMAROLZAMAN (No. Kad Pengenalan: 000331-02-0664)	(……..) NUR ADZA
b)	NUR SABRINA SYAHIRAH BINTI MD NAZARI (No. Kad Pengenalan: 000512-10-0356)	(.....) NUR SABRINA SYAHIRAH
c)	NURFATHIAH HANANI BINTI NORMAN (No. Kad Pengenalan: 000819-13-0250)	(.....) NURFATHIAH HANANI

Di hadapan saya, ENCIK MOHD HARIZ BIN SAMAIN

sebagai penyelia projek pada tarikh:

(.....)

ENCIK MOHD HARIZ BIN SAMAIN

CONTENT

ACKNOWLEDGEMENT

Alhamdulillah, In the name of Allah the most gracious and the most precious, first and foremost, I would like extend our deepest praise to Allah SWT who given us the patient, strength, determination, obstacle that helping us to think wisely in making a decision and courage to completed this project .Plus, many thanks and highest gratitude to Encik Mohd Hariz bin Samain, our supervisor, which helps, lead and guides us with our project “Water Tank Cut Off”.

ABSTRACT

Wastage of treated water is one of the main problems faced by the National Water Supply Department, the impact of these problems involves the loss of millions of ringgit in the year as well as leaving significant impact on environmental ecosystems. The country's raw water supply was increasingly critical due to uncontrolled pollution, hence the country would require a treated water loss prevention system so that water supply to the whole country could meet consumer demand and ensure the preservation of natural ecosystems. Generally, there are 3 main causes of wastage of treated water pipe leakage, water theft & damage to water storage system which causes overflowing from the reservoir without being noticed. The aim of this study is to focus on the prevention system of treated water loss on the consumer home tank when the tank is experiencing damage resulting in the excess water out of the tank. The mechanism of this preventive system works is by using flow control valves, it will stop treated water flow into the tank when the overflow and immediate occurrence of the user will also get a warning indication that the tank system has failed to function and requires repair. Berita Harian article showed that there were two states with the highest use of treated water, Selangor and Pulau Pinang with a total of 234 litres and 290 litres per capita per day. The data analysis techniques used are from questionnaires and surveys at each home. In addition, we have made project plans to ensure smooth running of the project. Further, the design of this project is made through inventor. The project implementation is done on time and place.

In this study, the mechanism of the produced system is able to reduce the water overflow continues from the consumer's home.

ABSTRAK

Pembaziran air terawat merupakan antara masalah utama yang dihadapi oleh Jabatan Bekalan Air Negara, impak permasalahan ini melibatkan negara kerugian jutaan ringgit saban tahun serta meninggalkan kesan yang signifikan kepada ekosistem alam sekitar. Sumber bekalan air mentah negara semakin kritikal disebabkan oleh pencemaran yang tidak terkawal, oleh yang demikian pada masa kini negara memerlukan sistem pencegahan kehilangan air terawat supaya bekalan air kepada seluruh negara dapat memenuhi permintaan pengguna serta menjamin pemeliharaan ekosistem alam semulajadi. Secara amnya terdapat 3 punca utama pembaziran air terawat iaitu kebocoran paip, kecurian air & kerosakan sistem simpanan air yang menyebabkan air melimpah dari takungan tanpa disedari. Matlamat kajian ini adalah memfokuskan kepada sistem pencegahan kehilangan air terawat pada tangki rumah pengguna apabila tangki mengalami kerosakan yang mengakibatkan lebihan air melimpah keluar dari tangki tersebut. Mekanisme sistem pencegahan ini berfungsi adalah dengan menggunakan injap kawalan aliran, ia akan menghentikan aliran air terawat ke dalam tangki apabila berlakunya limpahan dan serta-merta pengguna juga akan mendapat indikasi amaran bahawa sistem tangki tersebut telah gagal berfungsi dan memerlukan pembaikan. Merujuk akbar Berita Harian, kajian menunjukkan bahawa terdapat dua buah negeri yang mempunyai penggunaan air terawat yang tertinggi iaitu Selangor dan Pulau Pinang dengan jumlah 234 liter dan 290 liter per kapita sehari. Teknik analisis data yang digunakan adalah dari soal selidik dan kajian di setiap rumah. Disamping itu, kami membuat perancangan projek bagi memastikan projek berjalan dengan lancar. Seterusnya, rekabentuk projek ini dibuat melalui inventor. Perlaksanaan projek dilakukan mengikut waktu dan tempat yang ditetapkan. Dalam kajian ini, mekanisme sistem pencenggahan yang dihasilkan dapat mengurangkan limpahan air terus berlaku dirumah pengguna.

CHAPTER 1

(Prepared by: Nur Adza Binti Kamarolzaman)

INTRODUCTION

1.1 **RESEARCH BACKGROUND**

Currently, there is a lot of waste in Malaysia due to the management of Air Selangor Sdn Bhd (Air Selangor) which has spent RM35.41 billion over 30 years for the implementation and strategic initiatives for consumers to extract, treat and distribute treated air supply in Selangor , Kuala Lumpur, and Putrajaya. Refer to the Daily News article. The data analysis techniques used are from questionnaires and studies in each house.

Furthermore, the indestructible material in Malaysia is on the rise and that now makes us among the countries with the highest pollution that requires treated water loss prevention system so that water supply to the whole country can meet consumer demand and ensure the protection of natural ecosystems. Therefore, there will be many precautions and new discoveries made to avoid pollution scenarios.

Therefore, this study inspires to combine a valve that can stop water automatically with the help of a valve to make him stop immediately. This new material is cheaper and easily available at any metal store due to its abundant resources. Additionally, it can decompose naturally and environmentally friendly. So we decided to make this project.

1.2 PROBLEM STATEMENT

A water tank that is cut off from the leakage aspect is a simple concept that facilitates the user of a large amount of material that is difficult to move. It is most widely used in construction and industry for daily use such as difficulty bathing, washing, and farming. This design is done to help users to be frugal and make wise choices; this can cause the amount of water per capita per day to decrease and will drive the progress of the national budget. The idea of water tank cut off being re-implemented should give consumers the ability for consumers to realize the benefits of frugality and this will keep the country's economy awake. Redesigning water tank cut off can be done on the user's home tank. With the advent of new ideas that can be used to improve the ecosystem of the environment to meet the design objectives, the following is a list of concepts:

- Pipes in the outlet to facilitate water production

- Valve modified to 90 degrees to ensure water stops immediately when it reaches the 90 degree level

1.3 RESEARCH OBJECTIVES

The objectives to this research are:

i. The mechanism of this preventive system works is by using flow control valves, it will stop treated water flow into the tank when the overflow.

ii. User will also get a warning indication that the tank system has failed to function and requires repair.

1.4 RESEARCH QUESTIONS

This study will answer the following research questions:

i. Is it possible to make a lighter and higher quality tank?

ii. What types of materials can be used to make valves cheaper?

iii. What are the possibilities of making tanks and valves safe for all ages?

1.5 SCOPE OF RESEARCH

The scopes and limits to this research are:

I. This product is not electricity related.

II. This product can decompose naturally.

III. Suitable for adults.

IV. Using black buoys and containers and valves.

V. Can last a long time with good and orderly care.

1.6 SIGNIFICANCE OF RESEARCH

The importance of the study is to address the wastage of water that occurs around. There are a large number case of rising water bill price for a house without the consumer being aware of the water leak in the house tap. Although many products have been created by contractors,

There are still many who do not have the self-awareness to be frugal and do not care about wasting water per capita daily. Ranhill SAJ Sdn Bhd (SAJ) Chief Executive Officer, Datuk Ahmad Faizal Abdul Rahman, said the waste involves large numbers and the amount may be enough to meet daily needs in smaller states. So, to prevent such incidents from getting worse, the house must be equipped with good and orderly tank capacity. These findings can help many parties from wasting to pay the cost of soaring water. It is important to deal with it for future generations. It can also reduce total water consumption in a day. This product is made and

Develop using simple components that are readily available in any type of component store.

It is also found in very small products and is easy to carry. In particular, these findings relate to systems that detect water from overflowing out and blocked immediately. In this case, for

Reducing buoy damage without realizing it, corrective action needs to be taken. This product uses readily available components such as valves, buoys, pipes to detect movement in the tank and while in the user's home. Valves will be set to detect specifically distance only to avoid interference from the leak section. This system will works during the occurrence of buoyant damage. Upon sensing the movement of water, the valve will automatically detect to turn off the water immediately and excess water will enter the second tank as a backup. Next, the user will realize that there is damage to the buoy when the water tank from the inlet is no longer out of water for the entire use of water in the house.

1.7 DEFINITION OF OPERATIONAL TERMS

1) Valve shut off- a type of valve that will close directly if a leak occurs.
2) measuring tape - measures the width and length of process materials

1.8 CHAPTER'S SUMMARY

In this chapter, the study is explained about the origin of the idea and its inspiration. All objectives are made from all problem statements. The objective for this project along with its importance is that the broken water tank becomes cheap and light so that it is easier to use for amputation, and even this project not only focuses on leaks but also saves on daily use. Therefore, this disconnected water tank can be used for daily routine with excellent treatment for a longer shelf life.

CHAPTER 2

(Prepared by: Nur Adza Binti Kamarolzaman)

LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, we will show the three main materials used in this process such as valves, containers and buoys. These three ingredients have their own advantages and disadvantages.

There are 2 types of tanks namely PLASTIC WATER TANK and STAINLESS STEEL.

There are many tanks for sale in the market, but what we will discuss this time is the type of water tank made of plastic (PE) and metal (stainless steel) which each has its advantages and disadvantages. Here are the advantages and disadvantages that you need to know.

PLASTIC MATERIAL WATER TANK (PE)

Advantage:

The raw material is made of plastic (polyethylene) which has been recognized by international bodies to test the effects of a product on human health, namely the FDA (food drug administration),The walls are made of three layers and have no connections so their strength is beyond doubt,

Disadvantages:

Less resistant to moss, especially bright ones such as yellow and orange. This is due to the pigment factor that is easily penetrated by sunlight, the frequency of treatment is more frequent, and at least once a month should be controlled,

STAINLESS STEEL MATERIAL WATER TANK (SS)

Advantage:

The raw material is made of stainless steel type 304 which has a chromium content of 18% and nickel 8% which is said to have a high anti-rust content,

The walls are designed to look more elegant and more exclusive.

Disadvantages: Has the possibility of rusting faster if your home is near the beach and sea area. The price is 3x more expensive than the same size,

Each water tank must have its own disadvantages and advantages. However, users must service the water tank at the right time to maintain the quality for daily use.

Valve - Safety valve calibration has two methods: on-line calibration (on-line calibration) and calibration bench calibration. If the conditions of the permit, it should be as far as possible at the calibration location, because the calibration at the location is more suitable for the actual operating conditions, and therefore more reliable.

The advantages and disadvantages of calibration on site are as follows:

(1) It is easy to modify the welding safety valve, and the seat back pressure can be measured.

(2) The disadvantage is that the calibration time is long, the system should be stimulated repeatedly, uneconomical, more dangerous, cannot do sealing test.

The advantages and disadvantages of the normal temperature calibration calibration platform are as follows:

(1) Complete environmental detection and safety valve leakage below normal normal temperature and working temperature below 250 ℃.

(2) Determine the small error range of the opening pressure relief valve saves new adjustment valve relief time, reduces labour intensity, reduces energy consumption and reduces work risk.

(3) The disadvantage is that there is an error between the operating temperature and the normal temperature (spring softens at high temperatures), and the return pressure will not be checked.

Shut off valve

Shut off valves are designed to safely manage compressed air in pneumatic applications, and are used to block compressed air in an industrial automation process, and isolate sub-systems when not in use.

Float valve or Ballcock valve

A ballcock is a mechanism or machine for filling water tanks, such as those found in flush toilets, while avoiding overflow and backflow. The modern ballcock was invented by José Antonio de Alzate y Ramírez, a Mexican priest and scientist, who described the device in 1790 in the Gaceta de Literatura Méxicana.

2.2 MATERIAL SELECTION

2.2.1 STORAGE BOX (REPLIKA)

Storage is a component that will replace the tank (replica). In this case, it increases the water resistance after it is set. In the storage box, used as a healing component. This aims to hold water as the actual tank holds water for everyday household use. The storage box has been modified with holes to make it look real and at the same time it works 100 percent like a house tank. Storage boxes are modified in the inlet and outlet to install overflow pipes and distribution for use

2.2.2 PVC PIPE AND CONNECTED

Pipe PVC

- is a hollow tube or cylindrical tube, usually but not necessarily of a circular cross section, which is used primarily for conveying flowing materials - liquids and gases (liquids), slurry, powders and small solid masses. It can also be used for structural applications; hollow pipes are much heavier per unit weight than solid members.
- The common use of the words pipe and tube is usually interchangeable, but in industry and engineering, those terms are unique. Depending on the appropriate standards produced,
- Pipes are usually determined by a nominal diameter with a constant outer diameter (OD) and a table defining their thickness. Tubes are most often determined by OD thickness and wall, but can be determined by any two ODs, in diameter (ID), and wall thickness. Pipes are generally made to one of the international and national industrial standards. [1] Despite the same standards for certain industrial application tubes, tubes are often made to custom sizes and a wider range of diameters and tolerances. Many industrial and governmental standards exist for the production of pipes and tubes. The term "tube" is also commonly used in non-cylindrical parts, that is, square or rectangular tubes. In general, "pipe" is a more common term in most of the world, while "tube" is more commonly used in the United States. Both "pipe" and "tube" mean the degree of rigidity and durability, while the hose (or hosepipe) is usually portable and flexible. Pipe assemblies are almost always built using fittings such as elbows, tees, etc., while tubes can be shaped or bent into custom configurations. For materials that are inflexible, cannot be moulded, or if construction is governed by

codes or standards, tube assemblies are also constructed using tube fittings.

PVC connector

- Aims to facilitate the flow of water from the inlet through the pipe to the hallway to the exit of the outlet. Aims to tighten the pipe and smooth the process of water flow in the pipe from the tank to the outlet.

2.2

Apply glue directly to the surface of both pretend and wait for 5 ~ 10 minutes. When the glue is slightly sticky and has a dry touch, align the two firmly with a little pressure. The bonding surface is denser, and it can be placed 1-2, and the effect is achieved within 24 hours, and the best bonding strength is achieved within 48 hours;

★ Tips: If you need to increase the bond strength and temperature resistance, you can speed up the treatment agent on the surface of the material, Plastic Plastic Pipe and then add about 5-8% curing agent to the glue to fully mobilize the bond strength and temperature resistance. Significantly improved, as the heat is activated at 60-75 ° C for 4-7 minutes, the viscosity is better, the glue added to the curing agent must be applied within 12 hours.

PVC plastic pipe precautions

★ This type of product is flammable, and storage and transportation are handled according to flammable product regulations;

★ Use ventilation and ventilation when using, pay attention to safety, and operate from fire;

★ After use, the container will be tightly closed to prevent colloids from solidifying. If the glue is too thick, it can be diluted with the appropriate amount of toluene or halogen.

★ Double-sided coating is better than one-sided coating.

★ Do not move the bonding surface easily, Plastic Pipe Glue otherwise air will affect the strength.

★ A long time can cause some corrosion to the metal container to make the sticker look darker, but it does not affect the performance of the product.

★ This product is sealed and stored in a cool place. Storage period is 1 year. When using other glues, Plastic Pipe Glue please use a smaller amount first, then use it in large quantities.

★ Be careful with inhalation and ingestion to avoid touching children!

2.3 CHAPTER'S SUMMARY

To conclude this chapter, a review of the literature is essential to show all material studies and methods to improve knowledge of this project. Every thesis and other project related to this broken water tank is very helpful especially for us to fully understand it.

Once many materials and methods are discussed and research is done, the materials are most suitable for our project. Due to its nature and advantages, while the method we decided on was the method of placing the valve. This is because of the low cost benefits and great for the beginner process.

CHAPTER 3

(Prepared by: Nurfathiah Hanani Binti Norman)

METHODOLOGY

3.1 INTRODUCTION

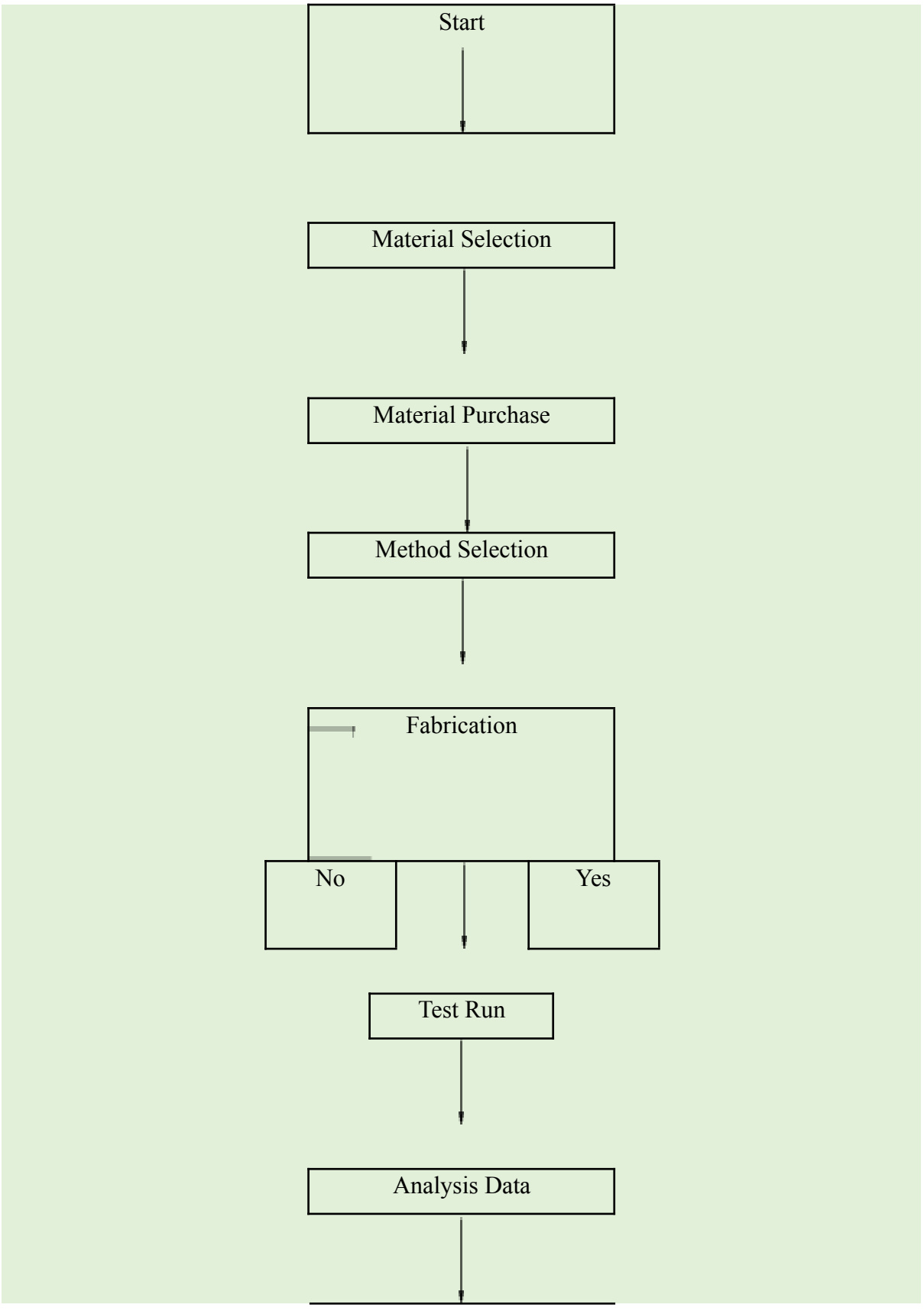
What is methodology? A methodology is a plan-of-attack, especially when that plan-of-attack is used repeatedly. This might be obvious, but the word methodology is

related to the word method. In fact, a methodology is a system of methods followed consistently. Scientists, for example, use various methodologies as they perform experiments. It might seem like the world is nothing but chaos and disorder. But actually, sometimes there is a method to this madness. And sometimes there's a methodology.

In this chapter, there will be a lot of information about the process and journey throughout the making of our final project. There will be flow chart showing the process of us making the whole project. This flow chart will explain the processes we took. Next, is the Gantt chart, which will show the actual and planning throughout all the 13 weeks of our final year project journey. However, in this chapter, we also will show 3 methods we used to carry out our final year project.

Among those 3 methods are drilling, sawing and welding. Hence, in this chapter we will discuss about these 3 methods.

3.2 FLOW CHART



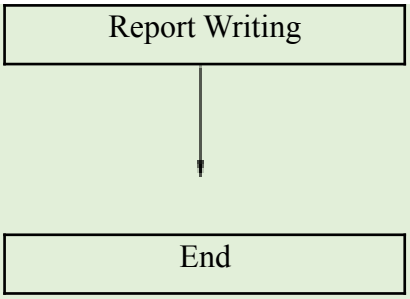


Figure 3.2.1-Flow Chart

3.3 FLOW CHART EXPLANATION

- **Material Selection**

  The process of material selection is one of the most important process in this final project. The main factor of material selection is to discuss and finalized which materials that will use in the project in order to avoid wasting of money and time. The material selection need to be done precisely so that the risks could be avoided.

  1) Transparent Storage Box

  Transparent storage box are used to imitate the real water tank that use for residential area and to store the water that will be use during the test.

  2) PVC Pipe ½ Inch

  PVC pipe is a tubular section or hollow cylinder that made from plastic and it is widely used by the residential area because the cost of the pipe are not too expensive. PVC pipe ½ inch are used to flow the water from the main pipe throughout the tank.

3) PVC ½ Inch 90 Degree Elbow, PVC ½ Inch P/T Socket, PVC ½ Inch Tank Connector.

PVC ½ inch 90 degree elbow, p/t socket and tank connector are used to connect from one pipe to another. PVC ½ inch tank connector are used to connect between the storage and the pipe and between the pipe and the valve. Then, PVC ½ inch p/t socket are used to connect the PVC ½ inch tank connector to the pipe.

4) Float Valve

It consists of a valve connected to a hollow sealed float by means of a lever, mounted near the top of the tank. When the water level rises, the float will rise and the valve will shut off the water flow.

5) Shut Off Valve

To stops the water flow to the entire home from the water meter. Come in many different sizes and materials, suitable for many different applications. Is such a commonly used instrument and there will always be an option to customize according to specific requirements.

6) PTFE Tape

Commonly used in plumbing for sealing pipe threads to prevent water leaking from the pipe.

7) PVC Cement

Is a chemical solvent and literally fuses the pieces of pipe together. Specifically formulated to soften the plastic so it can form together to create bond and to prevent water leaking from the pipe when the water flow through the pipe.

8) Mild Steel Square Hollow

Is commonly used when a balance is required between strength and functionality in structural and mechanical applications. The equal-sided gives it aesthetic appeal as well as making it economical for joining and other fabrication processes.

- **Material Purchase**

  The process of materials purchasing is crucial to collect and obtains all the materials needed. In this process a lot of research on the places and suppliers that the materials are going to be purchase is done. This step is important so that the risk off material wasting or money-loss will not happen. However, to carry out material purchasing, a well-made purchasing plan needed to be made. First, the suppliers will be contacted to make sure the availability of the materials. After that, surveys of price must be carried out to determine the better selling prices. Then finally, the purchases could be made.

- **Method Selection**
  - Drilling

    Drilling is a cutting process that uses a drill bit to cut a hole of circular cross-section in solid material. The drill bit is usually rotary cutting tool, often multi-point. The bit is pressed against the work-piece and rotated at rates from hundreds to thousands of revolutions per minute. We use this method to make a hole on our storage box so we can put the pipe inside the hole.

- Sawing

  Saw is a tool consisting of a tough blade, wire, or chain with a hard toothed edge. It is used to cut through material, very often wood though sometimes metal or stone. The cut is made by placing the toothed edge against the material and moving it forcefully forth and less forcefully back or continuously forward. This force may be applied by hand, or powered by steam, water, electricity or other power source. We use this method to cut the pipe and the metal that we use for the project.


- Welding

  Welding is a fabrication process that joins materials, usually metals or thermoplastics, by using high heat to melt the parts together and allowing them to cool, causing fusion. Welding is distinct from lower temperature metal-joining techniques such as brazing and soldering, which do not melt the base metal. We use this method to build the table for the tank.

- **Fabrication**

- **Test Run**

  The test run is carried out to determine the strength and end result of the product. In this test run, we test whether the float valve and shut off valve are function and if the shut off valve will closed when the float goes up.

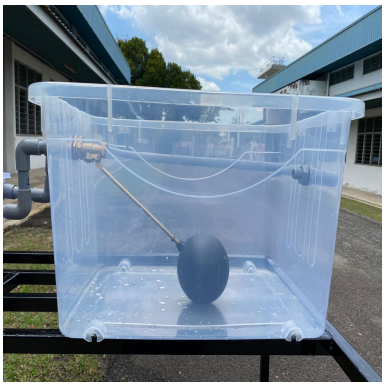
- **Analysis Data**

  The process of evaluating data using analytical and logical reasoning to examine each component of data provided. This form of analysis is just one of the many steps that must be completed when conducting a research experiment. Data from the test run is gathered, reviewed and the analysed to form findings, discussions and conclusion. In this project the data collection is collected from the tensile strength of the material we created.

- **Report Writing**

  Report writing is one of the most crucial step in every project invented. It is important to make a report based on the project, test run and analysis so that future improvements nor expansion of knowledge could be done. Our report writing is based on the analysis and findings that we collected throughout this whole process of completing this project.

3.4 PROJECT DESIGN



3.5 OPERATIONAL METHODOLOGY

- Drilling

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- Sawing

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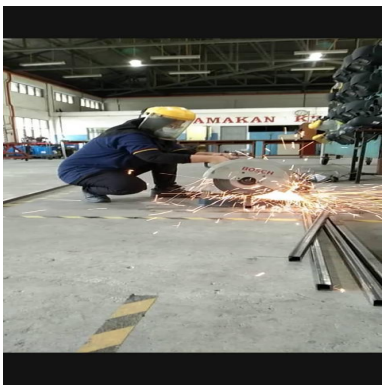

- Welding

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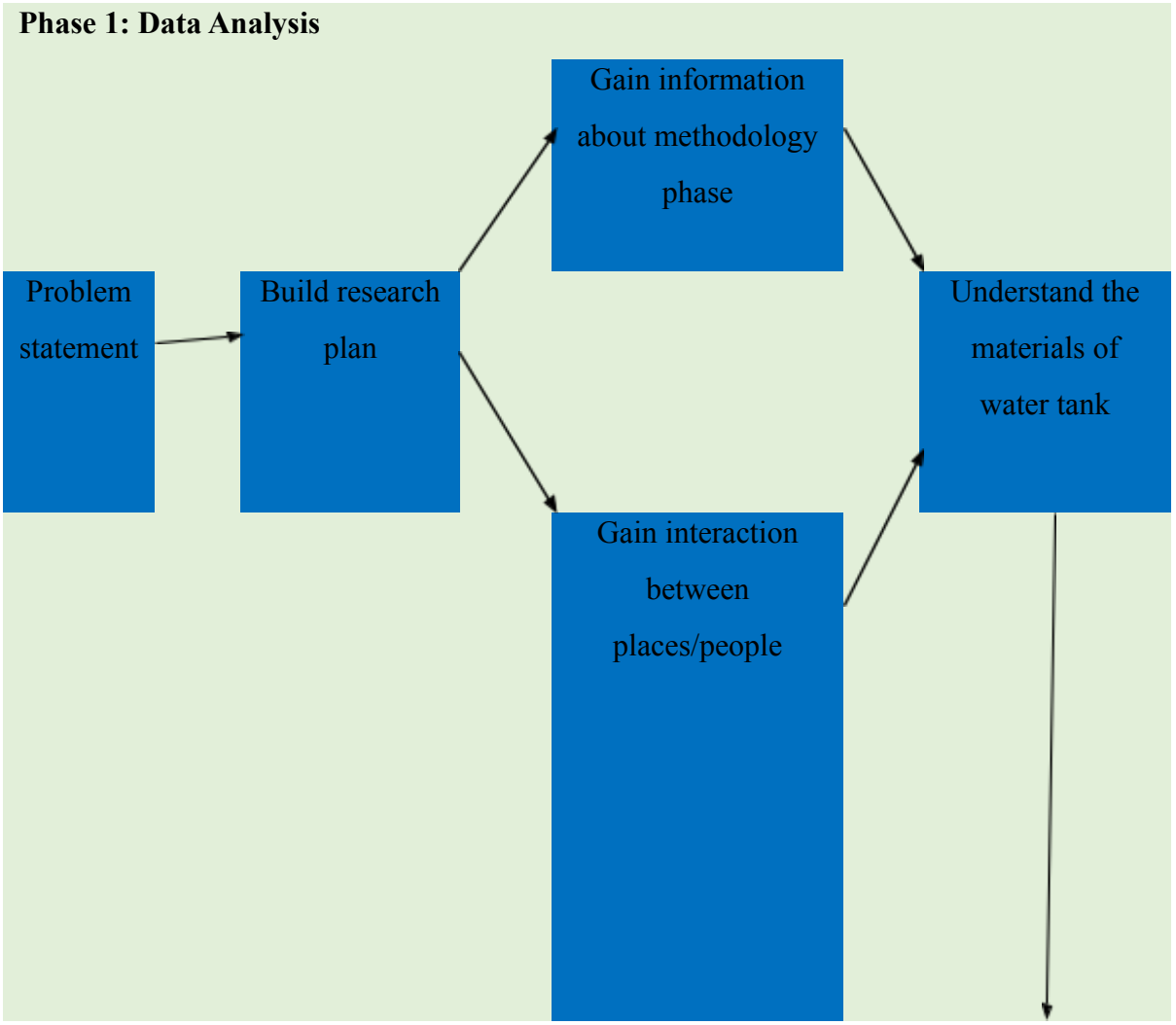
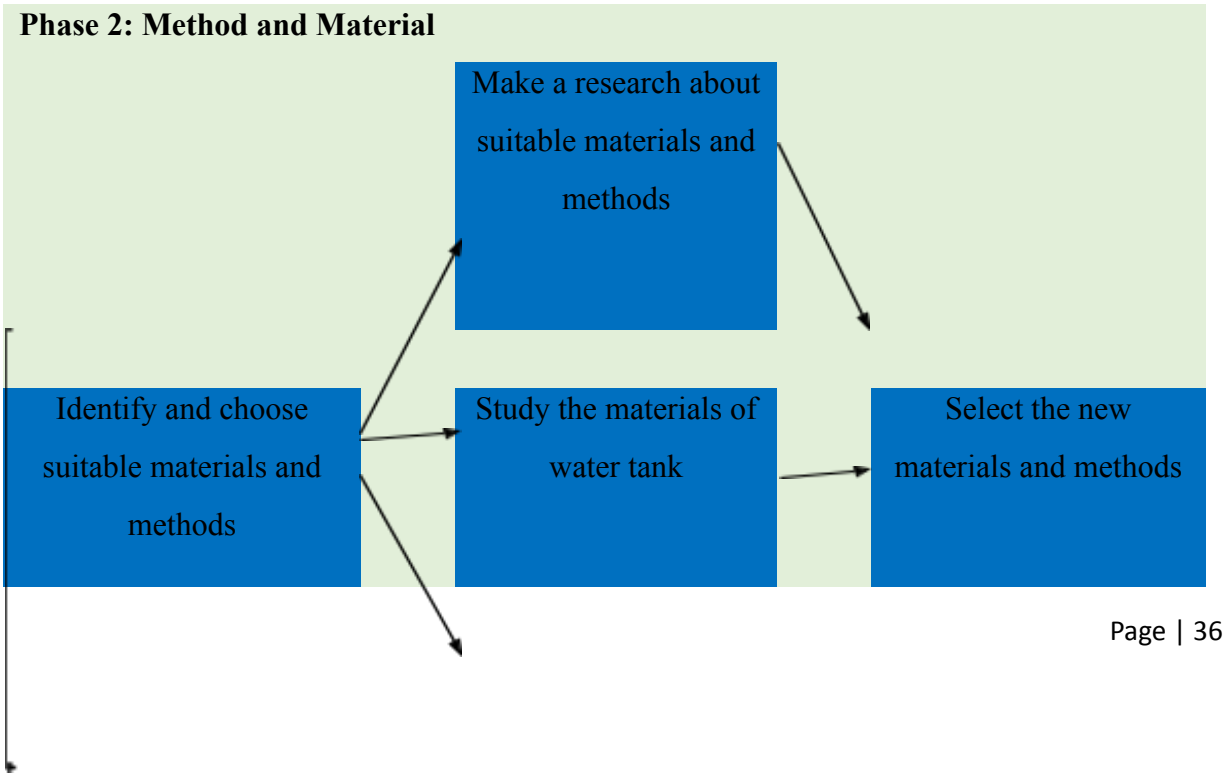
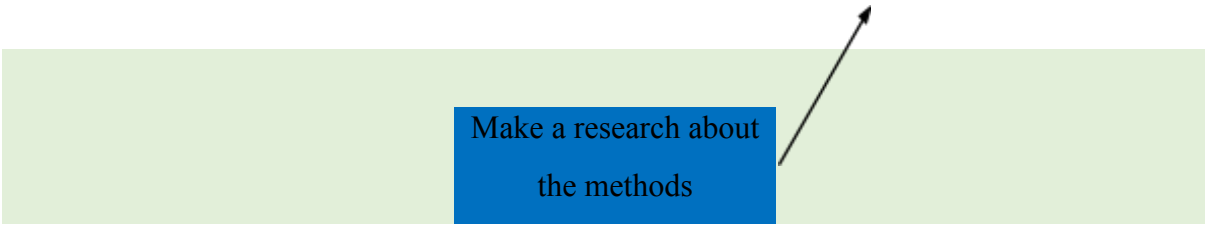
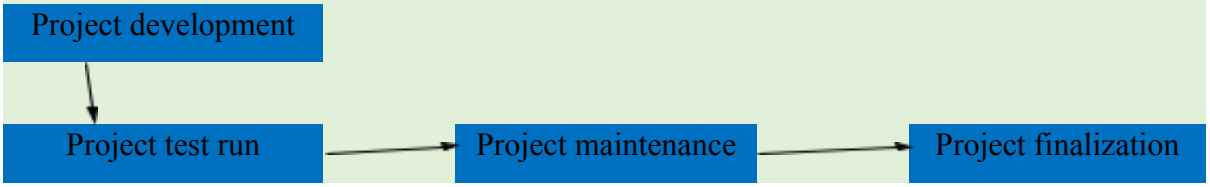
3.6 METHODOLOGY PHASE







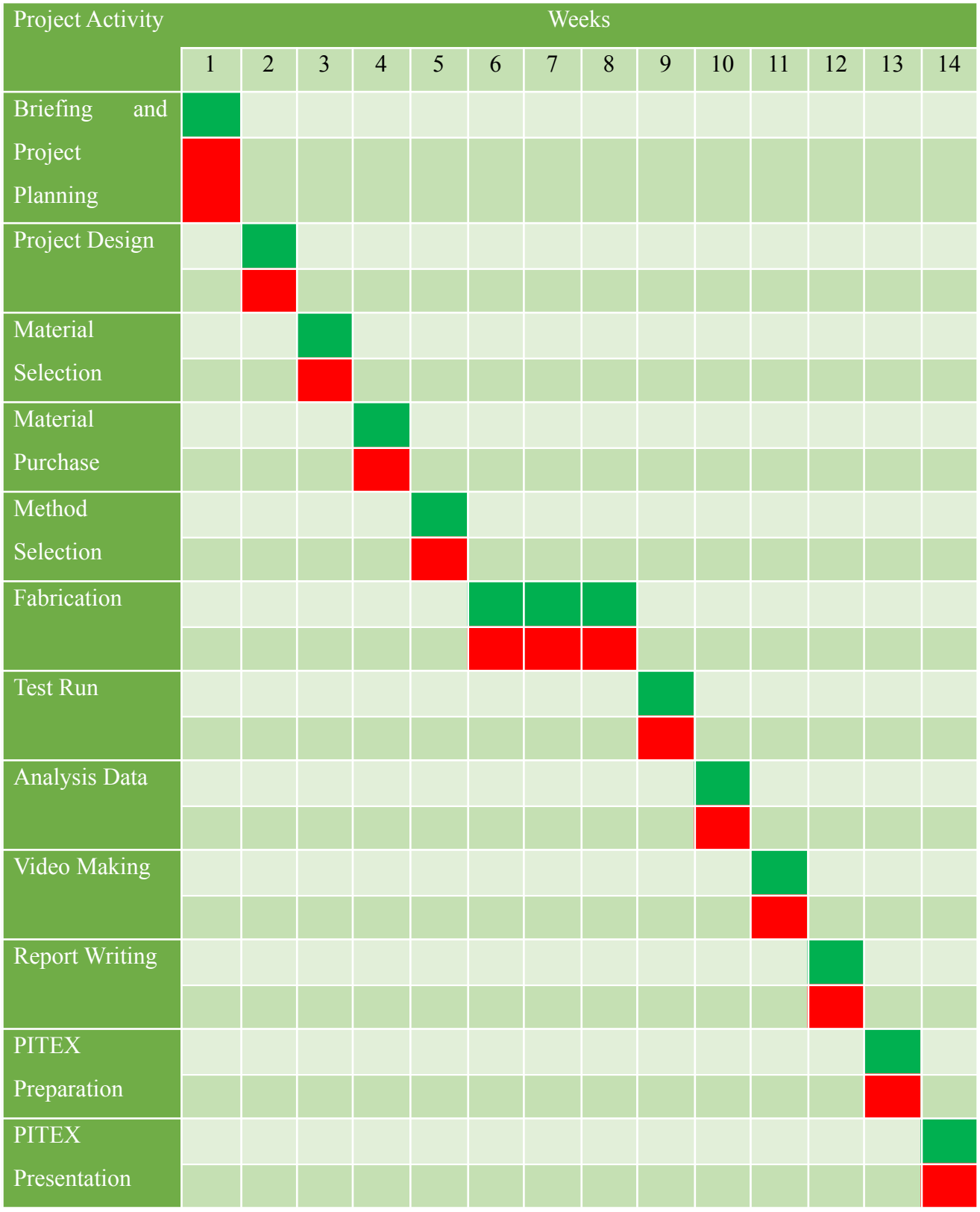
Phase 3: Preliminary Study

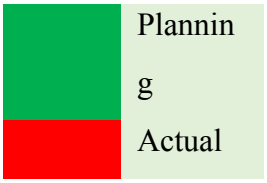


3.7 BUDGET CALCULATION

No	Materials	Unit	Price (RM)
1.	Transparent Storage Box	2	70.90
2.	PVC Pipe ½ Inch	5	8.00
3.	PVC ½ Inch 90 Degree Elbow	12	7.20
4.	PVC ½ Inch P/T Socket	2	1.60
5.	PVC ½ Inch Tank Connector	8	14.40
6.	Float Valve With Floating Ball	2	60.00
7.	Shut Off Valve	1	15.00
8.	PTFE Tape	2	5.00
9.	PVC Cement	1	19.50
10.	Mild Steel Square Hollow	6	55.00
Total			256.60

3.8 PROJECT ACTIVITY





3.9 CHAPTER'S SUMMARY

As a conclusion, the methods implemented in this project are very crucial and important to complete the project. Thus, this project is agreed and accepted by Encik Mohd Hariz Bin Samain, our supervisor. This project is very convenient and will save a lot of treated water from wasted. However, this method will affect the result totally if one of the method is change.

CHAPTER 4

(Prepared by: Nur Sabrina Syahirah Binti Md Nazari)

FINDINGS AND ANALYSIS

4.1 INTRODUCTION

This chapter combines data and analysis of the water tank cut off. This data and analysis are especially important for this project because it is containing the discussion to achieve the objectives and scope of this project. This chapter analyses the advantages, disadvantages and comparisons between normal water tank and water tank cut off. We used this data to, analyses every single possible to make it perfect and we did it.

4.2 ADVANTAGES AND DISADVANTAGES

Every project has its own pros and cons, the pros will help the people and the environment. However, the cons or the disadvantages must be improved or change for the future so that we could enhance the good and very efficient product that hardly to find disadvantage of the project. Besides of the advantages, this project also disadvantages that we must overcome it in the future for the better good.

4.2.1 ADVANTAGES OF WATER TANK CUT OFF

Water tank cut off have more advantages than normal water tank. It focus on the prevention system of treated water loss in the consumer home tank. Water tank cut off will help the prevention that that compare to normal water tank which have in nowadays world market. By adding a new installation on the water tank cut off it will reduced the clean water waste.

Moreover, this water tank cut off is more efficient than normal water tank to avoid water waste. The design help water flow overflowing into the outlet pipe. The additional valve in the tank is use to cut the water off from overflowing. The mechanism of the produced system is able to reduce the water overflow continues from the consumer's home.

4.2.2 DISADVANTAGE OF WATER TANK CUT OFF

The consumer will not notified when the main float valve damaged. So the consumer will be alert when the water in the main tank is drain. So to solve the problem an indicator must be place in the piping system to aware the consumer that the float valve is need to be check.

4.2.3 DISADVANTAGES OF NORMAL WATER TANK

Normal water tank is use in a common household. When the float valve is damaged, consumer will not alert. Generally, there are 3 main causes of wastage of treated water pipe leakage and damage to water storage system which causes overflowing from the reservoir without being noticed. Treated water loss on the consumer home tank when the tank is experiencing damage resulting in the excess water out of the tank.

4.3 CHAPTER'S SUMMARY

As a conclusion for this chapter, the analysis and findings have been made. This water tank cut off has a lot of advantages however there are every cons to pros. Hence, the challenges are taken as a room for improvements and more developments for future generation and well as to enhance their knowledge on the project we carried out. Test run is carried out to determine the fullest potential of water tank.

CHAPTER 5

DISCUSSION , CONCLUSION AND UPGRADE PLAN

5.1 INTRODUCTION

This chapter explains about discussion , conclusion and upgrade plan all together for the project . From the data from the test run of the project, the analysis have been done. Hence, the discussion from all the results of test run and analysis will be explain in this chapter. Then , the conclusion will be made based on the discussion and upgrade plan that have been made.

5.2 DISCUSSION

Based on the data we collected, we can agree to the fact that we need to lose the tightness of the shut off valve in the tank. This is because the process to lift the float valve by using the shut off valve is difficult. The process became difficult because the shut off valve need high pressure to lift it up. Thus, this may causes leaking at the shut off valve.

Other than that, we can change the HDPE to LDPE. Low-Density Polyethylene (LDPE) is a durable, lightweight material sourced from petroleum. Hollow LDPE plastic precision balls are versatile and well-suited to a number of applications and settings. They are typically at least partially translucent. Hollow LDPE balls are very resistant to wear, corrosion, water, and other elements. This resistance means that plastic precision balls made from LDPE are

especially recommended for outdoor, industrial, and other heavy-duty applications necessitating the use of hollow plastic spheres. The buoyancy of hollow LDPE balls makes them ideal for use as floats and levels in valves, pumps, and motors

CONCLUSION

Based on this through out project , it is confident to say that this water tank cut off gives alot of benefits not to just humans , but also the environment . Plus , with all the convenient that this water tank cut off to household , it will help from wasted treated water . In hopes that this project could make it to the marketing for place of residence, because it will greatly leave a positive effects to the environment. All the upgrades and improvements will be made so that this project could give more benefits and advantages . Hence, hope that this project could expand even more through out all the upcomings generations.

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-Uni-Bell UPVC Pipe Association

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