RUBBISH COLLECTOR MONITORING SYSTEM

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(a)

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Supervisor's Name : Engr. Khairuddin Bin Osman

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To my beloved family.

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I grateful to Allah because above the permission, I can finish my final project am 'Rubbish Collector Monitoring System' and implement the final report perfectly.

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ABSTRAK

Projek ini bertujuan untuk membina satu perangkap sampah yang dikawal sepenuhnya oleh sistem automatik. Selain itu perangkap sampah ini juga mempunyai sistem kawalan manual yang akan digunakan semasa kecemasan atau semasa penyelenggaraan perangkap sampah ini. Perangkap sampah ini diberi nama perangkap sampah automatick dengan system kawalan bersesuaian dengan fungsinya.Perangkap sampah ini akan dipasang samaada di dalam sungai, longkang ataupun tali air. Perangkap sampah sedia ada hanya mampu untuk mengumpulkan sampah sahaja namun proses mengangkat sampah akan dilakukan oleh manusia. Proses ini kadangkala terganggu akibat daripada kelewatan pekerja mengangkat sampah dan situasi ini akan menimbulkan pelbagai masalah. Masalah inilah yang cuba di atasi di mana satu perangkap sampah automatik perlu di reka dan dibangunkan. Pengawal yang digunakan di dalam sistem ini adalah Pengawal Logik Boleh Aturcara (PLC) untuk kawalan automatik and pengaturcaraan visual basic untuk kawalan manual. Disamping itu juga, terdapat peralatan tambahan yang digunakan seperti Suis Terhad, Motor Arus Terus, Geganti dan Suis. Pengawal Logik Boleh Aturcara digunakan sebagai pengawal kerana peralatan ini mudah dilakukan pengubahsuaian program sekiranya terdapat tambahan atau pengurangan kepada proses. Disamping itu juga, proses pendawaian juga amat mudah dilakukan. Manakala untuk kawalan manual menggunakan pengaturcaraan Visual asas kerana arahan dan kawalan yang mudah untuk dilakukan.

ABSTRACT

This project is to build one rubbish collector especially for river and drain and all of this process will be control by automatic system. Apart from that this rubbish collector have a manual control system will be used during emergencies or during maintenance the rubbish collector. This rubbish collector will be name Rubbish Collector Monitoring System suitable with the functions. This Rubbish Collector would be fitted in river, drain water course or lake. The conventional system, process to collect the rubbish will do by human power and sometimes process to collect the rubbish cannot follow the schedule. This problem can give many problems to environment. One of solution to solve this problem is design the new system such as Rubbish Collector Monitoring System. Rubbish Collector is being used Programmable Logic Controller (PLC) for automatic control and visual basic for monitor manual operation. Beside that, have a several additional part shall be install at this system like as Limit Switch, Power Window Motor, Relay and Toggle Switch. Programmable Logic Controller (PLC) used as a main control because this equipment easy to reprogrammed if have a additional process or want to decrease the several process and also this equipment easy to wiring from hardware to main controller. Whereas for manual control use Visual Basic because the programming is easy to control.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Malaysia is a one of country in the world has a beautiful place and also beautiful river. Beautiful river in Malaysia is attraction to tourist come our country. But at this time the condition of river in Malaysia very bad with behavior of Malaysian people likes to throw the domestic waste into the river. They take easy way to throw the waste into river. This action can make flood occurred and make many people nearest the river suffer.

Malaysia governments invest every year to make sure the condition of the river at country in the good condition and interest. Many programs from Ministry of Agriculture did to launch to give more expose about deterioration of habit like to throw the domestic waste into the river. Beside that, government also invest a lot of money to build the rubbish trap but this solution not give the big impact to make sure the river clean from the waste.

Like we know everyday we can hear about the waste problem occurred at river in the Malaysia and we are also hear about flood destroyed the residence and asset. One of the solutions is design the waste trap to collect the rubbish to follow the schedule or time set. From this problem, Rubbish Collector monitoring system will be design to solve this problem.

1.2 PROJECT EXPLANATION

Rubbish Collector Monitoring System using the Visual Basic to monitor the manual operation when automatic operation is problem or to do maintenance for the system. While PLC systems is one system to collect the rubbish or waste in the river and drain automatically. Main objective to design this project is to ensure the collecting process operation in consecutive condition. Rubbish Collector Monitoring System is control by Programmable Logic Controller (PLC) unit, Visual Basic (VB) for manual and this system will be installing together the project. To operate this project, ladder diagram will be design to assemble the process step. From ladder diagram, all sequence of the project step will be show. That is making easier to troubleshooting the problem. While Visual Basic will be create the command and built the form for control the system. The form divide into 3 part such as motor 1, motor 2 and motor 3 which represent for container and front net of rubbish collector.

Another components used to build this system is power window motor. In this project, power window motor will move in two conditions where for the first condition is at forward and at the second condition is reverse. Polarity of supply to power window motor will be change for reverse condition. Besides that, this project also uses the parallel port and also the timer.

1.3 PROBLEM STATEMENT

Have several problems identify before to create Rubbish Collector Monitoring System. The problem occur is like waste in the river and drain, river contamination, continuous process, conventional system, reduce human power and labour safety.

1.3.1   Waste In The River And Drain

This problem can occurred when the people throw the rubbish into drain or river such as in figure 1.1(a) and figure 1.1 (b). This action can induce the clog

drains, flood and can create the smelly environment. Besides that, mosquito problem also can happen and this gives the danger environment to people such as 'Denggi', 'Taun' and other.

Figure 1.1(a) Waste in the river (b) waste in the drain

1.3.2   River Contamination

River contamination is a big problem today because many rivers at Malaysia expose to bad attitude of Malaysia citizen such as figure 1.2. For example, many rivers at big town have bad scenery and give the bad reputation to the tourist especially Melaka River. Melaka River is a main river in Melaka city but failure from government to take any action to clean back Melaka River.

Figure 1.2: River Contaminations

1.3.3   Continuous Process

Waste in the river need the continuous process to make sure the river free from contamination forever. This process can be continuous if all the system changes

to programming system. Either programming system can use to make the system control automatically is Programmable Logic Controller (PLC). All system will be control by a timer and all process can set follow by system requirement.

1.3.4   Conventional System

At Malaysia, the system use to collect or manage the waste still uses the conventional system. For example, at Melaka River net will be use to block the domestic waste but at the same time process to collect the waste shall use manual system. Manual system mean is still use the worker from human to collect the rubbish or waste every week.

1.3.5   Reduce Human Source

Work in waste environment can expose the human to bad side effect such as which illness caused germs. In the sophisticated area and to achieve advance country, any work cannot need human source to do it or job where can give the bad side effect to people will be complete by machine or robot. Which work committed by machine or robot more gratifying and fast relatively human.

1.3.6 Labour Safety

Machine or equipment commonly uses do not guarantee the human safety. For example if use the human to collect the waste, human will be wound or ill which might due to rubbish or equipment used. Besides that, human maybe can be bad effect for their health.

1.4 OBJECTIVE PROJECT

Before start to build the 'Rubbish Collector Monitoring System' I must know the objective to ensure this project suitable with the condition. So, the main project objectives to build this system are:

i. To design and build one equipment to collect automatically rubbish and waste in the river and drain.
   - Ensure the rubbish collector system at Malaysia can use in automatically system without destroy the ecosystem.

ii. To design one systematic process in collecting rubbish field and to make sure process will be continuous without monitoring by supervisor.
   - Ensure the process system will do everyday or follow the setting time without any monitoring from supervisor. This system can ensure the collecting process will follow the schedule.

iii. To learn about Programmable Logic Controller (PLC) and about Visual Basic.
   - Learn about Programmable Logic Controller (PLC) include to create Ladder Diagram and learn how to make command Visual Basic to monitoring all the process into PC and detect the entire fault. Besides that, can practice what which study in the class to real environment and to familiarize the student with work environment.

iv. To comprehend of PLC wiring diagram and real wiring of PLC between the hardware.
   - Comprehend of PLC wiring diagram to do after finish create the mnemonic code and ladder diagram and can make reality wiring of PLC between the hardware which previously studied theoretically in the class and lab.

v. To comprehend of the Visual Basic instruction to control the hardware when the system problem and emergency occur.

- Learn how to use Visual Basic instruction in real life to control the output system such as theoretically learn in the class.

vi. To reduce the river contamination and to raise the quality water and river.

- The Rubbish Collector monitoring System built to reduce the waste and contamination river and automatically can make the quality water for use everyday. Besides that, the Malaysia people would stay in healthy condition.

1.5 SCOPE PROJECT

These project just a model of collector rubbish monitoring system. The size of project is not follow the real size of river and the power of motor using also not proper to used for the real project. So, the scopes to build this project are:

i. Use 3 power window motor for moving forward condition and reverse condition the rubbish collector and main container.

ii. Programmable Logic Controller (PLC) use to control automatically the rubbish collector.

iii. Used the computer to control manually project by pressing the keyboard for the movement of the rubbish collector using Visual Basic when the system to do maintenance or the automatically system is problem.

iv. The size of project is not follow the real size of river and the power of motor using also not proper to used for the real project.

1.6 PLACE TO INSTALL

After make the research, have a several place suitable to install Rubbish Collector Monitoring System. Another top place can be install this system is river, drain, water course and lake.

1.6.1   River

Most of the river at Malaysia has an ending or all rivers throw to sea such as in figure 1.3. All waste bring in the river shall release in the sea. So, this situation is very dangerous to marine species and can eliminate the entire marine heritage. Besides that, human also losses the nutritious food to eat everyday such as fish, crab and other.

Figure 1.3: River

1.6.2   Drain

This project can be installed at the small or large drain such as in figure 1.4. This concept for all of concepts stills same. Time to collect the rubbish and waste can be set follow the supervisor. Merely for design at drain, more safety needed to avoid the system and also to avoid the human from danger.
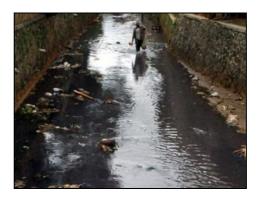
Figure 1.4: Drain

1.6.3 Water Course

Water course use to supply the water into the paddy field at the Malaysia. The water course in the Malaysia such as in figure 1.5. Water want to supply must be don't have any rubbish or waste. This waste sometime can give the bad effect to the growth of paddy.

Figure 1.5: Water Course

1.6.4 Lake

Lake is make rest area or recreation in Malaysia. So, we must take care of cleanliness our lake to see lake attract such as in figure 1.6. Lake also is one place to install the Rubbish Collector Monitoring System.

Figure 1.6: Lake