

CONVEYOR DESIGN FOR DISPOSAL SYSTEM

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With love,
I dedicate this thesis
To my beloved father and mother

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ABSTRAK

Dalam menuju era globalisasi ini, kebanyakan pengguna akan mencari alternatif yang baru untuk memudahkan segala kerja yang hendak dijalankan di dalam atau di luar rumah. Projek yang dihasilkan ini merupakan pembaharuan di kondominium di mana ia merupakan pengubahsuai sistem pembuangan sampah yang sedia ada. Ia bertujuan untuk mengelakkan sampah yang dibuang dari tingkat atas bertaburan di tempat pembuangannya dan tempat tersebut menjadi terlalu kotor. Projek ini menggabungkan rekaan yang melibatkan perkakasan elektrik dan elektronik serta perisian menggunakan program PLC. Sumbangan besar dalam projek ini ialah aplikasi PLC di mana ianya merupakan sistem kawalan yang berkemampuan menjadi pengawal utama kepada semua peralatan elektrik.

ABSTRACT

In the globalization era, mostly the consumer will find the new alternative to make all the work in or outside house easier. The project that was produced becomes renewal at condominium where it was modification of the existing waste disposal system. The purpose of the project is to avoid the rubbish that throws from the higher level was scattered at the disposal area and can cause the area become dirty and unhygienic. This project will combine the electric and electronic equipment and the PLC software. The big contribution in this project is PLC application where it a main controller to all the electrical equipments involved.

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LIST OF ABBREVIATION

PLC	-	Programmable Logic Controller
CPU	-	Central Processing Unit
DC	-	Direct current
AC	-	Alternating Current
PC	-	Personal Computer
SWM	-	System Waste Management
EPA	-	Environmental Protection Agency
NC	-	Normally Open
NO	-	Normally Close

CHAPTER I

INTRODUCTION

1.1 Introduction Of The Project

Toward to the globalization era, various equipment was created to make life easier. The effect from that, many aspects were undergone the changing in the latest technology to fill the goal. So, it includes the house equipment. Mostly, the consumer can find the new alternative to make the work easier. More rubbish will produce by human everyday. So, many dust bins was prepared at whole place for convenience and the country cleaning. But the waste disposal system at condominium or flat have a problem while the people just throw out the rubbish from the top and it may cause the rubbish to break and mess at that area. This project will aim to improve the waste disposal system at the condominium or flat area.

This project using the Programmable Logic Controller (PLC) as shown in Figure 1.1 to move the motor and conveyor. PLC is a programmable Logic Controller which has a processor unit, memory and input output terminal. These components work together to control machine and process.

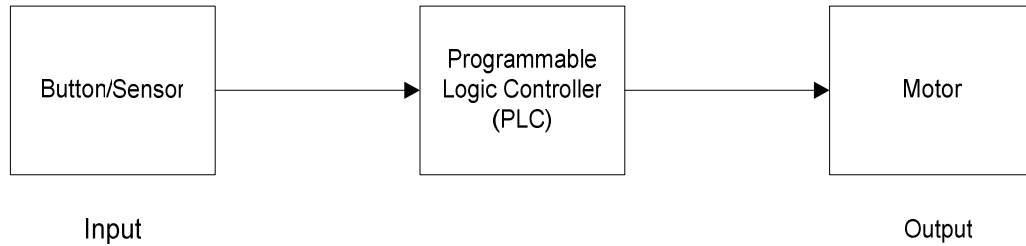


Figure 1.1 Block Diagram of PLC

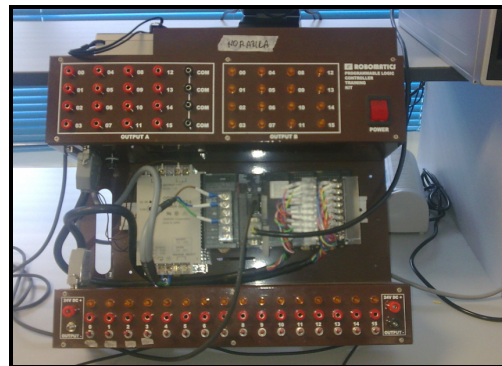


Figure 1.2 The PLC OMRON

1.2 Objectives

Before conducting or doing the project, the construction of the objectives of the project is the main focus in this project. At the last of this report in the conclusion chapter the objective will be stated where it succeed or not. This project is purposely design to improve the waste disposal system at the flat of condominium building. It is because, the main objective of this project is to ascertain the garbage disposed will directly enter the trash can without scattering away even though it is thrown from higher floors.

Besides that, the residents at the flat or condominium area can avoid unpleasant odours as well as guarantee cleanliness and furthermore it can prevent the outbreak of dangerous diseases. It related to the country motto “Country clean, citizen healthy”.

This project also to keep the uninvited and wild animals away from residential area. For example, it can keep the dog or cat since looking the food at the heap of rubbish. Besides that, to reduce man labour used for cleaning purposes and it can save labour cost in long run.

1.2 Problem Statement

Each of the projects has their own problem to be discussed before starting the project. By realizing the problem statement it easy to know the purpose of doing this project and what are the problem to be solved. Nowadays, the waste disposal system at the flat or condominium building has a major problem where is the garbage that thrown from above like second or third level is very likely to tear apart and scatter when it reaches ground. Besides that, the surrounding area whereby the trashcan is located would be too dirty with wastes scattered around and it also producing unpleasant odours. In fact, the state of the area would cause an outbreak of diseases to the residents that live at that area.

The waste disposal system in flat or condominium building also has the problem which is the scattering rubbish would invite wild animal that are looking for rood. For example, the dog or cat would come looking for the food at the scattering rubbish. This also would cause an unwanted disturbance to the residential area. In order to maintain a clear, trash controlled area, cleaners are needed. A continuous cost is needed to wire labours for cleaning the trashed area.

To solve the problem, one system will be designed to improve the waste disposal system at the flat or condominium building. The system will give much advantages to all resident at that area and they can used this system when they want to throw the rubbish although they live at the third or higher level.

1.4 Scope of Project

This project is based on electrical, electronics and mechanical application. The system is an application of a conveyor that uses a motor and chain for the navigation. The designed model has 2 level/floors where the ground floor stores the main disposal bin and smaller moves bins are installed on every level. These cans will be moved are along the levels by a navigator. Each bin must be fills up to 0.5kg of garbage and can be modified according to the real application. The whole weight capacity of the model is around a total of 2kg per bin.

For the model construction, Programmable logic controller (PLC) is used as a control device for the system. Among the items will be used in this project are chains, sprocket, bearing, shaft, motor and aluminum bin. The bin will be attached to a chain and will be moved by a motor. Besides that, the electronic display will be used to display the indicator that needed. Limit switch is used in this project and act as sensor to detect the rubbish and to ON the motor.

1.5 Thesis Layout

This thesis is divided into seven chapters and summary of each chapter is briefly discussed in this section.

i) Chapter I

This chapter is given the reviews of the project background and objective as well as the project scope.

ii) Chapter II

This chapter is the literature review that had been carried out for this project.

iii) Chapter III

This chapter discusses the theory of the project that consists the several types of sensors and material usually been used in building the hardware implementation.

iv) Chapter IV

This chapter is the overview of the Programmable Logic Controller

v) Chapter V

This chapter describes the project methodology including the flow chart of the process.

vi) Chapter VI

This chapter discussing on experimental, results and analysis including the mechanical design.

v) Chapter VII

This chapter gives overall conclusion and recommendation or suggestions for the project.