



SEMI AUTOMATIC MOVING ROOF

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ABSTRACT

Nowadays, environmental pollution gets from bad to worse. Acid rains and global warming are the main concern for us to build this project because these phenomena are dangerous for human and things since it may cause health problems to human and destruction of things. Houses that are situated near industrial areas are more risky as compare to houses that are situated in rural areas as they are more expose to pollution. Thus, Semi-Automatic Moving Roof (SAMR) is a product that eases people to enjoy outdoor activities without worrying about the weather. The methods of designing this project are by doing some observations and analysis about moving roof. The first process of this project is to design hardware for SAMR. Secondly, a program is built for SAMR using microcontroller PIC16F84A. Thirdly, the developed circuit is simulated by using Proteus software. Then, a prototype of SAMR is created. Lastly, the process of troubleshooting the software and hardware for SAMR is made. Based on our findings, the SAMR can choose to be operating in manual or in automatic by pressing the selection switch. When the selection switch is in open mode, the SAMR is operating manually by switching on and off another switch and if the selection switch is in close mode, the SAMR is operating automatically by sensing the rain using a rain sensor. The 7-Segment Display will appear number 2 if the SAMR functioning in manual condition while number 1 is displayed when SAMR operates in automatic condition. The DC motors rotate in forward direction and green LEDs turned on when the switch is pressed on or when the rain sensor detects rain. Once the switched is off and the rain sensor does not detect rain, the DC motors rotate in reverse direction and red LEDs turned on.

CHAPTER 1

INTRODUCTION

1.1 Background of Study

The title of this project is Semi-Automatic Moving Roof (SAMR). Roof is a very important thing that we need if we build houses or buildings. A roof is the covering on the uppermost part of a building. A roof protects the building and its contents from the effects of weather. Mostly, people put the roof outside of the house to protect outdoor things such as automobile. Besides that, roof can also prevent the outside area from being wet if there are rains.

In this project, the SAMR can move automatically if there are rains. The roof can move forward and reverse which means the roof can be open or close. The movement of the SAMR is controlled by motor that accept information from rain sensor. When there are rains, the motor will move forward and the roof close the particular area but if there are no rains, the motor will move reverse and the roof will be folded to the side. The movement of motor can also be controlled by switch. When the switch is on, the roof will move forward but when switch is off, the roof will move backward.

1.2 Problem Statement

Malaysia is a tropical rainforest country. Meaning that, this country is experiencing rainy and sunny weather only throughout the year. The reason this SAMR is created because most Malaysians enjoy outdoor activities but when it rains, we have to stop our outdoor activities because the outside area is wet. Besides that, rains are dangerous for human and things because of acid rains, especially houses near industrial area. Acid rains cause health problems to human.

1.3 Objectives of Research

The objectives of this project are:

1. To design hardware for SAMR.
2. To build a program for SAMR using microcontroller PIC16F84A.
3. To simulate the developed circuit by using Proteus software.
4. To build a prototype of SAMR.
5. To troubleshoot the software and hardware for SAMR.