

AUTOMATIC CAR WASHING SYSTEM

Sneha more, Darshana pagar, Sayali Kanmahale

Student at Matoshri College of engineering and research Centre Nashik, India

Prof.D.D.Ahire

Abstract

Automation is the need of time. Automation help to save the time, cost as well as manpower. Vehicles are used expensively. So it is important to have easy and effective system for cleaning the vehicle. In this project automatic car washing is done by using programmable logic control (PLC). In this exterior car washing is done which includes two processes namely washing and drying. We have used various components in this project such as conveyer belt, sensors, dc motor, and pump all these components are controlled using PLC. The main aim of this project is to reduce time and manpower.

Keywords— PLC, DC motor, DC relay, Proximatary sensor conveyor belt,, Dryer, Solenoide valve

1.INTRODUCTION

Car washing is simply activity done in order to keep the exterior of the car clean. Mostly it is done in automobile garage, car manufacturing companies, service center of automobile companies. This way of the cleaning car results in more consumption of water, manpower and time. Programmable logic controllers are used in most of the industries to get better productivity in lesser time with good quality of output. In earlier time car washing was carried out manually by service man at the service station or it was done by themselves, But this method of washing were not successfully in respect to accuracy, manpower and time consumption so automation of car washing was done using advance controllers like PLC.

2.RELATED WORK

Researcher group presented that Conveyor belt is used to handle mechanical equipment. it moves the material from one place to another. it is very useful to move heavy and bulky material. Because of the automatic system it saves the time.in our project we use conveyor belt for moving vehicle from one station to another station. The stations are car washing, car drying.so it is very easy for process of car washing and also it saves the time.[1]

Researcher group presented that dc motor converts the electrical energy into mechanical energy.in dc motor armature rotate inside the magnetic field. The basic principle of dc motor is that whenever current carrying conductor placed inside the magnetic field conductor experience the mechanical force.in our project we are using dc motor for the movement of conveyor belt.[2]

Researcher has proposed that proximity sensor is a sensor able to detect the presence of nearby objects without any physical contact. Proximity sensor often emits electromagnetic field or beam of electromagnetic radiation there are two types of proximity sensor-1) capacitive 2) inductive, capacitive is used to detect the plastic and inductive is used to detect metal body.in this project we use inductive type proximity sensor to detect the vehicle.

Author group have presented that solenoid valve is electronically operated device. The valve is controlled by an electric current through a solenoid.in case two port valve the flow is switch ON or OFF. Solenoid is most frequently use control element in solenoid offers fast and safe switching,high reliability,long service life,low control power. Solenoid valve is used to control the water entry into the machine.

3.PROPOSED SYSTEM

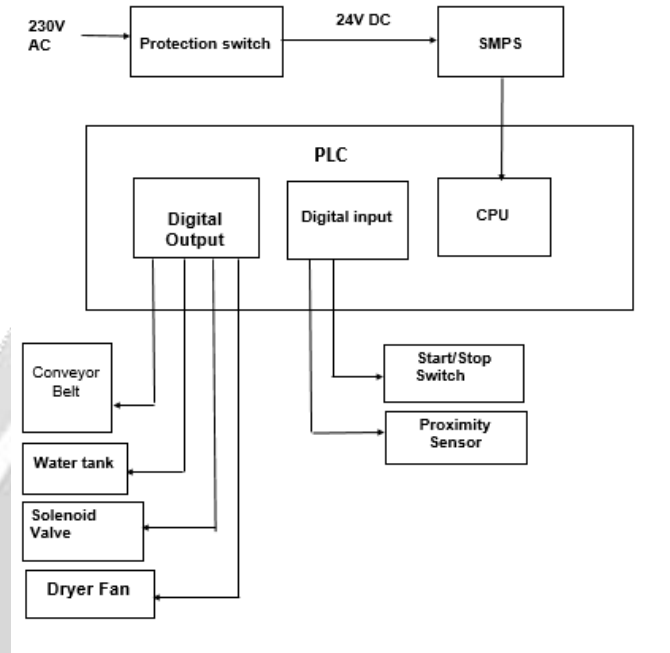


Fig no.1

A programmable logic controller or programmable controller is an industrial digital computer which has been registered adapted for the control of manufacturing process. Such as assembly lines all robotic devices or any activity that requires high reliability control and easy of programming and process fault diagnosis.

There are two types of contact in PLC and they are normally open and normally closed switches. A normally open contact means the contact is on when pressed/closed, and a normally closed contact is on when open/not pressed. Contacts represent the states of real world inputs like sensors, switches, if the part is present, empty, full etc. PLC's also consists of coils which are output like motors, pumps, light, timers etc. The PLC examines input and turns coils on or off whenever it is needed. They can also be used as inputs to other rungs in the ladder diagram.

The functionality of the PLC has evolved over the years to include sequential relay control, motion control, process, distributed control system, and networking. The data handling, storage, processing power, and communication capabilities of some modern PLC are approximately equivalent to desktop computers. PLC like programming combined with remote input output hardware, allow a general purpose desktop computer to overlap PLC in certain applications. The most basic function of PLC is to receive inputs from status components, which can be from sensors or switches. Some of the components of PLC are input modules and a programming device.

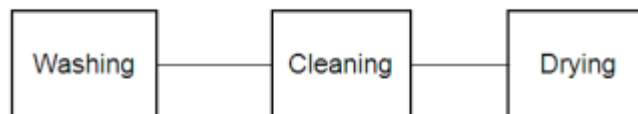


Fig.no.2

Working: First we use the SMPS (switch Mode Power Supply) to convert electrical power efficiently. SMPS transfers power. Now this power enters into the PLC. There are multiple inputs and output in PLC which can be

digital or analog. In this process we use D.C. motor for spraying the water for cleaning purpose. IR sensor senses the car positions and activate the appropriate stage of washing i.e. full washing and drying.

Washing: In a car washing system washing is the primary stage. In this process car is to be washed by water necessary to remove dust or mud from the outer frame of the care & wheels of the car.

This process is done manually in service center. In this automatic system, when the car is sensed on the conveyor motor start to rotate so the car get position conveyor stop & then solenoid valve get sprinkle water on the car to remove the mud from frame & wheel of the car. This washing process is run for specific timing as per the programing. When the washing process completed then car will move for the further process of washing.

Drying: After washing process completed car moves forward for drying. At the drying station proximity sensor will sense the car and conveyor will stop. When the car arrives at station, 2 nos fans which used as dryer will get started. This process will run for some time to dry the car. After drying Again conveyor start to move so that car moves toward the exit & go their destination.

4. CONCLUSION

This prototype will help to perform car washing automatically and results in high quality end product. Thus it will be User-friendly and capable to wash multiple cars at a time. Also require less man power, time and no pollution.

5. REFERENCES

- [1] prof.Mhaske Bhrarthankar "PLC based car washing system" IJREEICE Volume 4, Issue 4 ISSN 2321-2004
- [2] Mr.Vivek Kumar Yadav, Mr.Nishant Kumar "Automatic car washing using PLC" IJESC Volume 6 Issue No.5 ISSN 2321 3361
- [3] Mr.Pranay Sharma, Mr.Naveen Kumar "Manufacturing of automatic car wash system" IJERT Volume 8, ISSN 097-43154
- [4] Mr.Abhishek Pansare, Ms.PriyankaYadav "PLC based automatic car washing system IJAERD " Volume 2, Issue 4 ISSN:2348-4470
- [5] Mr.AmirHosseinDaeiSorkhabi, BitakHazini "Manufacturing of Full automatic car wash Using With Inteligent Control Algorithms" IJMAIMME Volume 7, issue no:3
- [6] Pranoti Utekar Ms.Sayali Naik53, "Implementation of Automatic car washing system using two robotic arms" IJRSET Volume 4, Issue 4, ISSN 2319-87Ms.