

Automation of Car Washing System Using PLC & SCADA

Akash Dalvi

AISSMS's Institute of Information
Technology, Pune.

Vishavambhar Urmode

AISSMS's Institute of Information
Technology, Pune.

Shubham Chaudhari

AISSMS's Institute of Information
Technology, Pune.



ABSTRACT

Today's world cannot sustain without automation. Automation helps to reduce time in all process of manufacturing. It also reduces expenses and manpower required for doing any activity. This paper describes an automation of car washing system using PLC and SCADA. There are three main processes like washing, mopping and drying. Conveyer belt is used to move car from one process to another. Proximity sensors are used to detect the location of car on the conveyer. For each process, specific time delay is provided so that the particular operation is completed. SCADA system is provided for monitoring purpose, So remote distance monitoring is possible.

Keywords : PLC and SCADA, Ladder diagram, sensor.

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I. INTRODUCTION

In order to keep the car clean externally, washing of cars is done at garages and service center manually which results in consumption of large amount of water. It also leads to wastage of water. Also time and manpower required is large. It will be possible to reduce the use of water, time and manpower if automation is used. PLC and SCADA can be used for automation. With the use of SCADA System it will be possible for the operator to monitor and control the washing process.

II. BLOCK DIAGRAM

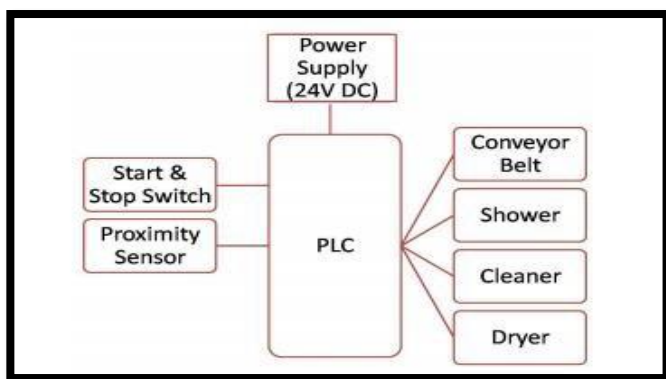


Fig no 1

III. COMPONENTS

1. PLC

Specifications:

PLC: Allen Bradley

PLC Software : RSLogix500

Input Power: 120/240V AC, 24 V

DC Battery backup

SCADA Software: Factory Talk view studio.



Fig no 2

2. Proximity Sensor-

Specifications:

Operating Voltage: DC 6-36V

Detection distance: 4 mm



Fig.No.3

3. Conveyor Belt-

To move material from one location to another , conveyor belt is used . They are normally used for the applications involving the transportation of heavy or bulky materials. Conveyor systems allow quick and efficient transportation for a wide variety of materials.



Fig.No.4

4. DC Motor-

Specifications:

Operating voltage: 4.5-18 V Speed:100 RPM



Fig. No.5

IV. LADDER DIAGRAM

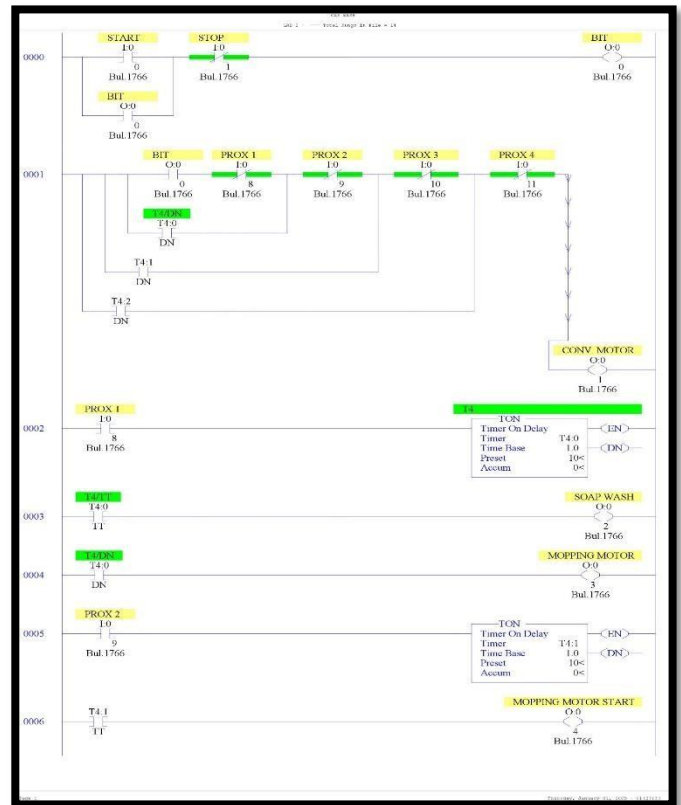


Fig.No.6

VI. WORKING

At first the car which is to be washed is parked on conveyor belt. Then the 1st proximity sensor senses the arrival of car and initiates the command of soap water wash. Car is washed with soap water for the set delay time . Then the conveyer belt starts again to move. When the car is detected by 2nd proximity sensor then the process of mopping is started. At the same time second car is entered in the station and its arrival is detected by 1st proximity sensor and process of soap water wash is started for the second car. In the same way processes of mopping and drying are performed.

VII.CONCLUSION

In this project the time required for car washing is reduced and also it is possible to wash 4 cars at a time. The wastage of water has also been decreased and operation of car washing can be performed with reduced man power.

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V. SCADA STRUCTURE

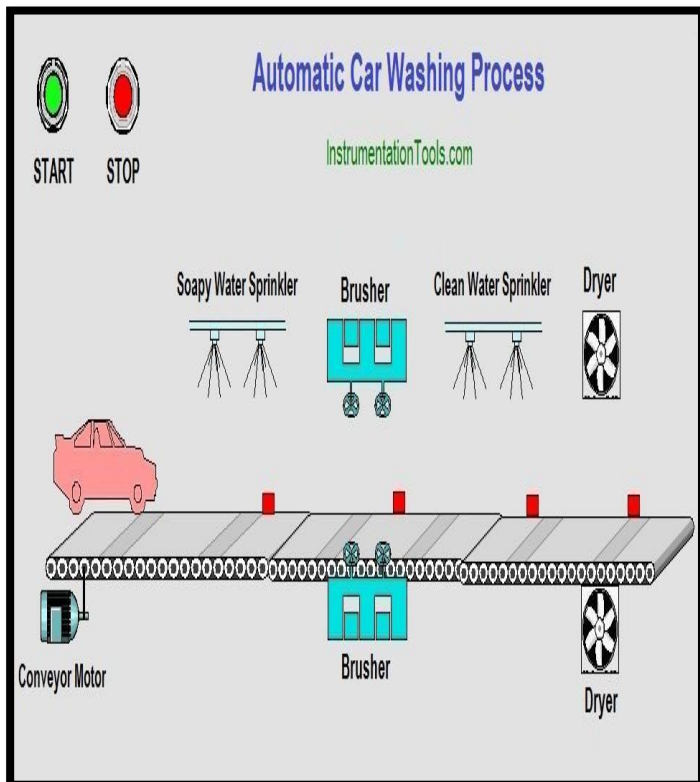
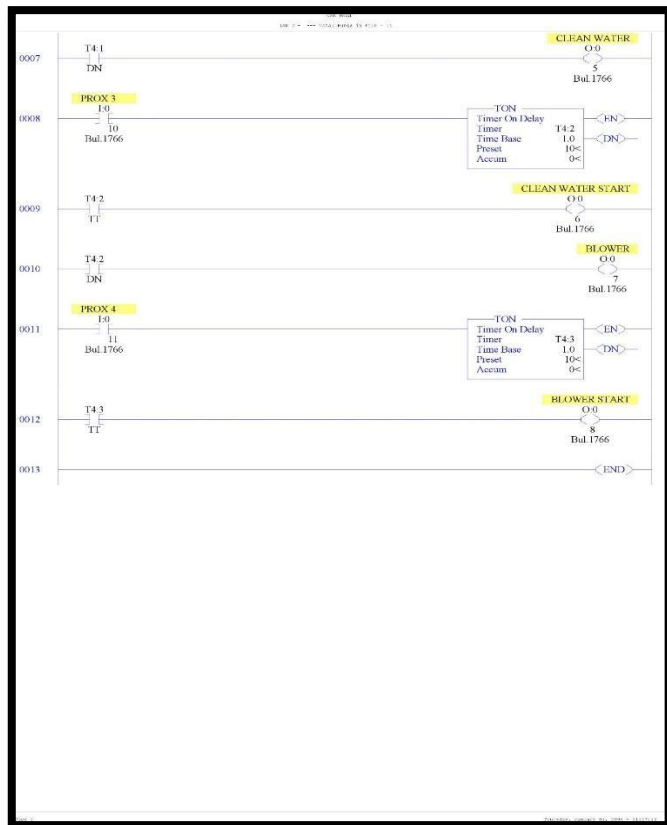


Fig. No.8