

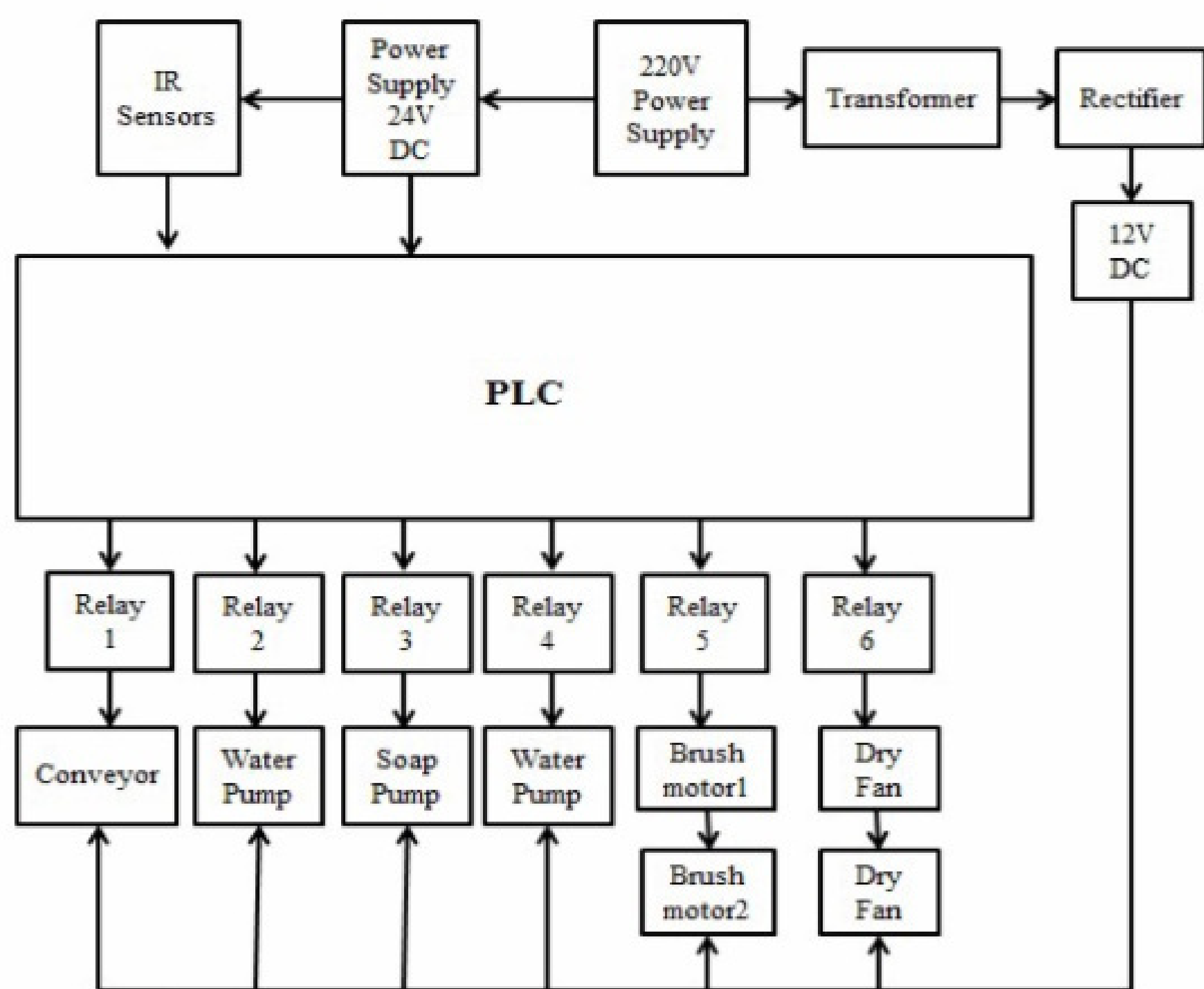


Programmable Logic Controller based Automatic Car Washing System

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Introduction

In today's industrial environment, vehicle surfaces are subjected to daily abuse, and automatic car washing techniques vary among car owners. There are various types of car washes, including manual, self-service, and chemical. Manual car washing requires more labor, time consumption, and may not be satisfactory to customers. To address these issues, automatic car washing can be done using Programmable Logic Controllers (PLC), allowing for more efficient and satisfactory results.



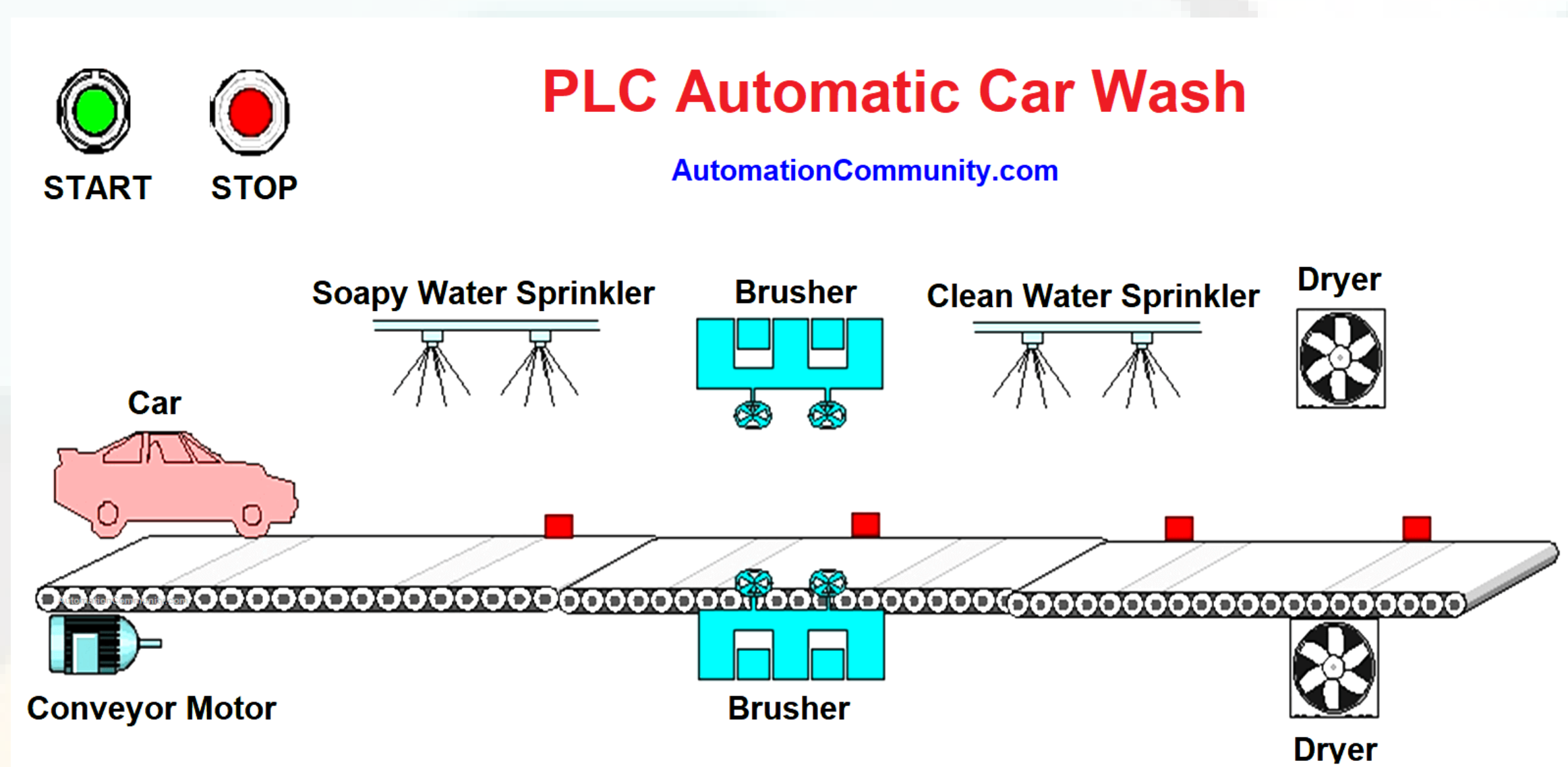
BlockDiagram of PLC based Automotive Car Washing System

The car washing industry began in 1914 with the first semi-automatic car wash in the US in 1946. Hanna Enterprises, founded in 1957, expanded to 31 car washes in America. In the 1960s, Hanna became the leading innovator and manufacturer of car washing equipment and materials. They developed machines like Wrap-Around Brush, Roller-on-demand Conveyor belt, soft cloth friction washing, tire washing methods, and a recirculating water system. Despite the rapid increase in gasoline prices in the 1970s, the industry continues to grow and evolve.



Stimulation of the System

The PLC Siemens is simulated using a ladder diagram. The diagram shows that various components are used as normally closed contacts, with the output Y000 being activated when the power supply is on. In network 2, the X001 is used as a normally open contact, activating the output Y001 and Timer T0 for 10 seconds. The output Y002 is activated when the car reaches sensor 1, the output Y002 is activated when the car reaches sensor 2, the output Y002 is activated when the car reaches sensor 3, the output Y003 is activated when the car reaches sensor 4, and the output Y005 is activated when the car reaches sensor 5. The process is completed after five steps, and the system continues operation for the next process.



conclusion

The automatic car wash system uses a Siemens PLC for control, reducing operation time and manpower, improving efficiency. The system is compact, fast, and accurate, with ladder diagram language being the most usable programming language. Although not as reliable as original designs, it is designed for larger scale implementation. The automatic washing system can be used in interior wash, coin or token systems, and can also have a counter for counting washed cars.

References

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