Solar Operated Automatic Car Washing System

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Abstract **- Automation has become the basic requirement in this developing world. Today in this present era, automation helps us to save time, expense as well as manpower. It is significant to have smooth and effective system to sustain the vehicles cleanliness. Automatic vehicle washing machine concentrates on car washer system using Solar. Automatic vehicle washer system has three capital processes namely washing, cleansing and drying. Hence the external of the vehicle will be washed by detecting the vehicle on conveyor belt and further controlled by Solar. Automatic vehicle washer is served with the usage of a conveyor belt which carries the vehicle. Proximity sensors are used for detecting the vehicle, which are placed in their positions according to the functioning of the washer. As soon as the vehicle is sensed, the functioning of conveyor assembly invokes. With the predefined time delay, the conveyor gets suspend. Vehicle washer technique is the combination of different functions which performs scattering the solution of detergent water, then cleaning with normal water and finally wiping the wetness using cotton brushes. Vehicle washing can be done where vehicles are parked for a long time and washing car can be done easily like fuel filling stations, supermarkets, hospitals, government buildings, railway stations and can also be widely used in service stations and manufacturing units.**

Index Terms **- Solar Panel, DC motor, Pipes**

1.INTRODUCTION

A car wash (also written as "car wash") or auto wash is a facility used to clean the exterior and, in some cases, the interior of motor vehicles. Car washes can be self-serve, fully automated, or full-service with attendants who wash the vehicle

2.COMPONENTS

1.Re-circulating water pump –

A re-circulating pump draws water from the basin under the pumps it through a system of sprays (or water distributors) from which the water is directed onto the tube surfaces. Air is induced or forced over the wetted tube surfaces and through the rain of water droplets. By intimate contact of the air with the wetted tube surfaces and water droplets evaporation of part of the water occurs thus cooling both the tube surfaces and the water simultaneously. In this manner evaporation is used to increase the rate of heat transfer from the tubes to the air.

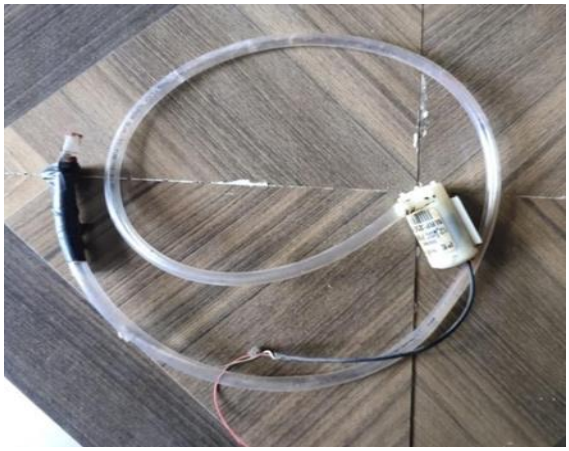


Fig no. 1 Re-circulating water pump

2.DC motor –

An electric motor is a machine which converts electrical energy to mechanical energy. Its action is based on the principle that when a current-carrying conductor is placed in a magnetic field, it experiences a magnetic force whose direction is given by Fleming's left-hand rule.

The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current in part of the motor.

DC motors were the first form of motor widely used, as they could be powered from existing direct-current lighting power distribution systems. A DC motor's speed can be controlled over a wide range, using either a variable supply voltage or by changing the strength of current in its field windings. When a motor is in operation, it develops torque.

Fig no.2 DC motor

3.Normally open switch-

In electrical engineering, a switch is an electrical component that can "make" or "break" an electrical circuit, interrupting the current or diverting it from one conductor to another. the mechanism of a switch removes or restores the conducting path in a circuit when it is operated. It may be operated manually, for example, a light switch or a keyboard button, may be operated by a moving object such as a door, or may be operated by some sensing element for pressure, temperature or flow.

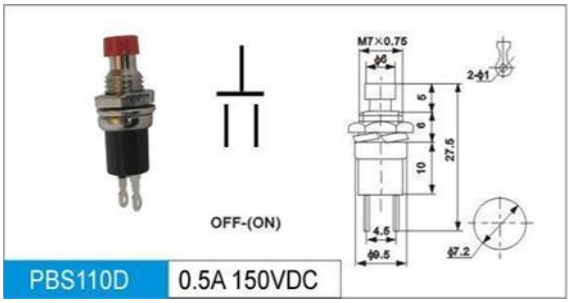


Fig no. 3 Normally open switch

4.Coil spring-

A coil spring, also known as a helical spring, is a mechanical device which is typically used to store energy and subsequently release it, to absorb shock, or to maintain a force between contacting surface. They are made of an elastic material formed into the shape of a helix which returns to its natural length when unloaded. Under tension or compression, the material (wire) of a coil spring undergoes torsion. The spring characteristics therefore depend on the shear modulus, not young's modulus. A coil spring may also be used as a torsion spring: in this case the spring as a whole is subjected to torsion about its helical axis. The material of the spring is thereby subjected to a bending moment, either reducing or increasing the helical radius. In this mode, it is the young's modulus of the material that determines the spring characteristics. Metal coil springs are made by winding a wire around a shaped former - a cylinder is used to form cylindrical coil springs

Fig no.3 Coil spring

4.Solar panel-

Term solar panel is used to colloquially for photo-voltaic (PV) module. A PV module is an assembly of photo-voltaic cells mounted in a framework solar electricity to electrical for installation. Photovoltaic cells use sunlight as a source of energy and generate direct current electricity. A collection of PV modules is called a PV Panel, and a system of Panels is an Array. Arrays of a photovoltaic system supply equipment. Most solar modules are currently produced from crystalline silicon (c-Si) solar cells made of silicon accounted for more than 90 percent of worldwide PV production, while the rest of the overall market is made up of thin-film.

Fig no.4 Solar panel

5.C-channel-

The structural channel, also known as a C-channel or Parallel Flange Channel (PFC), is a type of (usually structural steel), used primarily in building construction and civil engineering. Its cross section consists of a wide "web", usually but not always oriented vertically, and two "flanges" at the top and bottom of the web, only sticking out on one side of the web. It is distinguished from I-beam or H-beam or W-beam type steel cross sections in that those have flanges on both sides of the web.Steel Channel is a Hot Rolled product (typically grade ASTM A36). When looking at a cross section it has a vertical web with horizontal top and bottom flanges. It comes in a wide varying range of sizes and web thicknesses. The shape of this type of product provides a great amount of structural strength, making it an ideal product for making frames and bracing. Typically, it is used in the manufacturing of machinery, enclosures and vehicles. It is also used in the construction of buildings for structural support. The Structural Channel, also known as a C-Channel is distinguished from I-beam or H-beam or W-beam which has flanges on both sides of the web.

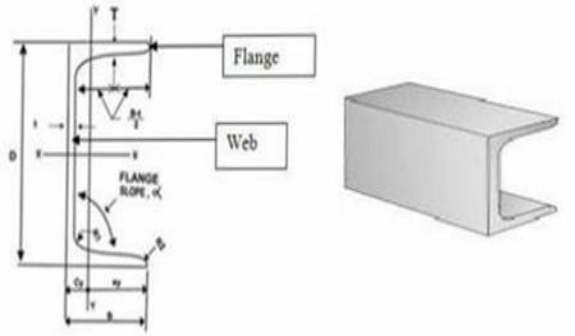


Fig no.5 C-channel

6.Battery-

An automotive battery or car battery is a rechargeable battery that is used to start a motor vehicle. Its main purpose is to provide an electric current to the electric-powered starting motor, which in turn starts the chemically-powered internal combustion engine that actually propels the vehicle. Once the engine is running, power for the car's electrical systems is still supplied by the battery, with the alternator charging the battery as demands increase or decrease. We are going to use this battery in our project for supply power to DC motor.

Fig no.6 .12 V Battery

Specification and dimensions of material-

1.DC motor

Voltage supply	12V
Speed	1800rpm
Type	DC
Units	2

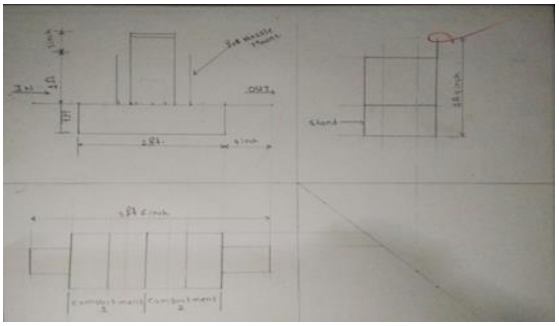
2. Battery.

Voltage	12V
Manufacturer	Shengoeu

3. Solar panel-

Length	L 1.5 & B 1
Type	10 V

3.DESIGN OF MODEL



4. FINAL MODEL

5.CONCLUTION

After completion of this project, we successful to achieve following points.

1.The project carried out by us made an impressing task in the field of automobile industry.

2. Because of this system we save more than 40% water and also, we save the energy.

3. these system helps to wash our vehicle in less time and also reduce the human efforts to wash cars.

6. ACKNOWLEDGMENT

We take this opportunity to thanks all those who have contributed in successful completion of this Capstone-project work. I sincerely wish to express gratitude to our Project Guide “Mr. M. J. Thorat” for full support, expert guidance, and encouragement and kind cooperation throughout the project work. I am greatly indebted to her for his help throughout Capstone-project work

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