

Hybrid Solar Operated Rain Sensing and Window Closing System

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ABSTRACT: Solar Energy usage is getting evolved day by day as the demand for the same is growing larger. The basic theme in this project is to develop system that gets its input energy from solar power and uses it to sense the rain drops with help of rain sensor and by applying pneumatic principles, Window is being operated. This project circuit gives automatically window closing when its sensor is wetted by water. Mostly used for rain detection in automobiles. In this project the rain sensor has to place making an angle of about 30-45 degrees to the ground. This makes the rain water to flow through it to the ground and prevents the window is closing on due to the stored water on the sensor. The metal used to make the sensor has to be aluminium and not copper. This is because copper forms a blue oxide on its layer on prolonged exposure to moisture and has to be cleaned regularly. The aluminium foils may be secured to the wooden / plastic board via epoxy adhesive or small screw. Automated system helps to reduce the man power and can work under any conditions.

KEYWORDS: Power Generating, Rain Detection, Automobiles, Solar panel.

I. INTRODUCTION

Solar Energy usage is getting evolved day by day as the demand for the same is growing larger. The basic theme in this project is to develop system that gets its input energy from solar power and uses it to sense the rain drops with help of rain sensor and by applying pneumatic principles, Window is being operated. This automated system helps to reduce manpower. These days, we need more and more power for driving and other related instruments and solar energy can help as constant source when used with efficient storage batteries.

Solar Smart is a solar powered (charged), battery backed, remote operated, chain drive opener system – designed for the use in awning and hopper windows, and skylights. Solar Smart is designed to be used without any additional power and wiring from the building. The operator is powered by a Lithium battery pack that is recharged from the external solar panel; an optional AC adapter is included. Solar Smart was engineered to feature ultra low power consumption while in idle state, and in use. The electronically efficient hardware and software design, allows for solar to be a reality; also allowing the solar panel to be relatively small The intelligence of Solar Smart extends to the handheld remote; bidirectional feedback display is the most noteworthy to the end user. The large and readable display provides feedback on a number of critical items including; Open / Close status displayed in percentage, operator and remote battery levels, solar charge rate, temperature automatic functions, and several other advanced programming options. A single remote can be paired with one or multiple operators within range.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Special Issue 15, December 2017

II. OBJECTIVE OF THE PROJECT WORK

This project circuit gives automatically window closing when its sensor is wetted by water. Mostly used for rain detection in automobiles.

And also power generating using solar panel the solar panel is connected to the window so that when the sun rays falls on the solar panel the battery is connected to the panel the power s stored under battery from that the operation works. Also we can work through the electricity connected to the micro controller so this called the hybrid operating system.

III. METHODOLOGY

The methodology of this work as follows:

- Arduino Uno
- Rain detecting sensor
- Solar panel
- Battery
- 2 Channel Relay Board
- Pneumatic Systems
- Driver circuit with relay
- Window model
- Compressor

The rain sensor detects water that completes the circuits on its sensor boards' printed leads. The sensor board acts as a variable resistor that will change from 100k ohms when wet to 2M ohms when dry. In short, the wetter the board the more current that will be conducted.

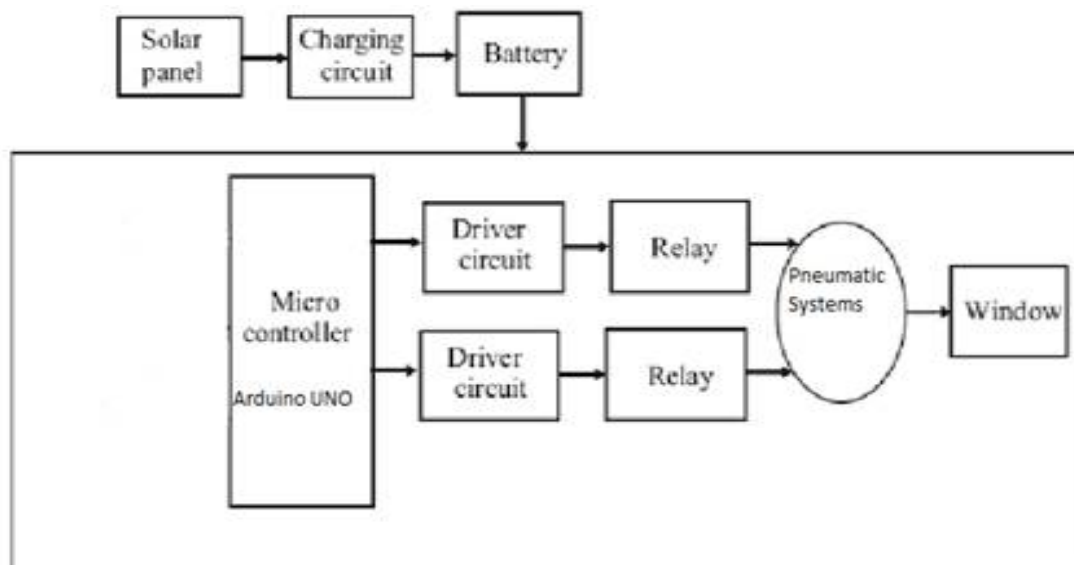


Fig. 1. Block Diagram of the System

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IV. ADVANTAGES AND DISADVANTAGES

Advantages :

- Solar energy is resource that is not only sustainable for energy consumption
It is indefinitely renewable
- Power Supply is obtained frequently due to solar power.
- Free cost of energy.
- Pollution Free and Environmental friendly.
- Automated system helps to reduce the man power and can work under any conditions.
- Solar energy is Renewable energy source.

Disadvantages:

- Primary disadvantage of solar power is that it obviously cannot be created during the night.
- The power generated is also reduced during times of cloud cover
- Solar power is not effective in moist conditions.
- D C Battery maintenance is complicated work.

V. CONCLUSION AND FUTURE SCOPE

Solar Energy is a Renewable free source of energy that is sustainable and totally inexhaustible and, unlike fossil fuels that are finite. It also a non polluting source of energy and it does not emit any green house effect when producing electricity.

Day by day the Electricity Power is getting major problem so we are taken a solar power to operate our system. Before they implemented mainly in automobile to wipe the water which falls on the glass the rain water falls on the glass the wiper blades get operated automatically wipes the window this is done only in automobiles. Now we are implementing to a house, apartments as a automatic window closing. When rain water falls on window the sensor works sense the water fall so automatically window closes when ever sun light appears the window will open this is done by using by both solar power and also electricity power.

This application can be used in a large power generation and also to overcome man power. We can easily implement in very huge apartments so that there is lots of houses are constructed in 1 single apartment.

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