

“A REVIEW PAPER ON SOLAR WINDOW BLINDS”

Akshata Gaurkgede, Gauri Rane, Shubham Nimbalkar,
Shubham Bawangade, Sameer Ukey, Poonam Lokhande
Student, Jhulelal Institute of Technology, Nagpur.
Prof. Piyush Bahad*
Jhulelal Institute of Technology, Nagpur.

Abstract

Among the non-convective, renewable energy source, solar energy affords great potential for conversion into electric power. Maximizing power output from a solar system is desirable to increase efficiency. In order to minimize power output, needs to keep the panels aligned with the sun. This paper deals with the review on electricity generation using solar power. The proposed system ensures the optimization of the conversion of solar energy into electricity by properly orienting the panel in accordance with the position of the sun south facing window.

Keywords: Solar window blinds, Poly crystalline panel, inverter.

I. INTRODUCTION

Now days the solar energy is produced by the sunlight is a non-vanishing renewable source of energy which is free from eco-friendly. Every hour enough sun light energy which is the earth to meet the world's energy demand for a whole year. Today energy is the main inspiration for socio-economic development. Solar windows were created for several reasons. One is aesthetics. While everyone is enjoying having the energy savings and environmental benefits that traditional solar PV systems produce, not everyone likes the sight of large solar energy system on a roof or a property.

This window – based solar panels, which channel sunlight into solar energy near the window frame, offset fossil fuel – based energy consumption without altering the appearance of building or landscape. Solar power windows can also supplement clean electricity produced by conventional PV system. This solar system works based on south facing buildings. This is a great for building with plenty of day time sun exposure. Window based solar technology is a revolutionary breakthrough for home owner and building owner we want to maximize efficiency and wouldn't otherwise be able to get enough energy for a PV solar system.

PV cells convert sun light to Direct Current (DC) electricity. Charge controller works as control the power from solar panel with reverse back to solar panel to get cause of panel damage. Battery system acts as storage of electric power is used when sun light is not available (i.e. night). From this system is connected to inverter for convert Direct Current (DC) into Alternating Current (AC).



Fig.1. Working of Solar Energy

II. NEED OF SOLAR POWER SYSTEM

The increase demand for energy, the continuous reduction in existing source of fossil fuel and the growing concern regarding environmental pollution, have pushed mankind to explore new technologies for the production of electrical energy using clean, renewable source, such as solar energy, etc. Among the non-convectional, renewable energy source, solar energy affords great potential for conversion into electrical power, able to ensure an important part of the electrical energy need of the planet. Solar energy is free, practically inexhaustible and involves no polluting residues or green gasses emissions.

III. LITERATURE SURVEY

This study incorporates a literature review of the sustainable benefits of using blind and illustrates how they are an asset the building saccade in creating dynamic, comfortable and potentially productive environments for the commercial sector.

This study [1] shows how the use of dynamic windows can bring numerous benefits in terms of energy efficiency, rather than improving the already good performance, it therefore appears more important to drastically reduce the cost, focusing on material, reduction process improvement and easier installation. Overcoming current technical and economic barriers will have required substantial further outlays to finance applied research and development, and to cover anticipated cost of initial investment in commercial-skill improved-technology production capacity.

It is necessary to control and use the power generated by solar in proper manner such that it does not interrupt and provide required power. In [2] describes the design of a solar charge controller with micro-controller based soft switching buck converter. Zero current switching technique is used for buck converter is design. 14 pin micro-controllers are used for generating the necessary PWM switching signal. The output voltage of the solar panel is 21V and it is applied to the charge controller circuit. The overcharge indication and under charge indication is available in the charge controller circuit. The solar charge controller is design using ZCS buck converter topology. In this topology, it is insuring that PWM generation through micro-controller will we controlled depending upon solar radiation, intensity and temperature. Future work is aimed at implementing modified perturb and observe method in the solar charge controller.

High efficiency bust-buck converter [3] based single stage PV inverter is used. From this it is analysed that the first converter part operates in ideal bust or buck mode, thus, it has a quit input voltage range which is good for PV application. The second inverter part is composed with unfolding circuit based on the direction of the greed therefore from power processing point of view, this inverter is a single stage inverter. Because it processes power either buck converter or a bust converter, high efficiency can be achieved.

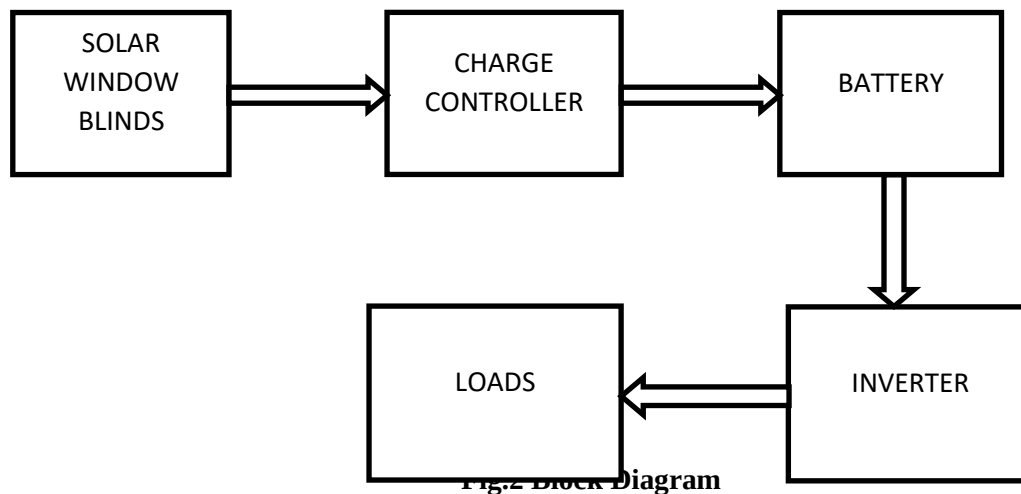
IV. OBJECTIVE

Working with solar window blinds should be of following basic objectives:

- a) **LESS SPACE REQUIRED:** Now days, most of the people install solar panel on their roof top and they get more Space. So, instead of this we are installing solar panel on windows and getting less space.
- b) **GENERATION OF ELECTRICITY:** With the help of waste heat which falls on window we are generating electricity by using solar panel.
- c) **GREEN TECHNOLOGY:** Solar power is pollution free and causes no greenhouse gasses to be emitted after installation. It will not create noise and wear and tear will be minimized. It does not required fuel to generate electricity so it does not produce waste and therefore, there will be no pollution issue.
- d) **ENERGY BILL REDUCE:** Using solar panel instead of relying on a utility company can help you cut your bill by up to 50% per month. When your home has solar panel, energy from the sun will be use to power your electricity. Except for when the sun is not present such as during thunder storm is at night.

V. PROPOSED METHODOLOGY

Solar system with window is as shown in the above fig. it is placed in south facing side. Sun rays are incident on the solar panel. Solar panel traps the light energy and converts into electricity. We are use in Poly crystalline modules which are the convert heat energy into electric energy. Poly crystalline module works on the basic principle by absorbing sun light with photovoltaic cell, generating DC energy and then converting it to useable alternating current. Solar panel mounted on window which gets heated and the poly crystalline module converts heat into electricity. The solar panel mounted on the window having positive and negative which are connected to the charge controller and the charge controller is connected to the battery as well as load. And battery is connected to the inverter with step-up transformer. Four solar panel module are placed on the window. When there is a sufficient heat available on the panel the module generates electric energy. When temperature is more output is maximum. As temperature varies output of the panel also varies.



CONCLUSION:

The paper has presented a preliminary study on the solar window blind by survey on various literatures. Literatures provided beneficial data for proposed methodology. The concept of solar window blinds is advantageous for the generation of electricity for reducing your energy bill and save your space.

REFERENCE:

1. B. Cazes, "windows and glazed area technologies and materials in Europe", presented at the IEA (International Energy Agency) Building Envelope Technologies and Policies Workshop, Neuilly-sur-Seine, France, 17 November 2011
2. X. Long, R. Lion and J. Zhou "Low cost charge controller of photovoltaic power conditioning system based dynamic DC/DC topology" IET Renew. Power Generation., 2011, vol. 5, Iss. 2, pp. 167-174.
3. Kjaer, S.B.; Pedersen, J.K.; Blaabjerg, F.; "A review of single-phase grid connected inverters for photovoltaic modules", IEEE Transactions on Industry Applications, Volume 41, Issue 5, pp. 1292 – 1306, Sept.-Oct. 2005
4. AkshayUrja (2008) special issue on Solar Energy for Urban and Industrial Applications. Vol. 1. NO. 5. March-April 2008. Ministry of New and Renewable Energy, Government of India.
5. B. P. Divakar and Danny Sutanto "Optimum Buck Converter with a Single Switch" IEEE Power s