

# A Module to Harness Solar for Hybrid System

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## INTRODUCTION

Renewable energy sources play an important role in electricity generation .People are finding the benefits of having energy saving. Energy from the sun is the best option for electricity generation as it is available everywhere & is free to harness. On an average the sunshine hour in India is about 6 hours annually also the sun shines in India for about 9 months in a year. Electricity from the sun can be generated through the solar photovoltaic modules .The output power of the PV panel depends on the terminal voltage of the system. To maximize the output power of solar system we can use high efficiency, low cost DC/DC boost converter. From this maximize voltage we can charge the battery & operate the load continuously. In other case solar supply is off or battery is discharge then automatically AC main gives the supply to the load.

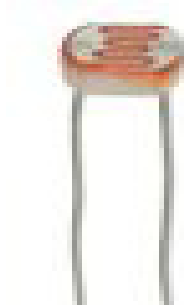
We all know that the world is facing a major threat of fast depletion of the fossil fuel reserves. Most of the present energy demand is met by fossil and nuclear power plants. A small part is met by renewable energy technologies such as the solar, biomass, geothermal etc. There will soon be a time when we will face a severe fuel shortage. As per the law of conservation of energy, “Energy can neither be created, nor be destroyed, but it can only be converted from one form to another”. Most of the research now is about how to conserve the energy and how to utilize the energy in a better way. Research has also been into the development of reliable and solar power sources have experienced a remarkably rapid growth in the past 10 years. Both are pollution free sources of abundant power.

With high economic growth rates and over 17 percent of the world’s population, India is a significant consumer of energy resources. Despite the global financial crisis, India’s energy demand continues to rise. India consumes its maximum energy in Residential, commercial and agricultural purposes in comparison to China, Japan, and Russia.

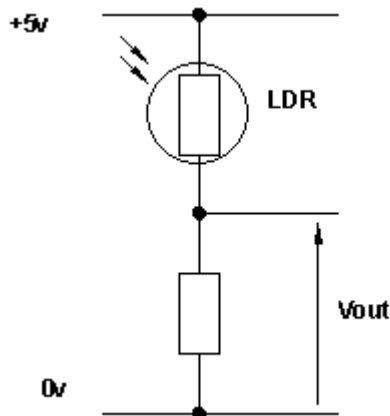
Solar energy is energy from the Sun. It is renewable, inexhaustible and environmental pollution free. Solar charged battery systems provide power supply for complete 24 hours a day irrespective of bad weather. By adopting the appropriate technology for the concerned geographical location, we can extract a large amount of power from solar radiations. More over solar energy is expected to be the most promising alternate source of energy. The global search and the rise in the cost of conventional fossil fuel is making supply-demand of electricity product almost impossible especially in some remote areas. Generators which are often used as an alternative to conventional power supply systems are known to be run only during certain hours of the day, and the cost of fueling them is increasingly becoming difficult if they are to be used for commercial purposes.

## PROPOSED SYSTEM

### Light Detecting Diode:

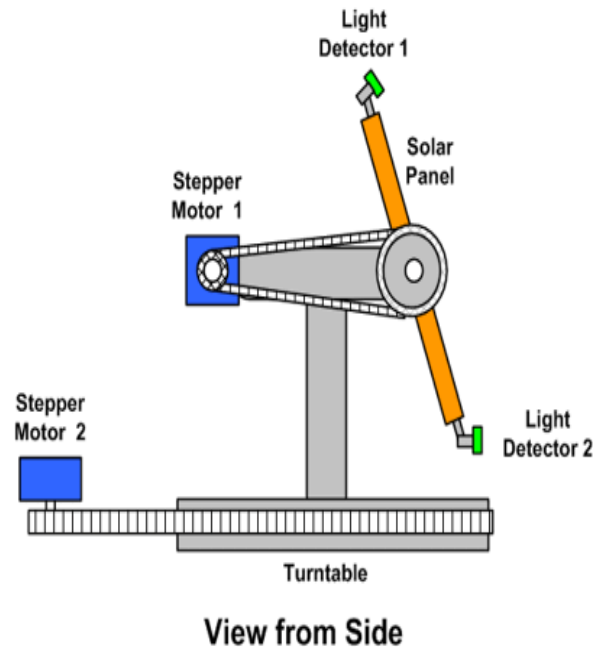


Since we want to be able to track the sun we need some form of light detector. There are a number of alternatives here, but the simplest is an LDR (Light detecting diode)



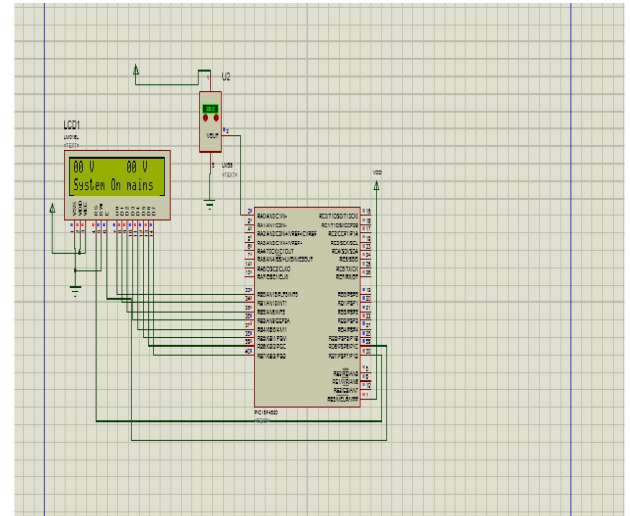
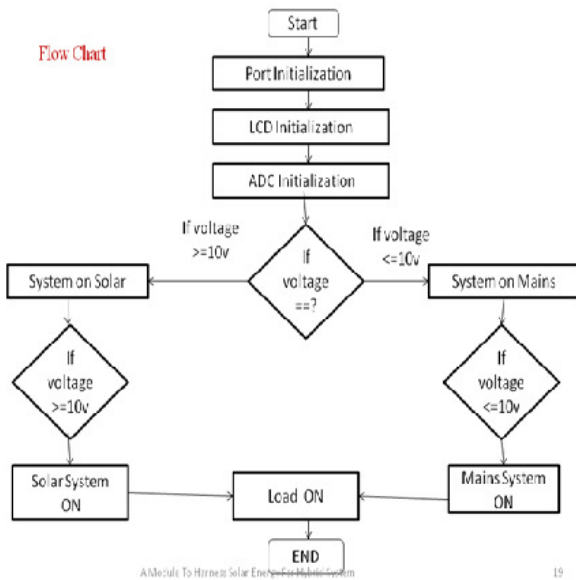
The principle on which these work is that their resistance decreases as the light intensity increases. Typically it is about 1M ohm in darkness, 10K ohm in moderate light and 2K ohm or less in bright sunlight). Because of the relatively high impedance of the analogue inputs on the WASP we can connect the LDR's directly using the circuit shown on the right, where the resistor used is 10K ohm.

This will cause the voltage appearing at the WASP input to vary between about 1v and 4v in average daylight conditions, which is more than enough to base our control system on. Note that we have 4 LDR's connected to the WASP. This will allow us to mount two in the vertical plane and two in the horizontal. They will also be angled with respect to each other. As the sun rise into the sky the upper one of the vertical pair will receive more effective light since the sun is closer to being perpendicular to its surface while the lower will receive less. Similarly as the sun traverses east to west the two in the horizontal plane will receive different amounts of light. This is illustrated below

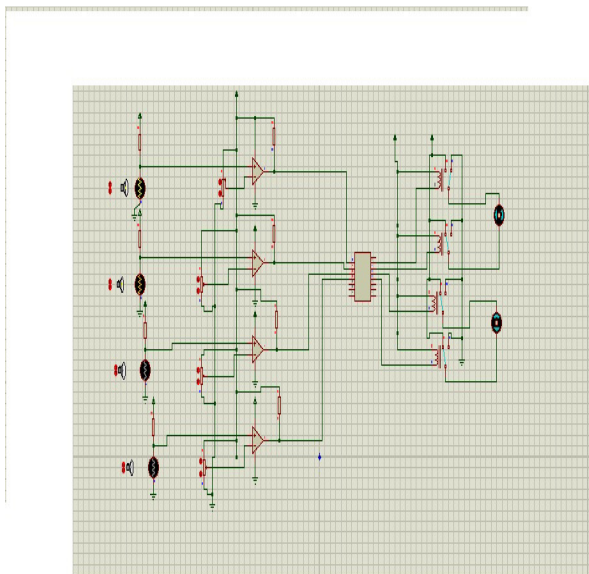


The function of our control system is to move the solar panel in such a way as to keep the received light on each LDR in a pair about the same.

**FLOWCHART:**



**RESULT**



The project “Hybrid Energy for Rural and domestic” was designed such that to deliver power to switch on the loads like water pump. The project uses electromagnetic principles to convert solar energy into Direct Current (DC) using sun energy. The system generates electrical power as non-conventional method by solar power using solar plate set up. We also use solar energy and main energy supply to charge the battery. The system is used for domestic purpose as well as Street lighting, Traffic signals. In various monitoring systems. In Powering up for communication system. Pump irrigation Systems. In Small Boats like yacht. As per requirement of electrical energy the system can be either designed or updated for higher energy requirement.

When ac mains supply is not available, the proposed system can be used as emergency system with only few changes. So, it can be used for almost every electronic, mechanic, viz. system needing/ require electric energy to work on.

### ADVANTAGE:-

- Renewable energy source.
- Reduces electricity bills.
- Low maintenance costs.
- Green, environment friendly

### APPLICATION:-

- Islanded system (remote areas)
- Hybrid vehicle (fuel less)
- Industrial power saver
- Distributed power generation

### FUTURE SCOPE

As the awareness of non-renewable(Gas, Coal ,Crude Oil etc) sources and pollution causes by them, the clean energy production with renewable sources (Sun, Wind etc)is widely preferred and day by day as well as In daily regular implementation of such sources going on, so, resources and research are also goes increasing for such plants and projects. As the first time installation cost is higher due to design and manufacturing perspective. The system can be monitories using graphical user interference on computer. So, the whole information will be available to user and/or stored regarding further applications and

### CONCLUSION

In the present work a Solar Energy for hybrid System was implemented. A portion of the energy requirement for a private house, farm house, a small company, an educational institution or an apartment

house depending on the need at the site where used has been supplied with the electricity generated from the solar power. It reduces the dependence on one single source and has increased the reliability. Hence we could improve the efficiency of the system as compared with their individual mode of generate

### ACKNOWLEDGEMENT:

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### REFERENCES

- 1)International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 05 Issue: 01 | Jan-2018 [www.irjet.net](http://www.irjet.net) p-ISSN: 2395-0072 © 2018, IRJET | Impact Factor value: 6.171 | ISO 9001:2008 Certified Journal | Page 139
- 2)Hybrid Energy (Wind-Solar) For Rural (Remote Areas) “Elecrcification, ISSN 2319-5991 Vol. 6, No. 1, February 2017
- 3)Priyanaka Mani, K. Nithiyananthan and Pratap Nair “ Energy Saving Hybrid Solar Lighting System Model For Small Houses”, World Applied Sciences Journal 33 (3): 460-465, 2015 ISSN 1818-4952© IDOSI Publications, 2015
- 4)“ Design of a hybrid solar-wind power plant using optimization”Conference Paper · May 2010