

HYBRID PHOTOVOLTAIC AND WIND POWER SYSTEM

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ABSTRACT

Renewable energy integration has attracted widespread attention due to its zero fuel cost, cleanliness, availability, and ease of installation. Among various renewable energy sources, photovoltaic (PV) and Wind turbines (WT) have become very attractive due to the abundant local availability in nature, Technological progress, and economic benefits. The hybrid combination of both distributed energy resources eliminates mutual intermittences due to their adverse nature, therefore, the reliability of the system will be improved. The basic key objective of the project is to generate electrical energy by using renewable and clean energy with minimum pollution.

INTRODUCTION

Electricity is one of the most important blessings that science has given to mankind. It has also become a part of modern life and one cannot think of a world without it. Electricity has many uses in our day-to-day life. It is used for lighting rooms, working fans and domestic appliances like using electric stoves, A/C and more. All these provide comfort to people. In factories, large machines are worked with the help of electricity. Essential items like food, cloth, paper and many other things are the product of electricity.

Modern means of transportation and communication have been revolutionized by it. Electric trains and battery cars are quick means of travel. Electricity also provides means of amusement, radio, television and cinema, which are the most popular forms of entertainment are the result of electricity. Modern equipment like computers and robots have also been developed because of electricity. Electricity plays a pivotal role in the fields of medicines and surgery too — such as X- ray, ECG. The use of electricity is increasing day by day. [1]

PROBLEM DEFINITION

Many remote communities in India cannot be physically or economically connected to an electric power grid. The electricity demand in these areas may be conventionally supplied by small isolated diesel generators. The operating cost associated with these diesel generators is unacceptably high due to discounted fossil fuel costs together with difficulties in fuel delivery in such remote areas and maintenance of generators. In such situations, renewable energy sources, such as solar photovoltaic (PV) and wind turbine generator provide a realistic alternative to supplement engine-driven generators for electricity generation in off-grid areas. It has been demonstrated that hybrid energy systems can significantly reduce the total life cycle cost of standalone power supplies in many off-grid situations, while at the same time providing a reliable supply of electricity using a combination of energy sources.

OBJECTIVE

The main objective is our project is to design a system representing the Hybrid Photovoltaic And Wind Power System. Essential load will have the power all the Time.

COMPONENT

1. Microcontroller:

We use AT89s52 micro controller as a main controller and low power, High performance CMOS 8 bit microcontroller with 8k bytes of in system programmable Flash memory. It has 40 pins.

Pin Diagram:

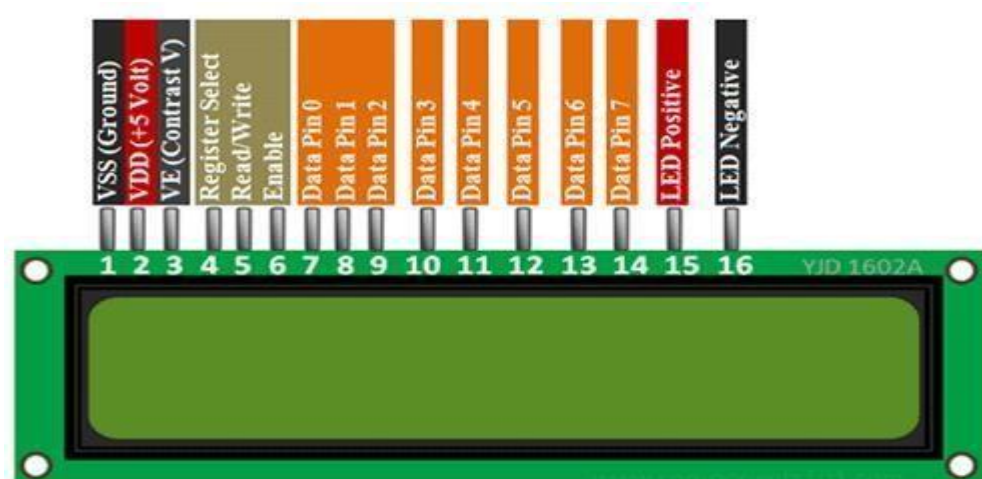


89s52

2. LCD Display:

LCD Display is a device which is used to display the current in the form of output voltage.

Pin Diagram:



LCD Display

The following table shows the pin number, name and description:

Pin Number	Pin Name	Pin Description
1	VSS	Ground
2	VDD	+5 V Power Supply
3	VE	Power Supply to controlcontrast
4	RS	Select Register
5	R/W	Output for Write And InputFor Read
6 To 14	DB 0 To DB 7	The 8 bit Data Bus
15	LED	+ Ve Terminal
16	LED	-Ve Terminal

3.Solar Plate:

Solar plate is called as Photovoltaic Panel. So Photovoltaic Directly convert solar energy into electricity. And this is work on the principle of photovoltaic effect.

Based on Principle of Photovoltaic Effect, Solar Cell and Photovoltaic Cell are made they convert sunlight into directcurrent (DC) Electricity.



12V Solar Plate

4. 12 V Battery:

Basically Sulphuric Acid is Used for making the Batterys. When Sulphuric Acid gets dissolved the molecules in it are dispersed in two ions. SO_4^- (Negative ions) and $2H^+$ (Positive ions) and this time electrode are dipped in the solution and provide a DC supply. Then the positive and negative ions will have a movement. Positive ions move towards the direction of the negative edges of the battery. In the same way, Negative ions move towards the direction of the positive edges of the battery



12V Battery

5. Soldering Gun:

The soldering gun is useful when soldered joints must be made intermittently. A constant-heat device has to be set in a safe place when powered but not actually in use, to prevent damage or injury.



Soldering Gun

ADVANTAGES

- Best for Remote Area Power System (RAPS)
- Operation in all weather
- Green Energy
- Can be Used For 24hr Power Generation.
- Free from pollution
- Save Energy

DISADVANTAGES

- Complicated controlling process
- High installation cost.
- Less Battery Life.

FUTURE SCOPE

- In future need is to overcome certain problems. in solar panel related factors like repair, maintenance & survey thus enhance its efficiency.
- Second Largest generation source after only wind or solar plant. Global capacity must reach 18 times current levels, or more than 8000 gigawatts by 2050.

CONCLUSION

The proposed work helps to predict the performance of the Hybrid PV System module through remote access. This can be extended for a large-scale solar plant to take preventive action by regularly monitoring the performance of the Hybrid PV system plant. It will be highly useful for the remote areas.

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