

# INTEGRATION OF PV WITH DIFFERENTIAL SYSTEM FOR ENHANCING THE ALL DAY EFFICIENCY

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**ABSTRACT:** Hybrid Solar System is a energy system that combines solar energy with a photovoltaic system with a different power source for power generation. A typical type of hybrid PV hybrid plant, which combines PV generators and diesel or diesel generators, because PV does not cost at least some and preferably deals in the grid. Done. The diesel generator is used to continuously fill the current distance of PVC and the current generation of energy generated by the photoelectric system.

In fact, the traditional form of morphology is the maximum cost of photovoltaic units and wind turbines at the lowest possible cost. However, the maximum battery capacity cannot be considered or found through a complete search between potential spaces requiring a large amount of calculations. The main objective of the goal is to implement an energy system which is a combination of PV and air power. Step by step study and modify photovoltaic cells, solar panel panels and voltages. Depending on the characteristic and environmental conditions, and how to study the effects of different temperatures and radiation. We believe that wind voltage and current deformation are sinusoidal. The photo current is almost constant; it is also true that the PV voltage 24V remains constant during the inspection period. We can conclude that the control strategy can monitor and monitor battery voltage.

**Keyword:** Solar hybrid power, diesel generators, PV system, hybrid system, MATLAB Software.

## I. INTRODUCTION TO HYBRID SYSTEM

There are many renewable energy sources like solar energy, wind energy, tides and tides. In these renewable energy sources, solar energy and wind energy are the fastest growing energy sources in the world. In the presence of pollution costs, energy conversion is performed by air energy and photovoltaic cells. The demand for electricity is rising rapidly. However, available basic loads of plants can not supply electricity on demand. Therefore, these energy sources can be used for the difference between supply and demand during the square load.

This small independent power generation system can also be used in remote areas, where traditional electricity production is unusual. This paper studies and the air is sent to the Hybrid Power generation model model. Hybrid systems are more beneficial because the single power generation system is not completely reliable. When a system is closed, another system can provide power. The block hyagram of the entire hybrid system is shown.

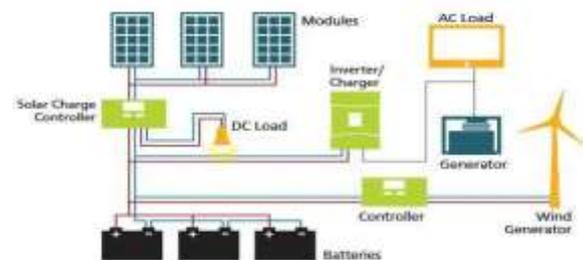


Fig 1.1: Block diagram of hybrid system

Contains PV and air systems on the entire hybrid system. The solar system is solar-powered, which is Very common in nature. Photovoltaic modules, maximum PowerPoint tracking system, have a built-in photovoltaic energy system. The light incident on the PV cell turns from a solar collector in electrical energy. The maximum power point tracking system can maximize the maximum power from the PDF modules using the error and emotional algorithms. ACC converter AC voltage is used to convert DC.

## II. OBJECTIVES

The main objective of the thesis is to implement a power system that is a hybrid of both Photovoltaic and wind powers. The step by step objectives are

- To study and model PV cell, PV array and PV panels.
- To study the characteristic curves and effect of variation of environmental conditions like temperature and irradiation on them.
- To study the PV module's behavior under partial shading condition.
- To trace the maximum power point of operation the PV panel irrespective of the changes in the environmental conditions.
- To study and simulate the wind power system and track its maximum power point Implement hybrid system.

### 2.1 BACKGROUND

In 1839, French physician Adam Beckel suggested that almost any material could not produce electricity in the sun. But Albert Einstein explained the photographic effects and features of light in 1905. The photovoltaic effect states that when the electronics or the sunlight are met on the electrical surface of the metal. Later photographic impact became the primary principle of photovoltaic power generation technology. The first photovoltaic module was made by Bell Laboratories in 1954.

### III. PHOTO CELL

Solar cells are electronic devices that convert sunlight directly into electrical energy. Light on the solar cell lightning current generates current and voltage for generating electricity. This is the first thing in which the absorption of light electrons increases high energy, and second, the higher energy moves from the external solar cell to the outer circuit. Then electrons use their energy in the outer circuit and return to the solar cell. Various materials and processes may potentially meet photovoltaic energy conversion requirements, but in practice, all photocytic energy conversion uses semi-conductor material in the form of CNN genre.

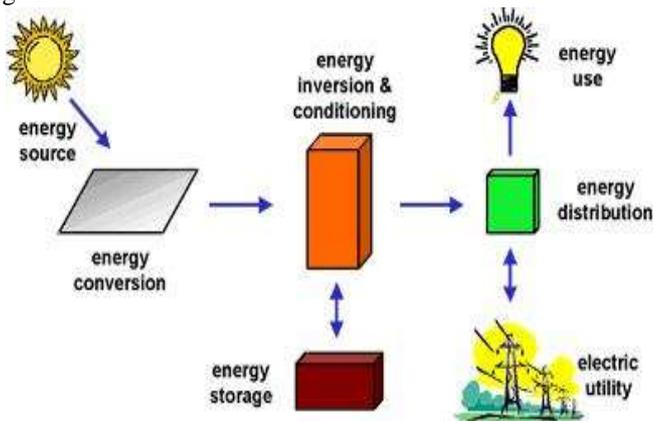


Fig 3.1: Actual understanding of PV system

The basic steps in the operation of a solar cell are:

- The generation of light-generated carriers;
- The collection of the light-generated carries to generate a current;
- The generation of a large voltage across the solar cell; and
- The dissipation of power in the load and in parasitic resistances.

### IV. HYBRID ENERGY SYSTEM ON MATLAB IMPLEMENTATION

Intermittent energy resources and energy resources The most important reason for imbalance to install a hybrid energy supply system. The solar-powered PV wind-flow system is suitable for sunlight and air-changing weather. Since the wind will not push until the whole day, the sun will not shine all day, so it is not a good choice to use a light source. The hybrid setting which connects energy from the wind and is stored in the battery can be a powerful source of trustworthy and practical. Even in the absence of sun or wind, the load of energy stored in the battery can still be powerful. Hybrid systems are often used for system design and it is the lowest price and most reliability. The high cost of solar photovoltaic cells makes it suitable for large-capacity designs. This is where air turbines enter the picture, and its main feature is its lower value than PV cells. A battery system is required to store solar and air energy generated during the day. At night, the presence of air is an extra benefit, which improves the system's reliability. In the Monsoon season, the effect of the sun is low, so it is easy to use mixed air solar systems.

### V. RESULT AND SIMULATION WORK

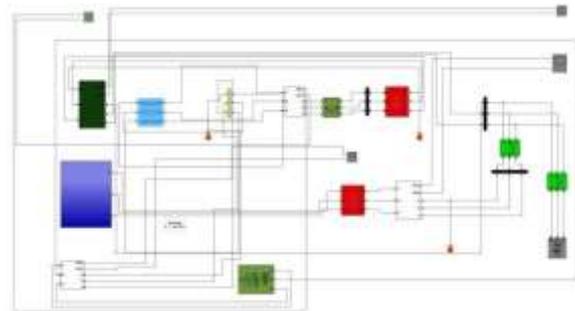


Fig 5.1 Basic Layout

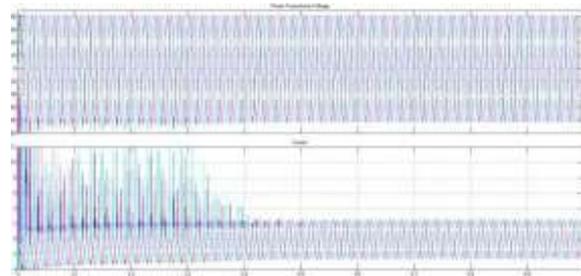


Fig5.2: Three phase VI measurement (Hybrid +battery)

Experimental results presented in this section are obtained from a hybrid system using MATLAB simulation charts. The following data was obtained during the operation of data acquisition, with a wind speed of 26 ° C, 612 W / M2 illegal and 9.2 meters / s. The results using MATLAB software are shown above Figure 5.2). We realized that the wind voltage and the current gear form are sinusoidal. POV current is almost constant; it is also true for PV voltage that remains continuous for whole day observation period of 24V. We can conclude that the control strategy can effectively monitor and monitor battery voltage.

### VI. CONCLUSION

In this Research, identification and implementation of Hybrid photovoltaic / air energy / battery system has been analyzed. The proposed system is easy due to low ingredients and is accurate due to its accurate electronic circuit. We used the MATLAB software to get the power parameters in real time. Data acquisition card is selected to perform different voltage and current sensors of the global system. To achieve this goal, we apply a different sensor that uses MATLAB to process signals and display the values required on the computer screen. The proposed power management strategy is easy. Energy system and batteries have been studied to provide energy flow load needs. It clearly shows that the proposed hybrid power system and its management control strategy is suitable for power supply or pumping in appropriate testing area as practical applications.

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