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AN IMPLEMENTATION OF HYBRID SYSTEM FOR GENERATING HIGHLY RELIABLE POWER SOURCE: A REVIEWS

Puja Bharti[1], Priyanka Gaur[2]
[1]M.Tech. (ECE), [2]Asst. Prof. Dept. of ECE, AITM, Palwal

I. INTRODUCTION

Due to the critical conditions of industrial fuels such as oil and gas, the development of renewable energy sources is constantly being improved. This is the reason why the importance of renewable energy is increasing recently. There are other benefits such as environmentally friendly recyclable abundant availability. There are many renewable energy sources such as the sun, the wind, the hydra, the tideland etc. Among these renewable sources, solar and wind energy are the fastest growing energy resources in the world. In the absence of pollutant emissions, energy conversion takes place via wind power and PV cells. Electric demand is rapidly increasing every day. However, the available basic load plants cannot supply power according to demand. Therefore, these energy sources can be used to fill the supply-demand gap at peak load. This type of small stand-alone power generation system can be used even in remote areas where conventional power generation is not practical. In this paper, we study and simulate the hybrid power generation system model of the wind power plant. The hybrid system is more advantageous as the individual power generation systems are not completely reliable. When either system is shut down, the other system can supply power. The block diagram of the whole hybrid system is shown below.

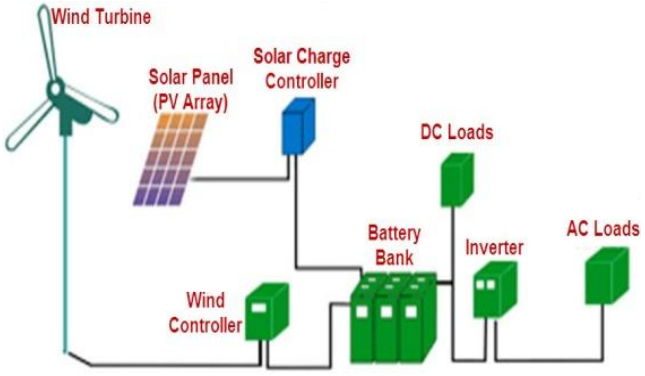

Fig 1.1: Block diagram of hybrid system

The entire hybrid system consists of a PV system and a wind power system. The solar system is driven by solar energy, which is inherently very general in nature. Solar power module, maximum power point

tracking system constitutes solar energy system. The light incident on the PV cell is converted into electrical energy by the solar collector. Maximum power point tracking system using perturbation and absorption algorithms can draw maximum power from the PV module. An AC - DC converter is used to convert AC voltage to DC.

II. LITERATURE REVIEWS

Guillermo Velasco-Quesada, Francisco Guinjoan: Dynamic electrical array reconstruction (EAR) strategy is proposed based on plant-oriented configuration for photovoltaic (PV) generator of grid connected photovoltaic power generation system when solar cell panel operating conditions are different It was done. The EAR strategy is accomplished by inserting a controllable switch matrix between the PV generator and the central inverter to enable electrical reconnection of the PV module. Therefore, photovoltaic systems have the ability to adapt to external operating conditions of photovoltaic generators in real time and improve the energy extraction of the system. Provide experimental results to verify the proposed method. Photovoltaic (PV) energy production brings several advantages such as being environmentally friendly and renewable. In addition, grid-connected solar power generation is an alternative to the development of renewable energy, and the introduction of new government laws and policies in recent years is increasingly intensifying competition. For example, most projects that support solar power generation systems have promoted the expansion of PV systems for small-scale residential use up to 5 kWp connected to a single phase grid installed mainly on the roof.

Jonathan Storey, Peter Wilson: They propose an improved strategy for optimization of dynamic photovoltaic array (DPVA) using "irradiance equalization" reconstruction strategy. This type of Reconfigurable Array is already very robust because it integrates the flexibility of dynamic reconfiguration using the average capability of the Total Cross Tide (TCT) array architecture. In this paper they will explain the four areas that will further improve the power yield and greatly reduce the ROI time. The results show potentially more than 10% potential efficiency improvement in some cases and a potential efficiency improvement of 4 to 10% over multiple random and sudden shading conditions. Like the DPVA system, the proposed approach requires additional hardware and sophisticated control algorithms compared to static PV arrays, but everyone who implements dynamic arrays requires a new precision supports the idea of fully dynamic IEq-DPVA with the ability to resize array dimensions while implementing a quick sorting algorithm based on information gathered using irradiance profiling techniques HE will. Most PV arrays will stay in place after being installed once and will face an unpredictable chaotic irradiance environment for at least 25 years. During this time the environment may consist of uniform direct beam, uniform hue unevenness, or a combination of these two non-uniformities. Attempting to integrate PV into a building

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(BiPV) or a vehicle tends to have a contoured curve that does not necessarily confront sunlight, thus complicating the problem of "non-uniform irradiance".

Vijayalekshmy S, Bindu G R, and S Rama Iyer: Various losses due to partial shading in different photovoltaic array configurations under moving heterogeneous lighting conditions (through clouds) are proposed. Each solar cell array consists of series and parallel modules. Bypass diodes are also modeled to avoid hot spots in the solar module. The developed model can be calculated by simulating the electrical characteristics of different array configurations under different lighting conditions. The composition of the array is compared based on various shading losses and fill factor. In recent years, the development of the smart grid concept has become a catalyst for expanding the diffusion of photovoltaic power generation systems. The grid has an accurate voltage level. In order to connect the photovoltaic generator to the grid, photovoltaic cells are connected in series to form a photovoltaic module. The generator is constituted by series and parallel (photovoltaic array) solar cell modules to obtain the required voltage level and increase the rated power of the generator.

Saravanan Kaliya Perumal, Sharmeela Chenniyappan: Energy demand is recommended to increase. Due to depletion of fossil fuels, the role of renewable energy is inevitable. Solar energy is a promising resource for other renewable resources. Renewable energy is clean, green and free, so it is environmentally friendly. In the PV module, the battery converts sunlight photons to electricity. The power generated by the photovoltaic module can be used for standalone and grid connected systems. By connecting the solar cell modules in parallel, the current jump of the solar cell module increases, and the voltage adjustment of the solar cell module can be increased by series connection. The output of the photovoltaic module is based on solar energy.

Paula dos Santos Vicente, Tales Cleber Pimenta, and Enio Roberto Ribeiro : A dynamic reconfiguration method for electrical connection in a series-parallel PV array is proposed under partial shielding conditions. It is desirable to extract the maximum energy from the array, but this does not happen if the module is caused by different operating points caused by shadows. The proposed method is characterized by maintaining a photovoltaic array size where the module has not been removed or added to the array. In addition, the control algorithm is based on a rough set theory that enables rapid and efficient implementation of a control system including rules that identify the optimal configuration of the system. In recent years, the use of photovoltaic (PV) systems has greatly increased as a viable alternative to conventional power generation methods. Reduction in power transmission and distribution losses and the possibility of energy injection into the power system are also attractive factors for their use.

R. L. Josephine, S. Suja, G. Karunambika: New techniques for fixed configuration and reconfiguration using switching circuit, microcontroller, and boost circuit are proposed. For rich raw materials photovoltaic (PV) systems have recently become increasingly important as a renewable energy system. One of the adverse effects of photovoltaic systems is the partial coloring effect. Partial shading results in a reduction in PV power. If you leave the shadow effect unprocessed, the battery may burn due to overheating and an open circuit may be formed on the shadow line. Reducing power consumption is not mainly a colored area but depends on the module interconnection scheme and color mode. Different solutions, including improved MPPT technology, different array configurations, photovoltaic system architecture, and different converter topologies have been proposed to reduce the effects of partial shading. The energy from the sun to the earth is about 1.5 x 1018 kWh / year. As a result, photovoltaic (PV) modules are one of the most important sources of renewable energy, and their use is gradually increasing in regions with long daylight hours and in rural areas. In order to draw out more power, the solar panels are connected in parallel in series.

V. Di Dio, D. La Cascia, C. Rando, G. Riccob Galluzzo: The effect of inconsistency due to non-uniform illumination on a PV (photovoltaic) system is proposed. Since the bypass diodes and the blocking diodes are installed, the effect of mismatch due to partial shading of the PV module may be limited. Unfortunately, this solution does not completely solve the disadvantages associated with mismatch effects. In the previous paper, theoretically, they can solve the effect of inconsistency by changing the parallel / serial connection of PV system modules, considering the radiation condition of each module. This article is the first step in experimental development of the theoretical results. Specifically, thanks to the MATLAB FPGA reconfiguration controller designed by the author, the energy production of the uneven irradiation of the solar power generation system is maximized. The controller can detect the voltage values of all the modules and thus can decide whether to change the connection of the module to maximize the energy output of the solar cell system. This connection change is actually accomplished by some of the commutation systems transmitting commutation pulses to the FPGA electronic controller. Because of the economic benefits associated with increased power production, the designed reconfiguration controllers can be manufactured on a large scale and economically staged in a short time.

F.Z Zerhouni, M.H Zerhouni, M. Zegrar, M.T Benmessaoul, A. Boudghene Stambouli proposed theme renewable sunlight sources for optimal energy production. The purpose of this task is to optimize the operation of the system. The main reason for this article is to provide experimental verification methods to effectively provide a green system that uses solar energy. In this study, they optimized the operation of solar power systems in real time. The method of tracking maximum power has been experimentally verified. Regardless of the conditions (adiabatic, temperature, load), another optimal switching technique for photovoltaic (PV) modules for electrical array reconstruction is proposed. Microcontrollers are used as electronic control support and

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provide practical testing.

III. PROBLEM STATEMENT

The hybrid system which has been introduce earlier research found effectively and efficient work to provide to current contentiously with variable source of power its quit untestable there is slight variation on the large change in power so the stability problem continue.

IV. PROPOSED WORK

Intermittent energy and energy imbalance is the most important reason to install a hybrid energy supply system. The Solar PV style hybrid system is suitable for the changing season of sunlight and wind. Since the wind does not blow all day, the sun does not shine all day, using a single light source is not an appropriate choice. The hybrid configuration that combines the energy from the wind and the sun in the battery makes it a more reliable and practical power supply. Even without the sun or wind, you can use the energy stored in the battery to power the load. Hybrid systems are often used in system design and may have the lowest cost and highest reliability. Due to the high cost of solar cell, it is not suitable for large capacity design. This is the place where the wind turbine enters the image; the main feature is lower cost than the PV battery. To store solar energy and wind energy generated during the day, a battery system is necessary. At night, the presence of wind is an additional advantage of improving the reliability of the system. In the monsoon season, the influence of the sun is small, so mixed wind power solar system is easy to use.The system components are as follows.

4.1 Photovoltaic solar power

Solar panels are the medium that converts solar energy into electrical energy. Solar panels can convert energy directly or use induction energy for hot water. In this release, the current is active. Photovoltaic power is called the process between radiation absorption and induction. Solar energy is converted to electricity according to a common principle called photovoltaic effect. A use of Photovoltaic solar is effective in Hybrid system.

4.2 Wind Power

Wind energy is renewable energy. Wind power is used to convert wind power to electricity. Turbine generators convert mechanical power to electricity. The power of the wind turbine system varies from 50 W to 3-4 MW. The energy production of the wind turbine depends on the wind speed acting on the turbine. Wind power can meet energy production and demand in rural areas. It is used to drive windmills and wind turbines that drive wind turbines to generate electricity. A use of wind power is effective in hybrid system. [3]

4.3 Batteries

The battery in the system is used to store wind or solar generated electricity. Any required capacity can be obtained by connecting the batteries in series or in parallel. The battery that provides the most favorable operation in solar and wind power generation systems is maintenance-free dry and uses a special electrolyte. These batteries provide perfect performance for long periods of discharge. [4]

4.4 Inverter

The energy stored in the battery is drawn by the electric load through the inverter, which converts the direct current into alternating current. The inverter has a short circuit protection function; reverse polarity, low battery voltage and overload.

4.5 Microcontroller

The microcontroller compares the inputs of the two power systems and provides the signals to specific relays and charges the DC battery. By alternately triggering the MOSFET, the current in the primary winding is also optional, and we obtain AC power in the primary winding of the transformer. A use of Microcontroller is effective in controlling the regulated power.

V. EXPECTED RESULT

To obtained the high reliable power generation when integrating multiple source of energy together. This paper has attempt to integrate the PV, Wind System, Battery (Storage), Microcontroller

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