

Solar System in Agriculture

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Agricultural technology is changing rapidly. Farm machinery, Farm building and production facilities are constantly being improved. Agricultural applications suitable for photovoltaic (PV) solutions are numerous. These applications are a mix of individual installations and systems installed by utility companies when they have found that a PV solution is the best solution for remote agricultural need such as water pumping for crops or livestock. A solar powered water pumping system is made up of two basic components. These are PV panels and pumps. The smallest element of a PV panel is the solar cell. Each solar cell has two or more specially prepared layers of semiconductor material that produce direct current (DC) electricity when exposed to light. This DC current is collected by the wiring in the panel. It is then supplied either to a DC pump, which in turn pumps water whenever the sun shines, or stored in batteries for later use by the pump. The aim of this article is to explain how solar powered water pumping system works and what the differences with the other energy sources.

Energy is a key ingredient for the overall development of an economy. India has been endowed with abundant renewable solar energy resource. India is large country and the rate of electrification has not kept pace with the expanding population, urbanization and industrialization and has resulted in the increasing deficit between demand and supply of electricity. This has not only resulted in under electrification but also put heavy pressure on the governments to keep pace with demand for electricity. People not served by the power grid have to rely on fossil fuels like kerosene and diesel for the poor people in rural areas.

Wherever the rural areas have been brought under power grid the erratic and unreliable power supply has not helped the farmers and the need for an uninterrupted power supply especially during the critical farming period has been a major area of concern. India receives a solar energy equivalent of 5,000 trillion KWh/year with a daily average solar energy incidence of 4-7 KWh/m². This is considerably more than the total energy consumption of the country. Further, most parts of the country experience 250-300 sunny days in a year, which makes solar energy a viable option in these areas. Decentralized renewable energy system, which relies on locally available resources, could provide the solution to the rural energy problem, particularly in remote areas where grid extension is not a viable proposition. Solar energy, with its virtually infinite potential and free availability represents a nonpolluting and inexhaustible energy source which can be developed to meet the energy need of mankind in a major way. The high cost, fast depleting tested kits are available to retrofit the most pole most pole mounting applications.

The solar system in agriculture very useful for our country. Now see the fig1 of block diagram of solar system in agriculture. When sun light falls on panel in solar panel made by silicon and germanium. It is convert photon energy to electric energy. So the solar cell converts in electrical energy in dc system. And also USB battery in hole day battery charge use dc supply in street light and water level indicator and water pump in agriculture system.

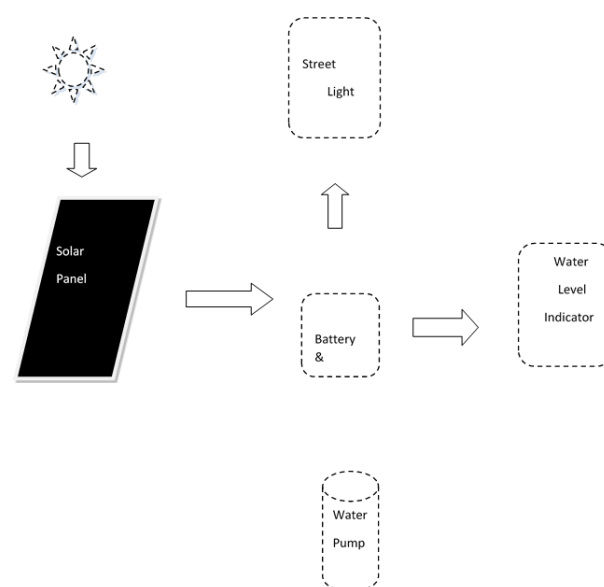


Figure 1: Block diagram of solar system in agriculture