

Abstract

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Application of solar energy system for submersible water pump

Agriculture requires energy as an important input to production. Where, 35% of the total power generated through electrically operated pump sets. Agriculture uses energy directly as fuel electricity to operate machinery and equipment, to heat cool buildings, and for lighting on the farm, and indirectly in the fertilizers and chemicals produced off the farm. Agricultural technology is changing rapidly. Farm machinery, farm building and production facilities are constantly being improved. Agricultural applications suitable for 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. 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 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 paper is to explain how solar powered water pumping system works. The electricity generation greatly relies on conventional energy sources. Therefore solar PV pumping is a means to mitigate energy crisis for irrigation in rural areas. This paper describes a solar PV water pumping system from theoretical, simulation and practical point. A Push Pull inverter is designed and constructed to provide current boosting to the DC pump for having a better performance from the system with transformer to step up the voltage from 120 to 220V. Some methods are discussed to increase the efficiency of the PV system. The PV DC water pumping system has a good prospect to solve the energy crisis in the irrigation. Also it can be used for getting pure drinking water in remote areas.