

**ARAB ACADEMY FOR SCIENCE, TECHNOLOGY
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**College of Engineering and Technology
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**Application of solar energy system for submersible water
pump**

By

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Abstract:

The purpose of this research is to describe a solar energy application as water pumping system. Solar photovoltaic water pumping systems can provide drinking water without the need for any kind of fuel or the extensive maintenance required by diesel pumps. Photovoltaic (PV) panels are often used for agricultural operations, especially in remote areas. In particular, 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 thesis is to explain how solar powered water pumping system works. They have been demonstrated time and time again to reliably produce sufficient electricity directly from solar radiation (sunlight) to power livestock and irrigation watering systems. This system begins with a solar panel that will use light energy from the sun to generate electricity through the photovoltaic (PV) effect to produce dc power; charge controller will control excessive current flow flowing into the battery. In addition to over-protection, state-of-charge control low voltage or battery needed for preventing deep discharge damage to the battery. Also in the practical system a push pull converter, which will step up a 24 V dc voltage supply to 220 V AC output voltage. The push-pull is suitable for production of square and modified square output waveforms. Connected to pulse width modulation (PWM) which is the process of modifying the width of the pulses in a pulse train in direct proportion to a small control signal, the greater the control voltage, the wider the resulting pulses become. By using sinusoidal of the desired frequency as the control voltage for PWM circuit.

Most of the PV equipment supplier offering charge regulator controls that combines both overcharge protection and low voltage disconnect to protect battery. After that voltage regulator is placed between the battery and the pump to maintain an appropriate level of voltage pump then to operate pumps the water from the river to the water tank.