

# SOLAR IRRIGATION SYSTEM

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## INTRODUCTION

Solar energy is the most abundant source of energy in the world. Solar power is not only an answer to today's energy crisis but also an environmental friendly form of energy. The supply of electricity is not reached up to every village. Solar energy is the most abundant source of energy in the world. Solar based irrigation system a suitable alternative for farmers in the present state of energy crisis in India. Provides free energy after an initial investment is made. An automatic irrigation system using solar power, controlled and moisture sensor is used to pump water from bore well to a tank, to control the flow rate of water from bore well to a tank, to control the flow rate of water from the tank to the irrigation field. Thus optimizes the use of water.

## HOW THE SYSTEM WORKS?

The system mainly consist of two modules-

1. Solar pumping module.
2. Automatic irrigation module.

## 1. SOLAR PUMPING MODULE

Solar water pumping system operate on direct current. The output of solar power system varies throughout the day and with changes in weather conditions. Photovoltaic module,

the power source for solar pumping, have no moving parts, requires no maintenance and last for decades. The Solar Water Pumping System is a stand-alone system operating directly on power generated by Solar Photovoltaic Modules during the daytime. Various types of Solar Pumps are used for lifting water from tube well, shallow well, ponds, canals for either drinking water in villages or mainly for irrigation purpose. The system is designed in such a way that it can also work with the existing Utility power to have more hours of operation for the Solar Pump.

## 2. AUTOMATIC IRRIGATION MODULE

A moisture sensor is used to sense the level of moisture content present in the soil. It has a level detection module in which we can set a reference value. With the help of moisture sensor signaling a controller, a control pulse is given to the driver circuit that excites the motor. So the pump starts working and moves water to the irrigation field as per the soil moisture content.

## ADVANTAGES

- It helps in saving energy.
- There is no fuel cost-as it uses available free sunlight.
- No electricity required.

- Can be operated lifelong,
- It works everywhere.
- It is also useful for clean, drinking water sanitation and also irrigation.
- It creates wealth for farmers by increasing no. of crops

## DISADVANTAGES

- High initial cost.
- Non working at night.
- Bulky solar panels are required for the large power production.

## CONCLUSION

- Easy to implement system and environment friendly solution for irrigating fields.
- Found successful for bore holes as they can pump over the whole day.
- Minimal maintenance, manual interaction and attention as they are self-starting.
- In long run this system is economical.

