

## SOLAR IRRIGATION SYSTEM

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### INTRODUCTION:

Since ancient times, human life is based on agriculture, and the irrigation system is one of the important tools to boost agriculture. The system which distributes water to a selected area is known as irrigation system. There are many methods of irrigation system like old or new method. The most abundant source of energy in the world is solar energy. Solar panels are now-a-days extensively used for running street lights or to full fill domestic needs like cooking etc . The cost of solar panel has been constantly decreasing which encourage usage in various sector of the solar panel. One of the important applications of this technology is used in irrigation system for farming which is the solar power irrigation system it is an alternative for farmers in today's life. Solar energy is a greenway for energy production which is providing free energy. The pumps which are used to transport the irrigation water is equipped with a solar cell.

Solar Cells absorb solar energy and it converted into electrical energy with help of a generator which provides electric current to pump for driving motor. In our country pumps system generally, work with electricity from a local grid or with the help of diesel.

In present days solar pumping irrigation system use the electronic system and best software, which has increase the output power, performance, and overall efficiency. The major device is now an electronic controller, which changes itself for available power from the solar generator to the solar pump.

In India, in most of the rural areas, the accessibility to the electricity grid is not always guaranteed for every time, therefore, farmers are not depending upon electricity only.

Solar Energy is a renewable source of energy it can be a good solution for farmers. It known to us that Diesel pumps are little more efficient than AC-powered pumps because it permits greater flexibility, but use of diesel is very dangerous for the environment. Generally

In India solar power pump is installed in arid regions for increasing local farmers productivity and as a result improving their living conditions.

### **OBJECTIVE OF SOLAR IRRIGATION**

The main objective is to design an low cost and time-based irrigation system with the help of microcontroller. Irrigation Scheduler measures various parameters such as humidity, temperature, and soil moisture.

- To develop a smart irrigation system in order to gate a significant saving in the consumption of water to irrigate the crops.
- To control the water application convenient for giving light and frequent irrigation and higher water application efficiency.
- To use saleable fertilizer and chemical
- To provide sufficient follow capacity to meet the irrigation demand.
- To reduce the erosion of soil that is common in surface irrigation system.
- To conduct fundamental and applied research in water management.

### **BENEFITS OF SOLAR IRRIGATION**

- Solar irrigation can increase incomes dramatically, particularly for remote producers with inconsistent access to electricity or fuel.
- Pump irrigation reduces labour for water delivery.
- By targeting water at a crop's roots, drips irrigation can reduce weed and disease pressure and increase the efficiency of chemical application.
- Drip irrigation significantly increases water use efficiency.

SPIS have many advantages, providing a clean alternative to fossil fuels and enabling the development of low-carbon irrigated agriculture. In areas with no or unreliable access to energy, they contribute to rural electrification and reduce energy costs for irrigation.

Solar-powered water pumping systems can find application in town water supply, livestock watering and irrigation. Solar-powered irrigation system is an application of solar-powered water pumping system used in paddy fields, gardens for watering the plants, vegetables.

In Bihar, it is one of the poorest states in India, which inhabitants 80% in rural areas. Basically, Farmers need a source of irrigation for their crops they are dependent on monsoon and which is more affordable than a diesel-powered pump. In Bihar 300 sunny days in a year, is good for solar water pumping systems which offer a cost-effective. This Water is also pumped into the village as a reliable source of drinking water for homes, schools, hospitals, etc. While using solar power pumps for irrigation on the basis of configuration some of them are Direct pumping.

One of the best solar power irrigation systems is the drip Irrigation system. In this irrigation system, water application efficiency is highest its solar pump can support many irrigation systems like drip, sprinkler, pivot, or flood irrigation method. Depending on the local condition, a system can also include filtration equipment. Solar pumps are combined with a low-pressure drip.

As it is mention above that investment costs for solar power irrigation systems are decreasing down. The government provide Subsidy and investments schemes for Solar power irrigation systems are being rolled out, making solar technologies a good option for many farmers.

While there are many of the challenges encountered with solar power irrigation systems context-specific, some common challenge are emerged while preparing this report, including input from the practitioners, manufacturers, suppliers, governments, and farmers in many countries, and field visits. Some of the challenges are identified they are Economic viability, Access to finance, Installation, operation and maintenance standardization and quality control of products and services, Water management, Social justice, etc. Now a days cost of solar panels plates continuously decreasing, due to which it is economically for farmers to have solar power as compared with other sources of energy. The renewable energy sector have Potential for job creation like producers, suppliers, services, etc.

## **CONCLUSION**

The overall conclusion is that solar power Irrigation system reduced cost for water pumping also work durable and increases lift of the system with minimum cost. As irrigation system is modernized for pressurized irrigation, with the help of solar power which decreases cost as compared to diesel and electricity form grid. So farmers, as well as government, should focus on Solar energy.