Two Weeks IEEE Workshop

On

Awareness of Renewable Energy Resources Availability in Locality

organized by IEEE Student Branch IIT Mandi in collaboration with IEEE PES-IAS and PELS-IES Chapter Delhi Section held at Govt. ITI (Grade-A), Mandi during 22nd Sept. to 5th Oct. 2021

Solar Water Pump House

Submitted by

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Aim: The solar water pumping system uses solar energy to pump water.

Objective:

The main purpose of a water pumping system is to move water from one area to another. They are often applied to construction sites as a form of water extraction, assisting in the removal of water when excavating, at sewage plants, in flooded areas or when dealing with water wells and oil wells.

Introduction:

A solar-powered pump is a pump running on electricity generated by photovoltaic panels or the radiated thermal energy available from collected sunlight as opposed to grid electricity or diesel run water pumps. The operation of solar powered pumps is more economical mainly due to the lower operation and maintenance costs has less environmental impact than pumps powered by an internal combustion engine.

List of Components

- Main components required for solar water pump project:

  - ❖ The Pump
  - ❖ The Controller
  - ❖ Solar Panels

Sr. NO.	Item Name
1	12V Spray pump motor
2	30W Solar Panel
3	Auto Cut Switch
4	Water Pipe
5	P.V.C. Tape
6	Fevicol
7	Plastic Paper
8	Wires
9	Boxes
10	L.E.D.
11	Wooden Paint
12	Wooden Board
13	Glue Gun
14	Green Mat
15	Battery

Schematic Diagram

☆ Below mention picture is the schematic diagram of solar water pump house.

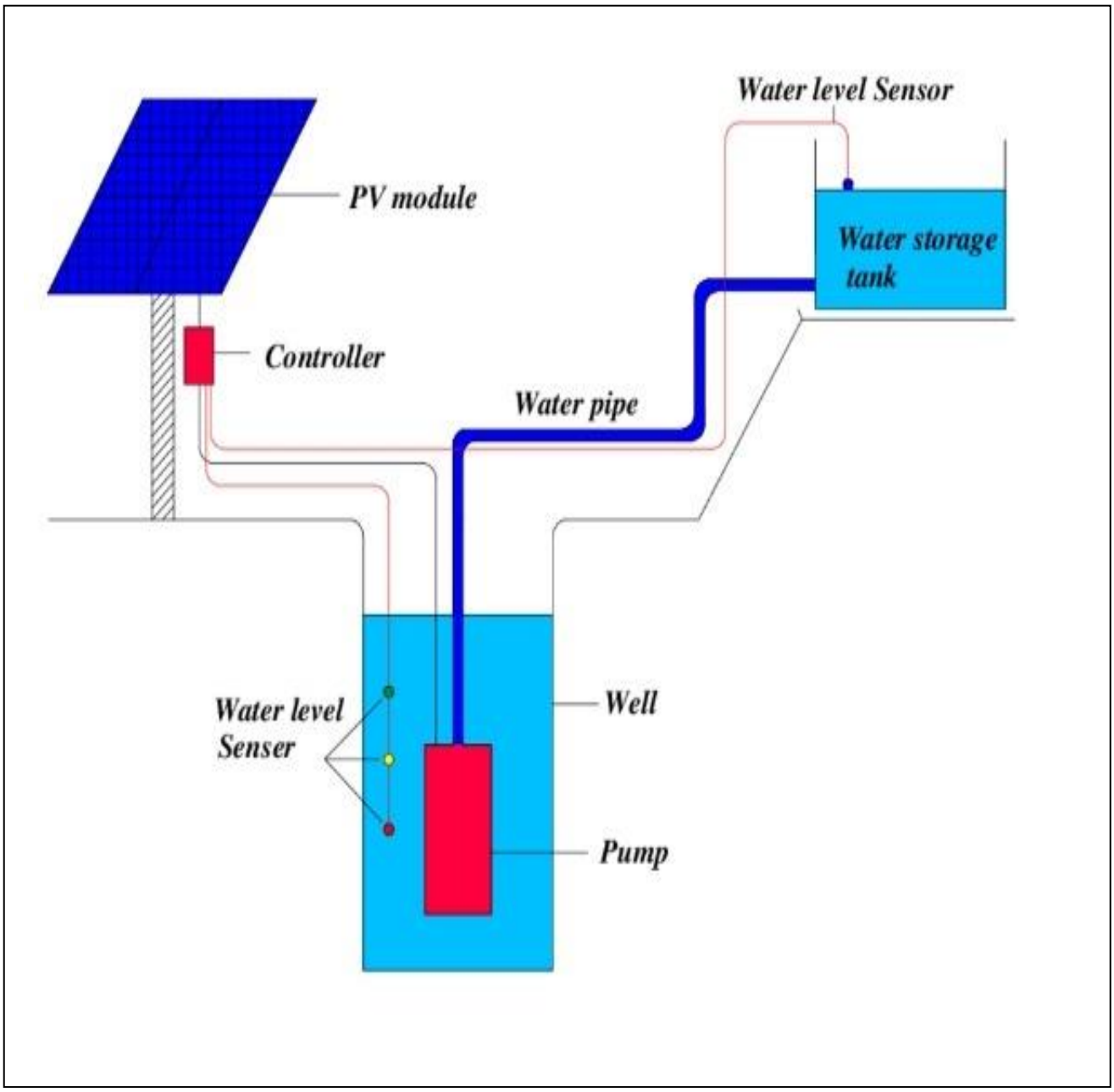
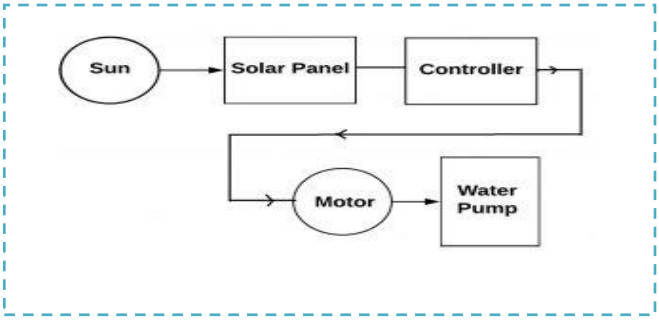


Fig.1. Schematic Diagram 0f Solar Water Pump House

Working Principle:

Working of a solar water pumping system the system **operates on power generated using solar PV (photovoltaic) system**. The
Photovoltaic array converts the solar energy into electricity, which is used for running the motor pump set. The pumping system draws water from the open well, bore well, stream, pond, canal etc.



- The system of solar water pump works on the **photovoltaic principle** which converts the energy from solar to electricity to run the water pump.

➢ **Some Advantages and Disadvantages of Solar Pumps:**

❖ **The advantages of solar pumps are:**

- Strong design
- Environmental
- Simple installation
- Operates for a long time
- Simple to work and maintain
- These are easy to relocate
- Conventional grid electricity is not required
- Without fuel, it works
- Less operating cost
- Less maintenance

❖ **The disadvantages of solar pumps are:**

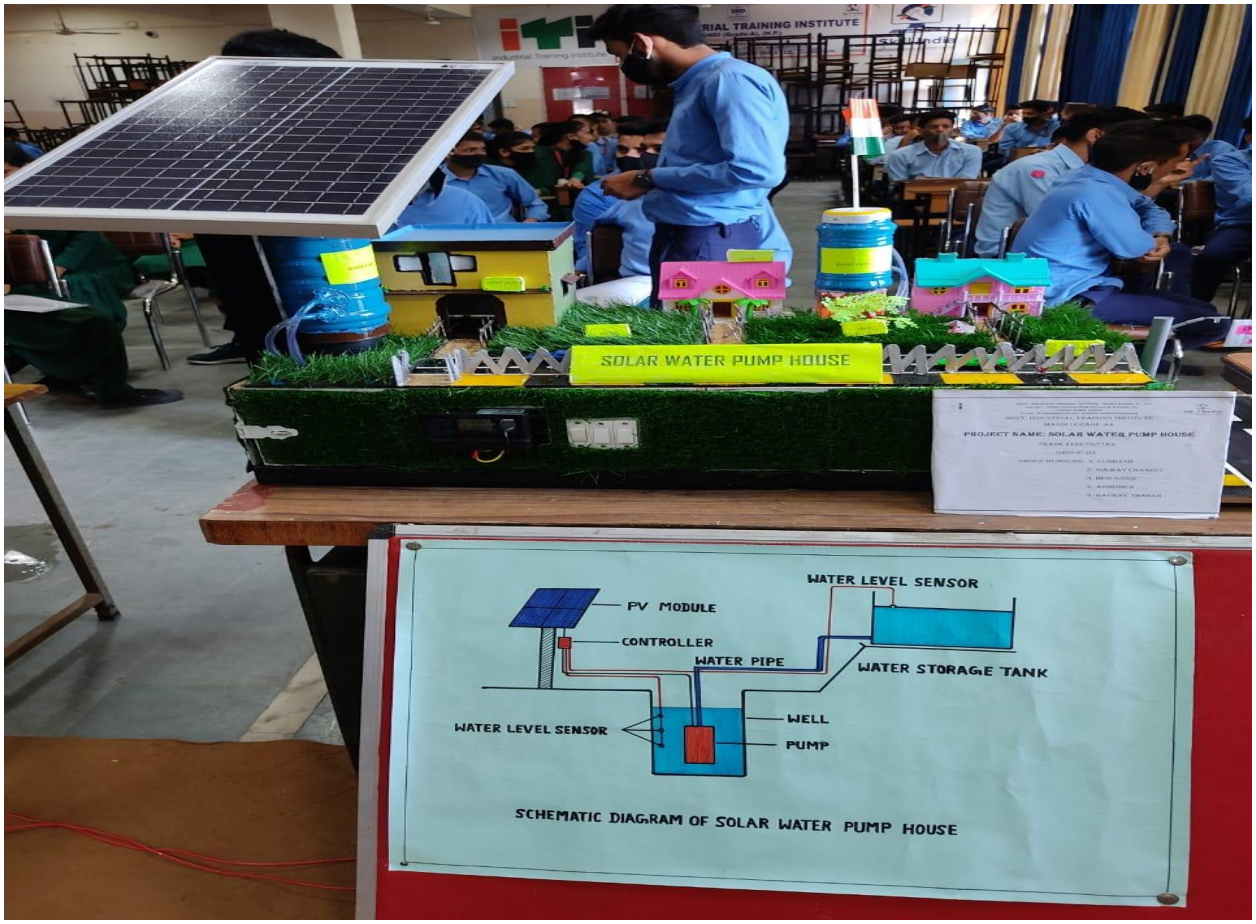
- It is costly.
- The solar panel output mainly depends on the climate.
- It needs a battery & water storage tank.

Solar-Pump

Results and Discussion

- Here, some pictures are taken by the trainees at the time of making project.

- **The final outcomes of the project of solar water pump house:**



Conclusions

- Farmer buys a solar water pump mainly because of two reasons. One is unavailability of electricity at farm and other is increasing price of diesel.

- Out of the primary survey it was found that farmer also buy solar water pump because of land ownership issue. To get electricity connection, farmer need land ownership document and signature of related owners.

- So, in this situation to get electricity connection is difficult. So, farmers prefer to buy solar water pump.

- The use of batteries can be replaced by having a larger water storage system in the form of a tank.

Estimate and Costing

	LIST OF RAW MATERIAL		
Sr. No.	**Item Name**	**Quantity**	**Price (In Rupees)**
1	Water Pump	1 No.	499
2	Home Beautiful Rug	1 No.	169
3	Auto On\Off Switch	1 No.	799
4	Solar Panel 30 Watt	1 No.	1599
5	Brown Paint	1 No.	37
6	Beautiful Rug	2 No.	299
7	Family Doll House	1 No.	349
8	Chart	3 No.	30
9	Tape	5 No.	50
10	Hot Glue Gun	1 No.	350
11	Stick	3 No.	30
12	Fevicol	1 No.	50
13	Red Paint	100 ml	44
14	Blue Paint	100 ml	43
15	White Paint	100ml	45
16	Brush	1 No.	20
17	Level Pipe	1.75 m	21
18	Black Paint	300 ml	300
19	Chart Paper	6 No.	42
20	Glue Gun	1 No.	250
21	Glue Stick	2 No.	30
22	Fevicol	3 No.	225
23	Sparkle Pen	3 No.	30
24	Water Color	3 No.	60
25	Double Sided Tape	2 No.	30
26	Copy Cover Role	1 No.	100
27	12 Volt 12 AH Battery	1 No.	1799
28	Glue Gun	1 No.	250
29	Glue Stick	5 No.	50
30	Tree	1No.	10
31	Nails	Mix	10
32	Hingo 3"	2 No.	20
33	Chuple	2 No.	30
34	Lock Brass	2 No.	110
35	Ply Board	4*4	400

36	Paint	2 No.	200
36	Scissor	1 No.	50
37	Paper Cutter	1 No.	30
38	Door Met	4 No.	400
39	Box	2 No.	60
40	Label Pipe	2 meters	40
41	Toy Car	2 No.	30
42	LED light	1 No.	30
43	Tape	1 No.	10
44	LED Light	5 No.	20
45	Cord	1 Meter	50
	Grand Total		**9100**/-

THANK YOU