Solar Operated Community Micro Irrigation

Talwara, Punjab

Punjab, the region of five rivers, obtains maximum yields. Contrary to this, 2.5% area of Punjab is not irrigated due to hilly terrain and forest area. Department of Soil and Water conservation was facing challenges in irrigating left bank of Kandi Canal. Since it is at higher elevation, farmers can grow only rain fed crops. Jain Irrigation Systems Ltd. have provided innovative solar based irrigation solution to about 1642 acres of area. In this project, Jain Irrigation is providing complete package of practices from concept to commissioning including training to the farmers and Operation & Maintenance for 7 years.

Requirement

1) Lifting water from the canal and distribution to hilly farms so that farmers can take crop in all seasons
2) Establishment of grid distribution network in this hilly area was costlier and challenging
3) Avoid cost of maintenance of distribution grid and monthly electricity bill

Technical specifications

Sr.	Particular	Value
1	Area	1642 acre
2	No. of lifts	5
3	Total Pumping capacity	750 kW (1000 hp)
4	Single Pump capacity	15 kW (20 hp) & 18.5 kW (25 hp)
5	Discharge	12841 m³/ day
6	Head	58-105 m
7	Pump type	Solar Submersible pump
8	Motor Type	AC motor
9	Total Solar Array capacity	1.2 MW (1200 kWp)
10	Type of controller	Solar pump inverter with PLC controlled operation
11	Energy saved = Energy Generated (units / year)	17,54,000

Features

- High efficiency solar modules
- Stand alone system completely works on solar
- PLC based pump controlling for maximum utilisation of solar energy
- Full proof inbuilt electrical protections
- 25 years of solar module life
- Automation of complete solar irrigation system up to farm level
- Easy to operate and maintain

Benefits to farmers

- Running of solar pumping system irrespective of unexpected / unavoidable faults in transmission line
- Inbuilt protections ensure higher pump life
- Automatic operation results in maximum utilisation of solar and water resources
- Socio economic benefit on farmers prosperity
- Dust to dawn working of pump
- Transmission losses avoided
- Theft of power is prevented
- Highly reliable and robust
- Maximum system Up time
- Requires mostly unskilled labour
- No expenditure of laying power lines

Benefits to government

- Government would save huge amount on creating electrical infrastructure to bring the electricity to the rural areas from the power generation stations, since solar is decentralized way of delivering power for pumping
- This will also avoid /eliminate theft issues
- Farmers will get reliable power for pumping, which will bring sustainability to farming
- Solar power is a green power which reduce GHG effect
- Recurring costs in case of solar systems would be Zero. Hence there is no question of recovery issues.
- Farmers would be able to run other electrical appliances such as tube lights/fans etc., on the solar power
- Government will always have a choice to offer electricity to the farmers at commercial rates

World's only and the largest integrated community solar powered micro irrigation project providing irrigation to 1200 farmers. This area of Punjab was not feasible for canal irrigation due to higher elevation and undulated terrain. This path breaking sustainable solution has now opened the avenues for Himalayan states and other hilly areas in the country.

Solar Tracker Installation

Solar Trackers Installation

Solar Pump Assembly

328 kW (245 hp) Solar Pumping Station

Jain Solar Powered Sprinkler Irrigation System