

Innovative Ideas on: Energy Conservation/Environment Improvement

Name of innovation: Solar Water pumping System at Nimdih Station of Adra Division

Summary: Solar Water pumping System has been provided at Nimdih Station of Adra Division by Electrical General Department. Photovoltaic powered pumps provide solution to save energy and also to cater demand of power where local source of supply is not available. Solar water pumps are specially designed to utilize DC electric power from photovoltaic modules through controller.

Detailed Description: A pump controller (which is a linear current booster) is an electronic device used with most solar pumps. It acts like an automatic transmission, helping the pump to start and keeps it from stalling in weak sunlight. Maximum power point tracking (MPPT) is a technique used commonly with photovoltaic (PV) solar systems to maximize power extraction under all conditions. As the amount of sunlight varies, the load characteristic that gives the highest power transfer efficiency changes, so that the efficiency of the system is optimized when the load characteristic changes to keep the power transfer at highest efficiency. This load characteristic is called the maximum power point and MPPT is the process of finding this point and keeping the load characteristic there. Solar Pump VFD is which getting the input power from PV module and changing it to AC output for pump controlling and pump working. Solar pumping inverter which getting the electricity directly from PV module and transfer it to AC for pump controlling and working . MPPT control card inside which make sure to system energy reliability and efficiency .This technology are based on Solar inverter and adding more required hardware for optimizing water pump control solution . There is special individual MPPT control unit inside.

Brief Data of System

1. SPV panel of **250 Wp of 24 Volt** each X **6 nos.** = **1500 Wp**
2. **1 HP Pump with 110 Volt 3 Phase AC Motor** having **variable frequency drive**
3. Control Panel/ Inverter
4. **2000 Litre discharge per hour** on bright sunny day.
5. **Date of Commissioning: 14 Dec 2017**
6. **Cost of Project: ₹ 3,80,800/- (inclusive of GST)**

IMPACT/BENEFITS: ENERGY SAVING BY THE ABOVE SYSTEM ANNUALLY

= 2729 KWH = 2729 X 7.72(@Rs 7.72/kwh) Avg = Rs 21,068/-

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NIMDIH STATION 1 HP SOLAR SUBMERSIBLE WATER PUMP

