

3 MW solar power plant for Abellon Clean Energy Ltd.

Project Description

Globally organizations are working on combination technologies to enhance outputs and optimize utilization of increasingly scarce resources. This project follows a global model that is based on combining technologies to enhance outputs and optimize utilization of increasingly scarce resources. Project explores the idea of developing a closed system, where each component such as solar power, waste water, carbon dioxide, biomass, bio-fertilizer, organic farming and food production is utilized in one model. Waaree Energies Ltd. provided turnkey EPC services for this 3 MW Solar Photovoltaic (PV) Power Plant, for M/s. Abellon Clean Energy Ltd., project site at Modasa, Gujarat. The project work commenced on 22nd November 2011 and was commissioned on 28th January 2012.

The project covered an area of approximately 17.5 acres of saline land with a total of 14,130 polycrystalline silicon PV modules of WAAREE WS – Series 230 Wp make. 500 kW central inverters were used along with variety of protection features and systems, evacuating to a 33 KV Grid. This 3 MW plant will generate approximately 4800 Mwh of electricity per year.

This project is one of the biggest achievements for WAAREE Energies Ltd. as it has been nominated for "**Power-Gen Project of the Year Awards**" & "**Intersolar Award 2013**", an international honour.

Project Benefits

The project addresses food & energy security on the same land by harnessing solar radiation on solar panels to produce electricity and on the photosynthesis platform by growing vegetables, spices and fruits under solar panels. This optimizes key resources like land & water, converts biomass residues into compost/fodder/energy, and enhances productivity of agricultural produce and solar infrastructure. Rural community gets job opportunity for agricultural activities under solar panels thereby the project anchors socio-economic and environmental benefits to local community.

Photosynthesis: 10-14 tonnes/acre/annum agricultural production below the panels.
An estimated revenue value: INR 1,25,000/acre/annum

Water efficiency: Solar panels are washed to increase solar efficiency. Re-using ~78 lac litre water/annum for irrigating underlying vegetation.

CO2 Capture: Sequestering ~250 tonnes/annum CO2 by vegetation from environment as food energy, reducing 1 lakh tonnes of CO2 over 25 years viz-a-viz fossil fuels by solar energy.

Soil improvement: The post harvested residues are used for composting & reused as organic fertilizer for cultivation under panel. Organic farming & addition of micro-organisms in the soil has made the soil healthy with bacteria which help to break down any organic matter and migrates the nutrients back into the soil matrix. They also help in nitrogen soil fixing.

Planting crops under the panels will bind the soil together and hence no soil erosion. Practice of crop rotation will replenish the nitrogen & other important macro and micro nutrients.