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A Solar Energy Initiative to avail financial and environmental benefits Holy Family Hospital, Delhi

GGHH Agenda Goals

- Energy

Hospital Goal

- Promote clean energy
- Reduce energy costs
- Reduce carbon dioxide emissions

Progress Achieved

- Energy and environmental savings: Solar photovoltaic (PV) power plant installed at the hospital saves \$ 4314 (upto Rs 3 lakh) and around 25 tonnes of CO₂ per month

The Issue

In order to provide solution to the general lack of energy access prevalent in many parts of the world, several innovative and decentralized solutions based on renewable energy technology have emerged. Particularly solar energy based systems such as solar lanterns and rooftop solar systems have gained momentum globally to improve energy access in different sectors including healthcare. The recent developments in the past years such as fall in solar prices, availability of energy efficient appliances and high market penetration of solar photovoltaic technology have made such solutions economically viable and accessible widely.¹

Around one-thirds of India's power is sourced from imported commodities such as coal and diesel. With rising problems over Coal production in India and ever-rising oil prices, the current rate of increasing imports to reduce the energy deficit is unsustainable as well as harmful to economic factors such as the Current Account Deficit that leads to rising inflation and lower purchasing power of the Indian currency. Solar energy can act as an important weapon against this rising trend of imports and has the potential to replace conventional sources of energy as India's solution to its power crisis.²



Fig 1: Rooftop solar panels at the Holy Family Hospital building³

Sustainability Strategy Implemented

With a clear vision of reducing the energy costs and carbon foot print of the hospital, management team at Holy Family Hospital took the initiative of installing solar photovoltaic power plant to save electricity units from conventional sources and switch to clean energy. The hospital aims to offset a part of its electricity dependence on the utility grid. The initiative is also aimed at reducing the hospital's carbon footprint. The solar photovoltaic power plant is installed in the hospital with its panels spread across the entire hospital building rooftops since 2014. Apart from this hospital has also installed energy efficient LED lights that use about 50% less electricity than the traditional incandescent, fluorescent and halogen options.

- A detailed cost benefit analysis with respect to the cost of installation, projected savings and estimated maintenance expenditure carried out by the technical staff and electrical department of Holy Family Hospital.
- The hospital management signs up a power purchase agreement with STEAG Energy Services India (SESI) to set up a solar photovoltaic (PV) power plant utilizing the rooftop spaces available on the hospital buildings.
- The company is responsible for operating and maintaining the solar power plant for next 20 years.
- Team of electrical engineers deployed along with assistants to assist and coordinate for the efficient functioning of the solar photovoltaic power plant.
- The power plant covers an area of 4,000m² and consists of around 1,000 PV modules providing a peak output of 300 kW of clean energy.
- The major component suppliers for the plant are ReneSola and Delta.
- The management replaces regular light and bulbs with LED lights.

Implementation process

The initiative began as a cost cutting measure as well as a sustainability step to reduce the carbon footprint generated by the hospital. The hospital achieved this through installing solar energy power plant and LEDs inside the campus to reduce its environment and economic footprint. The electrical department and the management team are involved in monitoring and evaluating the initiative. Hospital staff along with SESI team are responsible for cleaning and maintaining solar panels installed at rooftop of the building.

Tracking Progress

Capacity of solar water heating system at the Holy Family Hospital is 300 kW which connected to the direct grid. The power plant supplies clean energy to the 345 bedded multispecialty hospital. On an average the system saves upto Rs 3 lakh i.e., \$4314 and around 25 tonnes of CO₂ per month. Due to the financial savings the cost of installation will be received back over the course of time.

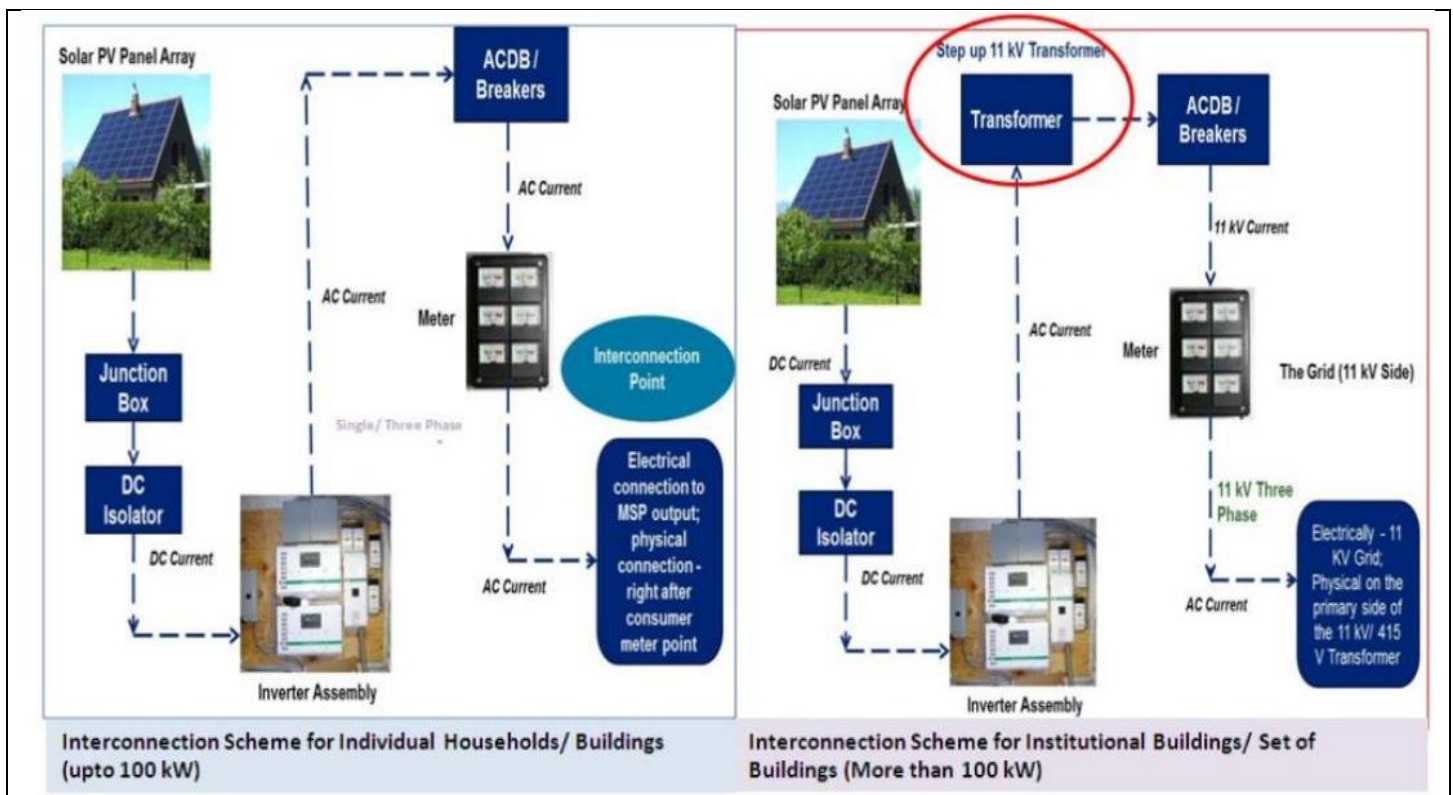


Fig 2: Various components of a solar photovoltaic power plant for rooftop system⁴

Challenges and lessons learned

- Weather conditions and cleaning of solar panels are major factors influencing the availability of solar radiation. The panels need to be cleaned regularly, as it accumulates lot of dust which can interfere with the panel functioning.
- Winter months are subjected to loss of productivity due to lack of sunlight penetration which also contributes to decrease in the efficient operation of panels.

Next Steps

The management will be taking further steps towards achieving higher efficiency in the current system. Further actions will be taken to advance low emission and energy consumption.

Demographic information

Holy Family Hospital is a 345 bedded multi-specialty hospital run by the New Delhi Holy Family Hospital Society. Situated in the city's industrial suburban area, hospital is managed by the Delhi Catholic Archdiocese. Hospital was founded by the Medical Mission Sisters in 1953.

Links

To learn more about Health and Environment Leadership Platform's and its members:

<https://www.ceh.org.in/activities/help/about/>

To gain access to HELP's Information, Education and Communication materials and other case studies:

<https://www.ceh.org.in/activities/help/resources/>

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Submission date: January 2019

¹ Solar for Powering Health and Education in India (Oxfam India and Council on Energy, Environment and Water; 2018)

² http://www.refenergy.com/solar_pv_india_benefits.html

³ https://www.steag-energyservices.com/fileadmin/user_upload/FM_SES/Projekte/Betriebsfuehrung_en/OM_ET_IN_New-Dehli_Photovoltaic_Rooftop_Power_Plant_Enginnering_and_Operation_eng.pdf

⁴ <http://www.iosrjournals.org/iosr-jef/papers/ICIMS/Volume-1/2.pdf>