



PUBLIC
HEALTH
FOUNDATION
OF INDIA



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
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Progress Achieved

- Energy and environmental savings: The solar photovoltaic (PV) power plant installed at the hospital saves USD 4,314 (upto Rs 3 lakh) and reduces emissions from the facility by approximately 25 tonnes of CO₂ per month

The Issue

In order to address the issue of a lack of energy access prevalent in many parts of the world, several innovative and decentralized solutions based on renewable energy technology have emerged. In particular, 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. Thanks to recent developments in the past years such as a fall in the cost of solar technology, an increase in the availability of energy efficient appliances and high market penetration of solar photovoltaic technology that have made solar applications economically viable and more widely accessible.¹

Around one-thirds of India's power comes 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. It has the potential to replace conventional sources of energy and can therefore be a solution to India's 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 a solar photovoltaic power plant to save electricity units from conventional sources and switch to clean energy. The hospital aims to use solar energy 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, installed at the hospital in 2014 has panels spread across all building rooftops. Apart from this, the hospital has also installed energy efficient LED lights that use about 50% less electricity than the traditional incandescent, fluorescent and halogen options.

- Technical staff and the electrical department of Holy Family Hospital carried out a detailed cost benefit analysis with respect to the cost of installation, projected savings and estimated maintenance expenditure.
- The hospital management signed 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.
- A team of electrical engineers along with assistants participated in the project to assist and coordinate 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 of the hospital. The hospital achieved this through installing a solar energy power plant and LEDs inside the campus. 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

The solar power plant at the 345 bed multispecialty Holy Family Hospital produces 300 kW per month. On an average the system saves up to Rs 3 lakh, USD 4,314, and reduces emissions from the hospital by around 25 tonnes of CO₂ per month. These financial savings will allow the hospital to see a return on investment.

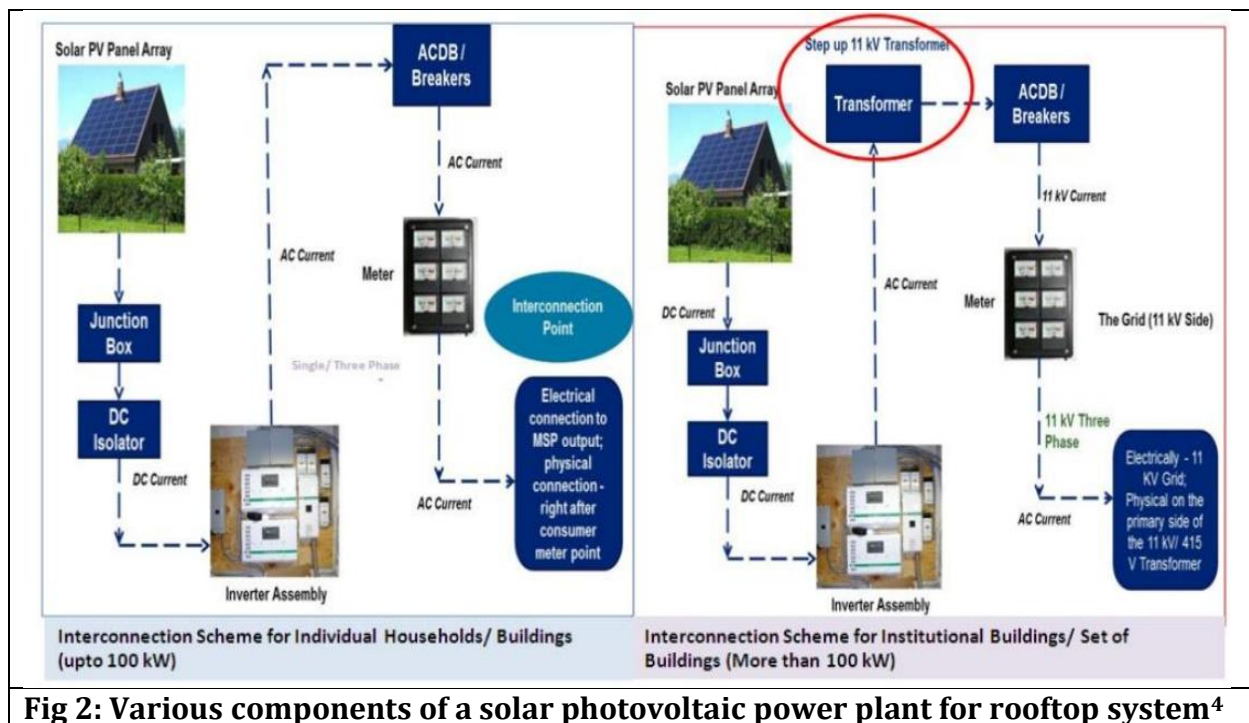


Fig 2: Various components of a solar photovoltaic power plant for rooftop system⁴

Challenges and lessons learned

- Weather conditions and cleaning of solar panels are major factors influencing the availability of solar power. The panels need to be cleaned regularly, as it accumulates a lot of dust which can interfere with the panel functioning.
- Winter months are subject to loss of productivity due to lack of sunlight penetration.

Next Steps

The management will be taking further steps towards achieving higher efficiency in the current system and reducing hospital emissions as well as 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/>

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

² http://www.refexenergy.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_Engineering_and_Operation_eng.pdf

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