A Solar Energy Initiative to Reduce Cost

HBT Medical College and Dr RN Cooper Municipal General Hospital

GGHH Agenda Goals

- Energy

Hospital Goal

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

Progress Achieved

- Energy savings: Capacity of solar water heating system installed at the 6 buildings of the hospital is 18,000 litres (L) per day which saves Rs 2,70,0000 ($37,500) per year
- Environmental benefit: Solar water heating system installed at the hospital saves around 270 tonnes of CO_2 emission per year

The Issue

The management at HBT Medical College and Dr RN Cooper Municipal General hospital took the initiative of installing solar water heating systems to save electricity units from conventional sources and switch to clean energy. It is also aimed at reducing the hospital's carbon footprint. The solar water heating system is installed since 2016 at rooftops of 6 hospital buildings that include staff quarter, girls hostel, boys hostel, officer's quarters, nurses school and training centre.

Fig 1: Solar Water Heater System installed at HBT Medical College and Dr RN Cooper Hospital

Sustainability Strategy Implemented

With a clear vision of reducing the energy costs and carbon foot print of the hospital, management team at the municipal general hospital installed solar water heating system with a capacity of 3000 L per day (each) at 6 buildings within the hospital campus. Installation was carried out with the help of local solar energy installation company Genex Renewable Energy Mission.

- A detailed cost benefit analysis with respect to the cost of installation, projected savings and estimated maintenance expenditure carried out by the technical staff of Brihanmumbai Municipal Corporation (BMC), local municipal body in Mumbai and technical staff at the hospital.
- A detailed proposal along with the cost analysis got submitted to the hospital administration and governing body for required funds and resources.
- Genex Renewable team was approached by the hospital to install the solar water heating system and its rooftop panels.
- The company is responsible for maintaining solar panels and the entire heating system at the hospital on contractual basis.
- Genex Renewable team provided trainings to the technical staff at the hospital and BMC staff appointed within the hospital for coordination and technical assistance.

- After the successful completion of training, dedicated internal staff members assigned to regularly clean the solar panel for maximum capacity and report for any inefficiency or performance issues.
- One senior electrical engineer deployed along with assistants to assist and coordinate for the efficient functioning of the solar water heating system.

Implementation process

The initiative begun as a cost cutting measure as well as to reduce the carbon footprint generated by the BMC owned municipal general hospital. The hospital has made use of solar water heating system inside the campus to reduce its environment and economic footprint. A solar water heating produces a total of 18,000 litres of warm water for patients and other healthcare deliveries on a daily basis. The hospital electric department and the dean of the hospital are involved in monitoring, learning and evaluating this initiative. The staff members are involved in cleaning and maintaining the solar panels and the external vendor is responsible for installing and maintaining the solar panels.

Tracking Progress

Capacity of solar water heating system at the campus is 3000 Litres (L) per day in 6 buildings which is equal to 18,000 L as total capacity of 6 buildings. On an average day 100 L of water per day system saves up to 1500 electricity units per year as per the efficiency capacity installed. So, 18000 L per day system saves 27,0000 electricity units per year. Cost of one unit of electricity is 10 INR, given the savings, it will result to 2,700,000 INR ($37,500) per year. The total cost in installing this system is 4,230,000 ($58,570). The cost invested in installing this system will be received back as financial savings in 19 months. As per market research, the average life expectancy of certified solar water heating systems is 20 years, much longer than standard gas or electric storage water heaters.

Electricity unites saved: 180 x 1500 = 27,0000 units of electricity per year

Total financial savings per year: 27000 units x 10 INR = 2,700,000 INR

Total installation cost of 18000 Solar water heating system:

18000 x235 INR per litre =4,230,000

Also, to generate 1500 units of electricity per year from a coal based power plant, 1.5 tonne of CO_2 is released in the atmosphere. Considering 18000 L per day system saves 27,000 electricity units per year, this in turn saves 270 tonne of CO_2 emission in the atmosphere.

Challenges and lessons learned

- The panels need to be cleaned regularly, as the panels accumulate lot of dust due to proximity to main road.
- Winter months are subjected to loss of productivity due to smog and cloud cover.

Next Steps

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

Demographic information

HBT Medical College and Dr RN Cooper hospital is a major municipal general hospital located in the western suburbs of Mumbai. The hospital was established in 1969 and upgraded into Medical college in August 2015. It is a 636 bedded secondary care hospital with all general specialties.

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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