

CASE STUDY

MSME in Bokaro installs solar rooftop power plant; saves ₹4.3 lakhs annually on power bill

BACKGROUND

Bokaro, in the state of Jharkhand, is a mixed engineering cluster of industries in Eastern India. Electricity is the main source of energy used by these industries. Adoption of solar rooftop power plant will lead to substantial reduction in use of grid electricity and reduce CO₂ emissions.

Baseline

An MSME unit was having an annual electricity consumption of 1 lakh kWh and contract demand of 200 kVA. The unit was drawing power from JBVNL at a tariff of ₹5.50/kWh. A rooftop area of around 6,000 sq. ft was available in the unit. The unit was recommended to install a solar rooftop PV system. Considering the available shed area, the potential of solar rooftop power generation was assessed to be 53.4 kWp.

A photograph of the solar rooftop module is shown in Figure 1.



Figure 1: Solar rooftop module

ENERGY SAVINGS

The assumptions for cost benefit analysis of solar rooftop PV system were as follows:

Particular	Unit	Value
Cost per installed kW	Rs.	43,000
Average solar generation	kWh/day/ kWp installed	4
Solar plant degradation factor		0.995
Electricity tariff annual increment		1%

Installation of a 53.4 kWp rooftop solar PV system in the unit will lead to an annual energy saving of 77,500 kWh which is equivalent to monetary savings of ₹4.3 lakh per annum. The investment in recommended measure will be about ₹23 lakh. The payback on investment will

be between 3-4 years, if accelerated depreciation of 40% on solar asset is taken into account. The GHG emission reduction from the recommended measure will be about 64 tCO₂ per annum.

The energy-saving is depicted in Figure 2

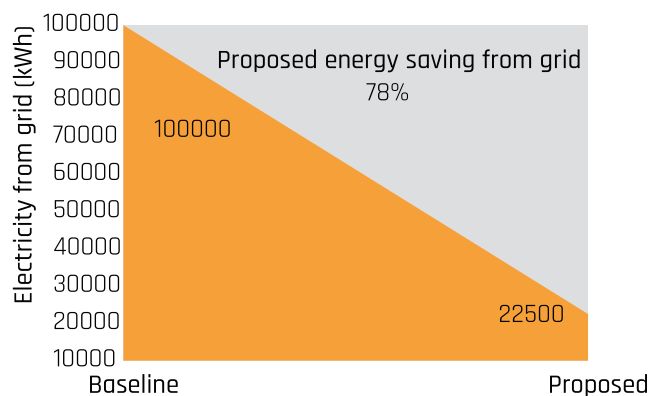


Figure 2: Energy saving

Simple payback period less than 5 years is considered good to solar investments. Integrating the diesel generator system with solar power plant will decrease the fuel cost.

For more details, please contact

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