Cost economics of concentrating solar systems for hotels and hospitals

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Case Study: Solar thermal application in Laundry

Particular	Specification
Laundry Application	Presently using diesel fired boiler for steam generation for process steam requirement
Assumption :	25 Liters pre hour of diesel consumption
	8 Hours per day of operation
	200 Liters per day diesel consumption
	Rs 11,000 per day cost of diesel (at Rs 55 per liter)
	300 days of operation
	Rs. 33,00,000 /- per annum cost of diesel

Case Study: Solar thermal application in Laundry

Particular	Specification
Proposal	Replacing the existing diesel fired boiler with solar shuffler dish for generation of process steam
	100% replacement of diesel fired boiler with solar
Capital cost of solar shuffler	Rs. 40 Lakhs
Annual Maintenance cost	Rs. 60,000 p.a.
O&M Escalation	6%
Cost of mirror replacement	Rs 2,50,000 (in 5^{th} year and 10^{th} year)
Capital Subsidy	30% of project cost (Rs 12 lakhs)
Equity Contribution	20% of (capital cost – subsidy) (Rs 5.6 Lakhs)
Loan	80% of (capital cost –subsidy) (Rs 22.4 Lakhs)
Capital cost after subsidy	Rs. 28 Lakh p.a.
Benefit	Depreciation 80% (Rs 7.2 Lakhs IT saved in first year)
Fuel cost saving	Rs. 33,00,000 /- per
Simple Pay Back	< 1 Year

Case Study: Solar thermal application in steam cooking

Particular	Specification
Cooking Application	Presently using liquid petroleum gas for steam generation for process steam requirement for cooking purpose
Assumption :	40 kg of LPG per day
	Rs 3000 per day cost of LPG (at Rs 75 per kg)
	300 days of operation
	Rs. 9,00,000 /- per annum cost of LPG

Case Study: Solar thermal application in steam cooking

Particular	Specification
Proposal	Replacing the existing LPG based system with 15 solar shuffler dish of 16 sq.m aperture area for generation of process steam for cooking purpose
	100% replacement of LPG with solar
Capital cost of solar shuffler	Rs. 35 Lakhs
Annual Maintenance cost	Rs. 60,000 p.a.
O&M Escalation	6%
Cost of mirror replacement	Rs 2,50,000 (in 5^{th} year and 10^{th} year)
Capital Subsidy	30% of project cost (Rs 10.5 lakhs)
Equity Contribution	20% of (capital cost – subsidy) (Rs 4.9 Lakhs)
Loan	80% of (capital cost –subsidy) (Rs 19.6 Lakhs)
Cost of system after capital subsidy	Rs. 24.5 Lakh
Benefit	Depreciation 80% (Rs 6.36 Lakhs IT saved in first year)
Fuel cost saving (LPG)	Rs. 9,00,000 /- per
Simple Pay Back	2-3 Year

Case Study: Solar thermal application in steam sterilization

Particular	Specification
Hospital equipment sterilization	Presently using electricity operated steam generation system for sterilization of hospital equipments
Assumption :	100 bed hospital will generate 500 kg of material for sterilization
	40 kg of steam will be required for sterilization
	260 kWh of electricity consumption
	Rs 2600 per day cost of electricity (assumed at Rs 10 per kWh this rate includes electricity base rate , taxes, fuel surcharge, Cess on electricity)
	300 days of operation
	Rs. 7,80,000 /- per annum cost of electricity saving

Study: Solar thermal application in steam sterilization

Particular	Specification
Proposal	Replacing the existing electricity operated sterilization system with 8 dish solar shuffler dish with 16 sq.m. aperture area used for generation of process steam for sterilization purpose
	100% replacement of electricity with solar
Capital cost of solar shuffler	Rs. 35 Lakhs
Annual Maintenance cost	Rs. 60,000 p.a.
O&M Escalation	6%
Cost of mirror replacement	Rs 2,50,000 (in 5^{th} year and 10^{th} year)
Capital Subsidy	30% of project cost (Rs 10.5 lakhs)
Equity Contribution	20% of (capital cost – subsidy) (Rs 4.9 Lakhs)
Loan	80% of (capital cost –subsidy) (Rs 19.6 Lakhs)
Cost of system after capital subsidy	Rs. 24.5 Lakh
Benefit	Depreciation 80% (Rs 6.36 Lakhs IT saved in first year)
Fuel cost saving (Electricity)	Rs. 7,80,000 /- per
Simple Pay Back	2-3 Year

Thank You