

SOLAR HOT WATER SYSTEMS

DESCRIPTION

Solar hot water systems (SHWS) harness solar energy for heating. This is a mature technology which can significantly reduce the requirement for conventional energy for water heating. These systems are economical, pollution free and easy to operate in tropical countries like India.

TECHNICAL DETAILS

A solar water heater consists of a collector to collect solar energy and an insulated storage tank to store hot water. The solar energy incident on the absorber panels coated with selected coating transfers the heat to the riser pipes underneath the absorber panel. The water passing through the risers gets heated-up and is conveyed to the storage tank. The recirculation of the same water through absorber panels in the collector raises the temperature to around 80°C on a good sunny day. Based on the collector system, SHWS can be of two types viz. Flat Plate Collectors (FPC) based system and Evacuated Tube Collectors (ETC) based systems.



Source: FPC based SHWS in the case study company

CASE STUDY

A Zn and Ni based electroplating company requires to heat-up 6 process baths of 1800 litres each to 55°C. The baths have to be maintained at that temperature throughout the process. This company was earlier using hot water boiler with fire wood and electric heaters for this application. This has been replaced with SHWS with 110 panels of FPC.

Company Profile	
Location	Aurangabad, Maharashtra
Employees	15-18
Annual turnover	Up to Rs. 3 Crore
Main products	Zn and Ni plated automobile components
Annual production capacity	600 tonnes of Zn plated components and 6,00,000 sq ft of Ni plated components

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TECHNICAL BENEFITS

- Reduced electricity or fuel consumption
- Very low running cost compared fossil fuels based heating
- No fuel cost - savings of around 45%
- Low maintenance
- Safe operation and long life

ENVIRONMENTAL BENEFITS

- Clean and environment friendly
- Natural and unlimited source of energy from sun
- Replaces conventional fuels like furnace oil (FO), natural gas, electricity and wood - reduces carbon emissions
- Reduced carbon foot print and Green House Gases (GHG) emissions
- Reduced air pollution

FINANCIAL BENEFIT OF CASE STUDY

Investment amount	Rs. 15 Lakh
Payback period	2 years 9 months
Net savings per month	Rs. 45,000
Lifetime of investment	20 to 30 years

TECHNOLOGY SUPPLIERS¹

There are 145 manufactures in Category 1 and 36 manufactures in Category 2 who are empanelled by Ministry of New and Renewable Energy (MNRE), Government of India under Solar Thermal Division for SHWS. Category 1 covers manufacturers who manufacture hot water storage tanks and balance of system in-house. Category 2 covers manufacturers who procure some of the components of the system indigenously.

¹ MNRE; http://mnre.gov.in/file-manager/UserFiles/list_etc_m.pdf (accessed on 26 Feb 2014)

FURTHER INFORMATION AND CONTACT

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