Selection of suitable Solar Water Heating Systems

1. Flat plate collector (FPC) based systems are of metallic type and have longer life as compared to Evacuated tube collector (ETC) based system as ETCs are made of glass which are of fragile in nature.

2. ETC based systems are 10 to 20% cheaper than FPC based system. They perform better in colder regions and avoid freezing problem during sub-zero temperature. FPC based systems also perform good with anti-freeze solution at sub zero temperature but their cost increases.

3. At places where water is hard and have larger chlorine content, FPC based system with heat exchanger must be installed as it will avoid scale deposition in copper tubes of solar collectors which can block the flow of water as well reduce its thermal performance. ETC based systems do not face such problem.

4. For a house with one bathroom and 3 to 4 members, 100 liter per day capacity system should be sufficient. For more numbers of bathrooms, the capacity will increase accordingly due to pipe losses & more number of family members. Generally the capacity is decided based on hot water required in mornings for bathing. If the usage is in evening & at other times also, the capacity is decided accordingly.

5. A 100 lpd capacity may cost Rs. 16,000 to Rs.22,000 depending on type & location. In hilly & N-E region the cost may be 15 to 20% more. The cost, however, does not increase linearly with increase in capacity, rather it comes down proportionately as we go for higher capacity system. The system cost does not include the cost of cold water tank, & its stand which is required if overhead tank is not installed in a house/ building. Cost of hot water insulated pipe line also, may be extra if number of bathrooms are more than one. Additional cost towards all these components may increase by 5 to 10%.

6. Avoid putting of electricity back up in storage tank of solar system. If you have electric geyser of say less then 10 lpd capacity or an instant geyser it would be better if you connect the outlet line of solar system with inlet of geyser & set thermostat at $40^{0.}$ Your geyser will start only when you get water below $40^{0.}$ from solar system and will switch off when temperature goes above say 42 or so. This will save lot of electricity & heat water according to your requirement. However, if you have storage geyser of high capacity, better to have a separate tap for solar system and use your electric geyser when you don't get hot water for solar.