SCI – SOLAR HEATING OF WATER

Solar hot-water heating is already popular in warm sunny climates. A solar collector for heating water consists of a thin, broad box with a glass or clear plastic top and a black bottom with a glass or clear plastic top and a black bottom with water tubes embedded within. Such collectors are called flat-plate collectors. Faced toward the sun, the black bottom gets hot as it absorbs sunlight—similar to how black pavement heats up in the sun—and the clear cover prevents the heat from escaping, as in a greenhouse. Water circulating through the tubes is thus heated and is conveyed to a tank where it is stored.

In an active system, the heated water is moved by means of a pump. In a passive system, natural convection currents are used. In a passive solar water-heating system, the system must be mounted so that the collector is lower than the tank. Thus, heated water from the collector rises by natural convection into the tank, while cooler water from the tank descends into the collector. There are no pumps to buy, maintain or remember to turn on and off. The size and number of collectors are adjusted to the need.

In temperate climates, where water in the system might freeze, the system may be adapted to include a heat-exchange coil within the hot water tank. Then, anti-freeze fluid is circulated between the collector and the tank.