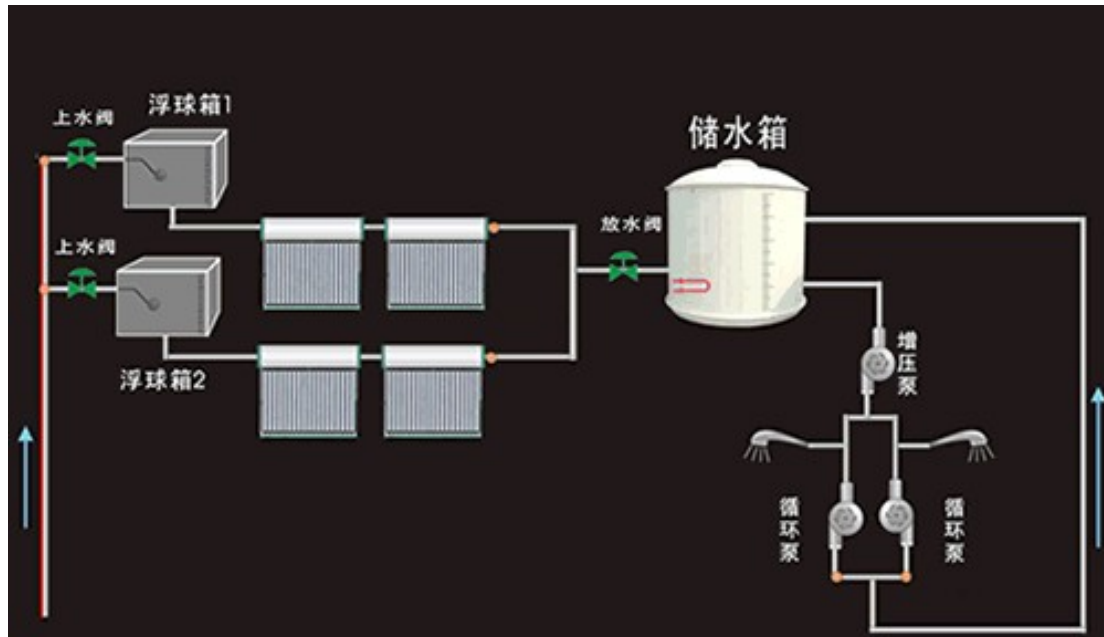
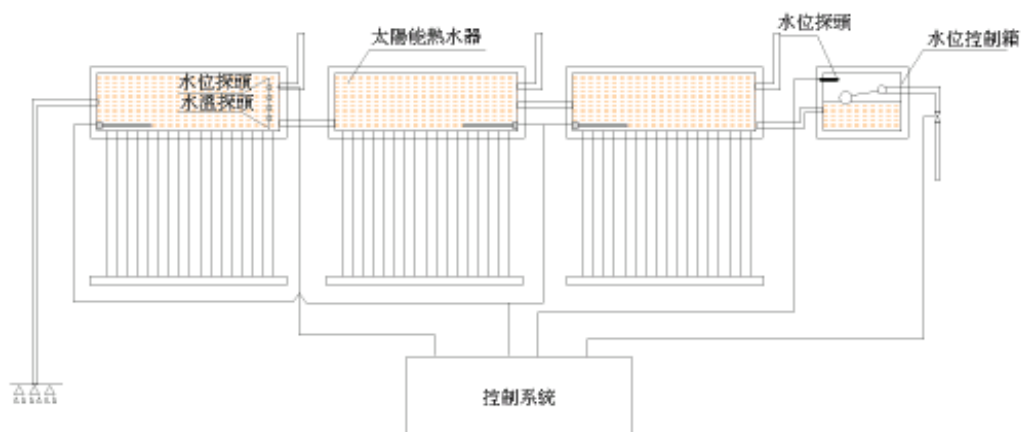


Serial or Parallel Solar Hot Water Project Solution



Input Valve
Ball Cock Box 1
Cycling Pump
Releasing Valve
Storage Tank
Pressure Pump
Ball Cock Box 2



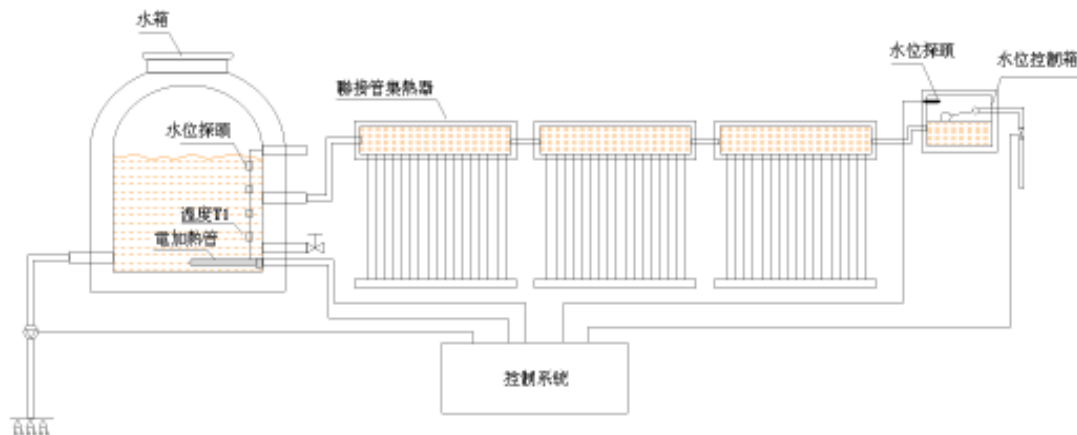
I. Solar Hot Water Project Solution of Single Heater Serial or Parallel Connected + Waterline Control Box

Working Principle: The cold water goes into the solar heat collectors via the waterline control box, and then is heated by the heat that is transformed by the evacuated tubes from light. The user will know the temperature of the hot water through the temperature

sensors and indicators in the tank. When the water becomes hot enough for shower, the user can open the tap and use the hot water. In cloudy and rainy days, the water in the tank can be heated by the electric heaters.

Features:

Simple structure, suitable for small-scale users who don't have a high demand on the quantity and quality of hot water.



II. Solar Hot Water Project Solution of Joint Tubes Serial or Parallel Connected + Waterline Control Box + Storage Tank

Working Principle: The cold water goes into the solar heat collectors via the waterline control box, and then is heated by the heat that is transformed by the evacuated tubes from light. The hot water will be stored in the storage tank. There is auxiliary automatic electric heater in the storage tank. When the temperature in the storage tank is higher than the fixed temperature, the electric heat will remain off; when the temperature in the storage tank is lower than the fixed temperature, the electric heater will be started to heat the water to the fixed temperature. At the fixed temperature, the electric heater will stop working. This system can work in all the four seasons of the year and in all weather conditions.

Features:

Reliable system, suitable for large-scale users who have a high demand on the quantity and quality of hot water.

Direction and Angle of Installation

The angle and direction of installation is also of great importance as it will effect the efficiency of the solar collector. Naturally you want the collector to receive the maximum amount of sunlight each day and throughout the year. As a general rule if you are in the Northern Hemisphere then the collector should face South and if you are in the Southern Hemisphere then the collector should face North. See diagram below.

The angle at which you mount the collector should roughly correspond to the latitude of your location. For example: Melbourne, Australia has a latitude of 37 °South - the collector should therefore face north at a 37° angle. London, UK has a latitude of 51° North - the collector should therefore face south at a 51° angle. You do not have to be too careful about mounting the collector at the exact angle suggested. If your roof angle is within 10°+/- of your desired angle you can just mount the solar collector flush against the roof surface. The added trouble of adjusting the collector to a precise angle is not warranted as it will not result in a great improvement in efficiency.

How to Prevent Excessive Summer Heat Output

If you are using the solar collector for space heating as well as hot water production, or if you just want a larger solar contribution, you will need a system that will greatly surpass heat requirements in the summer. Generally in the summer heating will not be required, in contrast cooling is. Unfortunately, at present solar cooling for domestic applications is not yet economically viable, so what to do with the additional heat? If you have a swimming pool or spa, the excess heat can be used to supplement heating. Turning off the pump and letting the collector stagnate is not ideal as high pressure and temps, and large volumes of vented steam may result (wasted water).

If you do not have an additional means of using the excess heat, then adjusting the angle of the collector can help to reduce summer heat output. As can be seen by the diagram above, the sun is low in the sky during the winter and high in the summer. Increasing the vertical angle of the collector by about 20° more the location's latitude (i.e. 60 ° instead of 40°), greater winter performance will be experienced. Due to the higher location of the sun in the sky during the summer, the collector will be around 40 ° from perpendicular and as such heat output will be reduced as the collector is not fully "facing" the sun. This simple solution alone can reduce peak summer output considerably, thus reducing problems associated with excessive summer heat production.

The above photo shows an ideal example of an installation angle that optimizes winter, spring and autumn heat output, while minimizing summer output. The high angle not only maximizes exposure to the direct winter sun, but also allows the sunlight reflected off the snow to be absorbed. In the summer when the sun is high overhead the exposed surface area is small, especially with the overhanging roof which would partially shade the collector. In areas without snow fall (and a latitude range of 30-40°) an angle lower than that shown above would be suitable.