Try This at Home

Solar Water Heating Systems

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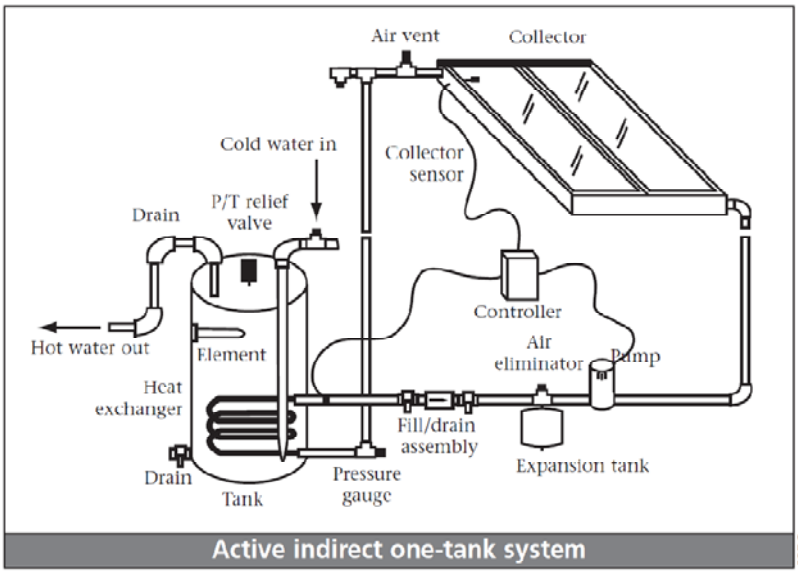
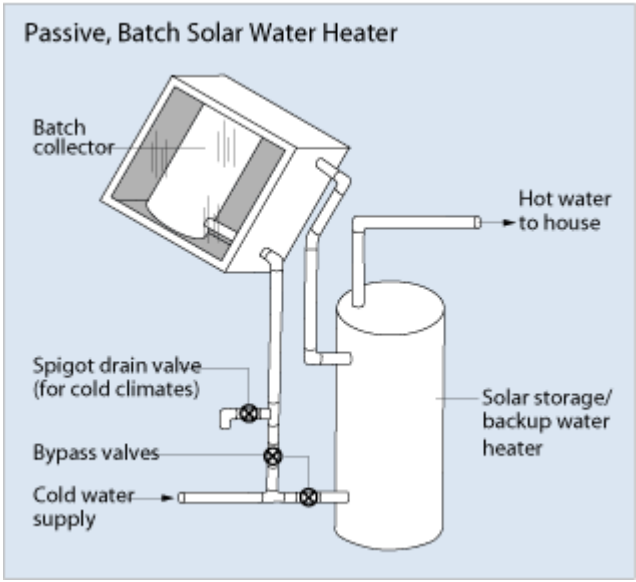
The sun's energy drives all of the natural cycles on our planet. One of the most cost effective ways to harvest this energy is to install a solar water heating system for your home. The basic premise behind solar hot water heating is that solar energy is captured directly to heat water (or a water/glycol mixture), and this hot water is then used directly in the home, or is transferred to your domestic hot water system. The advantages and disadvantages of the different types are discussed here.

The first system is the closed loop, active system. In a closed loop system, a water/glycol mixture is circulated by a pump through the solar collector, where it picks up heat from the sun. Then, the heat is transferred via a heat exchanger to domestic water. The glycol never comes into direct contact with your domestic water. When the sun is not shining, electricity or natural gas are typically used as a backup to bring domestic hot water up to the desired temperature. The main advantage of this type of system relates to is its use in cold climates. Since a water/glycol mixture is circulated to the panel outside, there is no danger of the panel or the pipes freezing if the outside temperature falls below freezing. This means that even on cold winter days, if the sun is shining, you can potentially be heating water and not have to worry about the system freezing at night. The disadvantages of this system include the complexity (pumps and electronic controllers are needed) and cost. They are most expensive solar hot water systems for a homeowner, and typically need to be installed by a professional. Costs have come down, and credits and rebates are available (see our "Rebates and Credits for Energy Efficiency Upgrades" fact sheet). The financial payoff time on this type of system is about 5 years for a 3-6 person household. See www.solar-incentive.org to estimate costs for your area, and to find a contractor.



Typical closed-loop system. Image from "Consumer's Guide: Heat Your Water With the Sun", U.S. Department of Energy.

The second type of system is an open loop batch-collector type. This system is less complex than the active systems, and is the one that is more commonly installed by a do-it-yourselfer with some carpentry and plumbing experience. The basic idea with this system is that a large tank (or tanks) is installed in-line with your domestic hot water heater. The tank is oriented towards the sun, and is encased in some sort of enclosure that allows the sun to shine in, but is insulated in other areas to prevent heat loss. Water in the tanks is heated during the day, and as residents of the home use hot water, the hot water is drawn from the tank into the existing hot water heater. The system in a sense "pre heats" the domestic hot water, reducing the consumption of electricity or natural gas in the home. The advantage of this system is its simplicity; there are no moving parts or complex controllers. Costs also tend to be much lower, although these systems may not qualify for federal tax credits. However, in cold climates, the systems must be drained in the winter months, to avoid potential freezing and broken pipes. A do-it-yourself guide for a batch solar water heater can be found on the Mother Earth News website at http://www.motherearthnews.com/Green-Homes/2007-10-01/Build-Your-Own-Solar-Water-Heater.aspx.



Typical batch-type solar water heater. *Source: U.S. Department of Energy.*

No matter which type of solar water heating system you choose, you will be reducing your home energy consumption, greenhouse gas emissions, and saving yourself money!

RESOURCES

For more in-depth information on these systems, view the U.S. Department of Energy's "Consumer's Guide: Heat Your Water With the Sun".

Another way you can harvest this energy directly is to install a photovoltaic (PV) system to generate your own electricity. Although the costs have come down for these systems, and numerous rebates and credits are available (see our "Rebates and Credits for Energy Efficiency Upgrades" fact sheet), the cost to an average homeowner is still quite high. Go to the Utah House website to view these sheets at http://theutahhouse.org/htm/publications.