

Why solar water heating?

Solar water heating

Modern solar heating systems can keep swimming pools warm, heat your home's water and heat your home's interior space. Their popularity is increasing for several reasons. Solar heating systems are cost saving, reliable, adaptable, and pollution-free because they use renewable energy from the sun. Modern systems include sleek, attractive, low-relief collectors that blends in with the look of the modern house. Did you know that modern solar heating systems work well even in winter?

A solar heating system is a rewarding investment. It can cover a high percentage of your monthly heating bill, ensure hot water during power failures and increase your property value. When you purchase a solar heating system you are making a conscious, responsible decision to help reduce harmful emissions from fossil fuels, while maintaining your quality of life.

What maintenance does solar thermal systems require?

Modern solar systems are designed to be maintenance free but due to poor water quality in some areas and dust cleaning is needed. ITS recommends an annual checkup of the system to ensure that your system is providing you with the biggest possible saving. During this checkup the collector surface can then also be cleaned and de-scaling can be done.

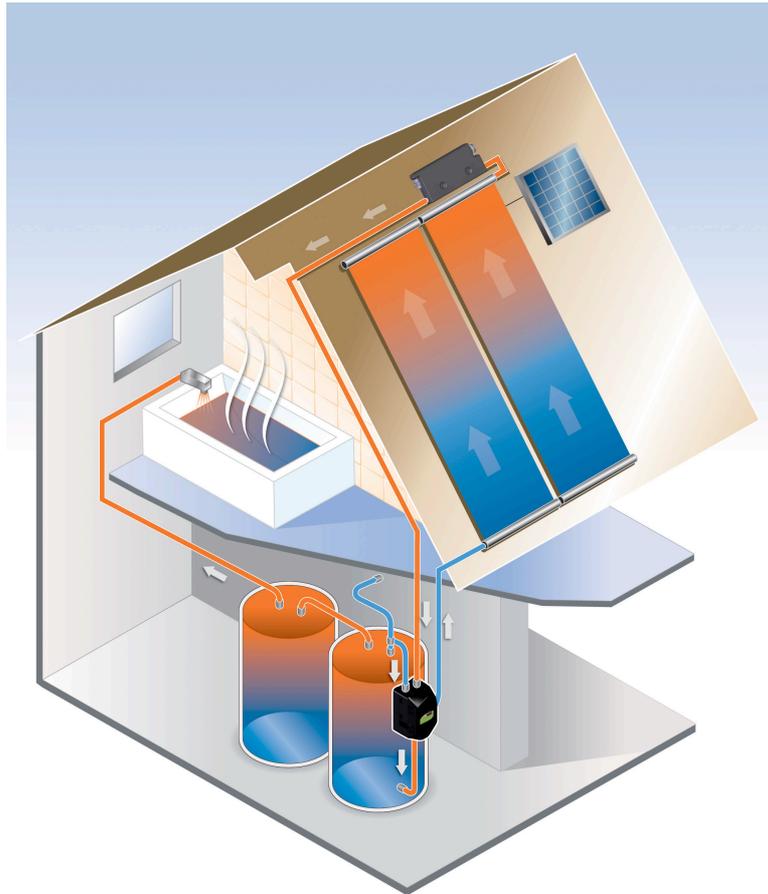
How much will your solar heating system help the environment?

On average for every 1kWh of energy produced by a coal power station, 0.966kg of carbon dioxide is produced. Now, a good quality solar system with 4m² of solar collector area will on average generate 8kWh of thermal energy per day. Therefore, you will personally be responsible for saving our environment of another 2900 kg of carbon dioxide per year. Carbon dioxide traps heat in our atmosphere, contributing to the greenhouse effect, which alters our planet's climate and ecological systems. Using solar energy in place of nonrenewable fuels may also reduce nitrous oxides and sulfur dioxides, which are components of smog.

How does solar water heating work?

What is solar water heating?

A solar heating system collects the sun's energy to heat water or another heat transfer fluid. The water or other fluid then transfers solar heat directly or indirectly to your home, water, pool or industrial process. Solar water heaters are a very good investment. Although solar water heaters cost more initially than conventional water heaters, the fuel they use—sunshine—is free. To take advantage of solar energy you need to have an un-shaded area, such as a roof, that faces north, northeast or northwest.



What are the basic components of a solar thermal system?

Solar water heaters and solar space heaters are made up of solar collectors, and all systems except pool heaters have some kind of storage. In pool systems, the swimming pool itself is the storage, and the pool's filtration pump circulates the pool water through the collectors. Active systems also have circulating pumps and controls, passive systems work without this added equipment. Two types of solar collectors are used for residential applications: flat-plate and evacuated-tube collectors.

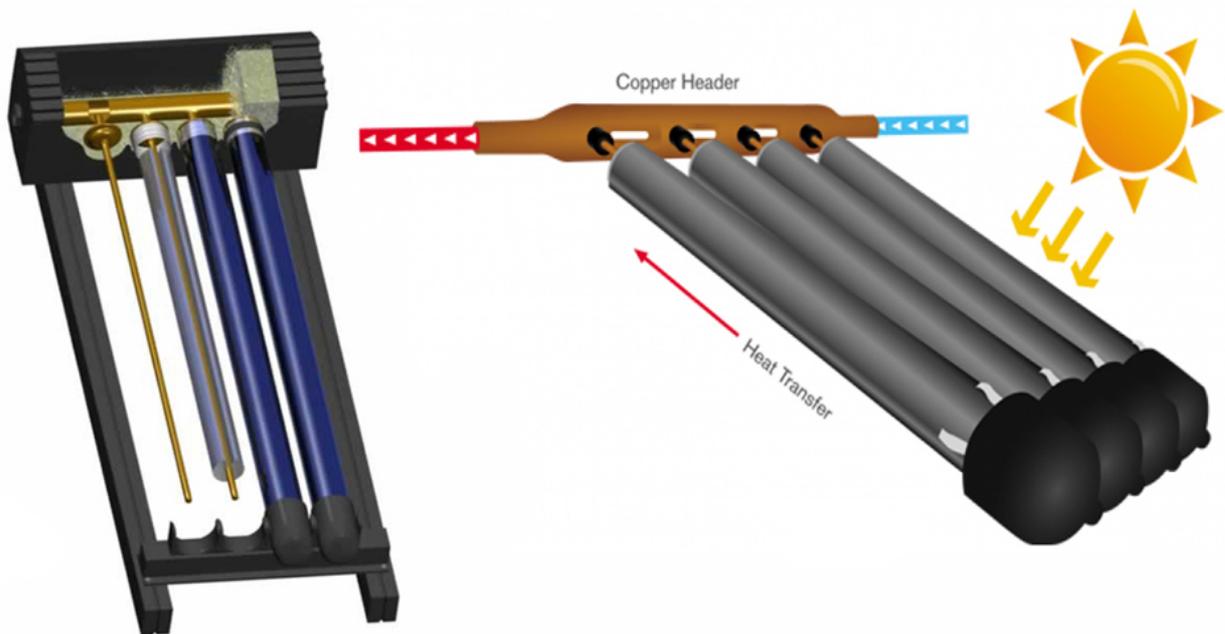
Flat-plate collectors

Flat Plate collectors are traditionally the most common type because they are easy to manufacture. Glazed flat-plate collectors essentially are weatherproofed boxes that contain a dark absorber plate under a glass cover.

Evacuated-tube solar collectors

Evacuated tubes can be seen as the newer of solar collectors. They are made of a copper "manifold" where the water flows through and a number of evacuated tube heat pipes connected to it.

Evacuated tube solar collectors convert direct and diffused solar radiation into heat. Infra red rays, which can pass through clouds, are also absorbed and converted into usable heat. The collectors efficiently collect and transfer this energy through a special collector plate and a rapid heat transfer channel 'the heat-pipe', situated in an evacuated glass tube, to a highly insulated manifold heat exchanger.



The collector plate has a special wavelength 'selective' coating using a semi-conductor layer. This special absorber plate converts the maximum amount of solar radiation into heat whilst having very low radiation losses. The heat-pipe has a very low heat capacity but an exceptionally rapid conductivity and therefore is a very efficient and speedy heat conductor.