

# Solar Heat Exchange Manufacturing

## SHEM Informational Packet



## Solar Made Simple

Heating your hot water with the sun simply makes sense. We have developed the new Simple Drainback System to make heating your hot water even easier. Our designs save time and money on installation, training and maintenance. Simple plumbing methods combined with high quality equipment create the next generation of solar hot water systems.

## Solar Thermal or Solar Hot Water Systems

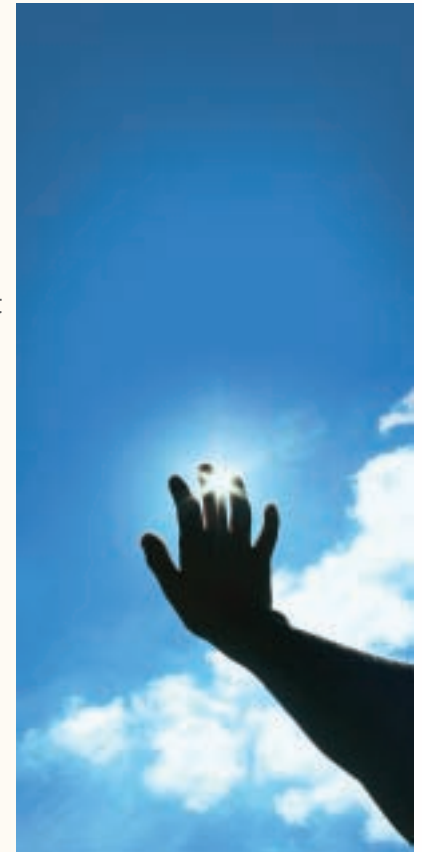
Solar thermal is the collection, storage, and use of heat from the sun to make hot water. It is one of the most efficient uses of the sun's energy. Think about how hot your car can get when you park it in the sun. A Solar Hot Water System uses the same principle to heat your water. Hot water that can be used to wash your clothes, dishes, heat your pool, or even heat your house!

The sun is POWERFUL. The sunshine on one square foot in one year is equal to the energy in 2.5 gallons of oil. Two or three solar thermal collectors can easily supply all the hot water for an average family on sunny days. Even on cloudy winter days, a substantial contribution can help cut utility bills.

A properly installed system works year-round even when it's cloudy. You size the system to meet your daily usage needs. It can be used as your primary source for hot water, but to guarantee hot water at all times, a backup heating source is required.

## How it Works

- The sun heats the solar collector on the roof
- The temperature sensors read that the collector is a higher temperature than the water in the storage tank.
- The controller turns on the pump sending solar water from the storage tank to the collector to pick up the extra heat and return it to the tank.
- As long as the temperature in the collectors remains higher than the tank temperature, the system continues to run until the set maximum tank temperature is achieved; Then the pump shuts off and the solar water drains back to the tank.
- The cold domestic water is plumbed through a copper heat exchanger submerged in the tank. When hot water is turned on in the building, the cold domestic water is drawn through the heat exchanger and picks up the stored heat in the tank and comes out hot.



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- If the solar collectors are still hot as the temperature in the tank drops, the solar water is pumped back up to the collectors, where it is once again heated by the sun.
- In freezing climates, the solar water will remain in the tank until the collector temperatures achieve levels above the tank temperature. As the collector temperature falls toward freezing, the system turns off and the water drains back to the tank leaving the collectors and pipes completely empty.

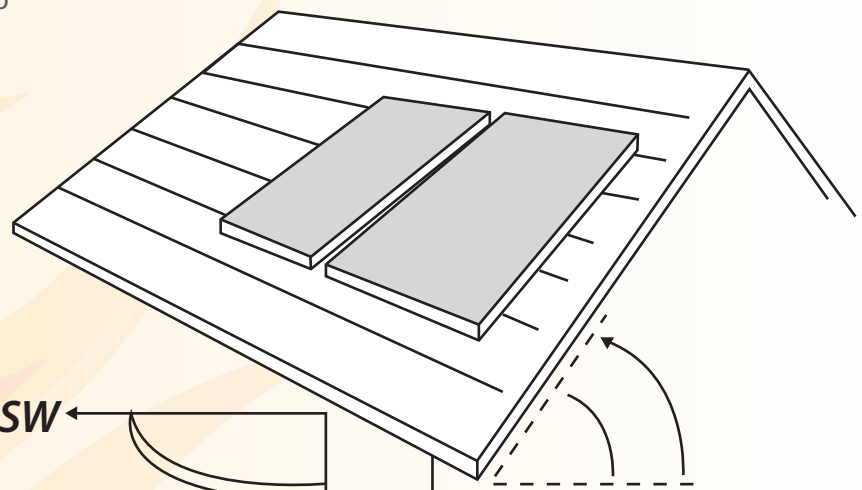
## Am I a Candidate for a Solar Hot Water System?

If a solar hot water system sounds like a good idea for you, the first step is to determine if your property is a candidate.

**Hot Water** - If you have a flat or south facing roof with little or no shading, solar thermal panels can be mounted for best efficiencies. Even with some shading, indirect sun rays will supply about half of the energy of direct sun rays. Trees that lose their leaves during the winter will not completely impede the panels when the winter sun is closer to the horizon and more likely to be shaded by those trees. The more hot water that is used, the more energy savings that these systems can realize. Businesses such as restaurants and hotels that use large volumes of hot water are prime examples of entities that would benefit greatly from such systems. There is no limit on the 30% federal tax rebate for all hot water systems, so the return on investment can be quite good. Anyone using propane or electric hot water heaters are prime candidates for these systems. The payback in these circumstances is very fast, because propane is so expensive and electricity is so inefficient for heating.

**Heating** - A radiant floor heating system can be integrated with solar thermal panels to supply much of the energy necessary to heat the space. Heating bills would then be reduced or eliminated. As the price of natural gas or propane continues to rise, your solar heat will remain virtually free.

### ROOF ORIENTATION & DIRECTION



**Solar collectors should be installed on a south-east to south-west orientation for maximum performance.**

**Install collectors at an angle between 20° - 60° from the horizontal plane.**

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### Why the Simple Drainback?

Low Maintenance. Standard Solar Hot Water Systems require regular maintenance. For the Simple Drainback System all you have to do is feel the tank once in awhile on a hot sunny day to make sure it is warm. Because our Simple Drainback System uses water for the solar fluid and is sealed from atmosphere, there is virtually no need for maintenance. Pressurized Glycol systems require regular maintenance to check that the acidity level in the Glycol has not reached the point at which the copper pipes and collectors will start to erode.

Our system will also work in freezing climates without failure. Correctly installed collectors and plumbing will guarantee that the water drains back completely. Our SHEM32 controller is set to prevent the pump from activating when the temperature in the collector drops below 50°F. This provides an additional measure of protection against freezing. Our controller is also passcode protected to prevent accidental adjustments of the temperature settings.

### Can I Afford It?

Think Investment, Not Payback. The Simple Drainback System is an investment that also gives piece of mind. When you invest in a Solar Hot Water System, not only are you adding to your property value, but you are becoming part of the solution to the Global Energy problem.

Hot Water Systems will pay for themselves over time and that amount of time will decrease as energy prices continue to climb. The technology is available right now to be free from the utilities. Many people choose to be completely off the grid, but even a small system can decrease your bills, and increase your awareness of energy use. So, really, how can you afford not to?

### Contact Us

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- ✓ Provides up to 70-80% annual hot water
  - ✓ Low maintenance
  - ✓ Rebates & solar incentives in your state
  - ✓ Pays for itself within 10 years of purchase