

Solar Water Heating Pilot Program

Moving California toward a sustainable energy future by helping lower the cost of solar energy for Californians

SKIP'S TIPS: Solar Water Heating Installation

This section contains tips for optimizing solar water heating (SWH) systems based on my inspections to date and other helpful resources. My goal is to help contractors get the maximum energy savings and maximum life out of every SWH system installed. Happy systems mean happy customers!

The tips will appear in a “stream-of-consciousness” fashion, and will grow over time. So stay tuned. Most result from system inspections for rebates under the San Diego Solar Water Heating Pilot Program.

The following condensed list of **recommendations** is provided. This will be updated from time to time.

FREEZE PROTECTION

Direct Forced Circulation (Recirculation Freeze Protection)

1. If you install a direct forced circulation (“Recirculation”) freeze protection system, you must install at least one FP-45 Freeze Drain Valve in a location that won’t be affected by scaling or unwanted night thermo-siphon flow.
2. We recommend that you prevent unwanted night thermo-siphon flow which could impair proper functioning of freeze protection systems by adding a check valve or 18 inch heat trap. Doing both is best. (Do this for glycol systems as well, to reduce heat loss.)
3. If you install a direct forced circulation system we recommend that you reduce hard water scale accumulation by either conditioning the water, installing a cartridge filter or device that reduces the risk of scale deposits, or arranging with the customer to return every five years to inspect and de-lime the piping if necessary.

Glycol Freeze Protection

Glycol systems should have protection from overheating, especially during summer vacations. Some glycol/inhibitor mixes begin to become acidic above 180-200°F. Options are:

1. Avoid over-sizing; however, this doesn’t prevent overheating during summer vacations.
2. Advise customer to cover collectors when away from home.
3. Use glycol with a very high temperature rating. Be sure the rating accounts for inhibitor chemicals. Be sure the chosen glycol is compatible with copper (some are designed for steel radiators and have chemicals that are intended to prevent steel corrosion, not copper.)
4. Select a system that uses advanced controllers with overheat features such as “Holiday Mode”. These controllers sense when the tank temperature is getting too high, and turn on the collector pump at night to cool down the glycol.
5. Arrange to check the glycol condition every 5 years. This could be done while doing a system operational checkup.

INSULATION

Avoid plastic or polyolefin insulations. They tend to melt above 180 degrees, a temperature that can be reached by almost any active solar system. Pipe insulation must be rated for high temperature and must be protected from UV damage. Protection options are:

1. Cover the insulation with a sleeve, either plastic or aluminum. This can be painted and look professional and should last decades.
2. Cover the insulation with foil or UV-resistant tape.
3. Paint the insulation with two coats of exterior latex paint. This should be repainted every 5 years., which is the minimum that is acceptable.
4. If the exposed insulation has a slit, the slit must be facing down. This is to minimize moisture entering the insulation.
5. All slits must be adhered by a proper adhesive, not the weak adhesive strip under the plastic pull strip. Use the adhesive recommended by the insulation manufacturer.



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