



# E<sup>3</sup>A: Solar Hot Water Applications for the Home, Farm or Ranch

## Steps in the Solar Hot Water Series

Building and Site Assessment

Conservation and Efficiency

System Options

System Sizing

Costs

Installation

**Operation and Maintenance**

Solar Hot Water Collector Sizing Worksheet

### Operation and maintenance

Periodic inspections and routine maintenance will keep your solar hot water system running efficiently for a long time. The overall system can last more than 40 years with proper care, but active systems have electrical and mechanical parts that will need repair or replacement before then. Active systems will require more frequent maintenance than passive systems, which are not recommended in cold climates.

The Installation guide suggests sources for finding qualified companies and contractors. These professionals might also conduct system inspections and perform maintenance tasks. Read the owner's manual and ask your system provider what upkeep is required.

Hiring a licensed and certified contractor is recommended, but if you plan on doing the work yourself, the inspection list at [www.energysavers.gov](http://www.energysavers.gov) gives you an idea of what is involved for an inspection.

#### Collector shading

Check for shading of the collectors during the day — at mid-morning, noon and mid-afternoon. Any shading can affect performance.

#### Collector glazing and seals

Look for cracks in the collector glazing, and check that seals are in good condition. Excessively yellowed plastic glazing may need to be replaced.

#### Plumbing and wiring connections

Look for fluid leaks at pipe connections; most leaks occur immediately after installation. All wiring connections should be tight.

#### Piping, duct and wiring insulation

Look for damage or degradation of insulation covering pipes and wiring.

#### Roof penetrations

Flashing and sealant around roof penetrations should be in good condition.

#### Support structures

Check all nuts and bolts attaching the collectors to support structures for tightness.

#### Pressure relief valve

Make sure the valve is not stuck open or closed.

#### Pumps

Verify that distribution pumps are operating. Listen to determine if they come on when the sun is shining on the collectors after mid-morning. If you can't hear the pump operating, the controller or pump has malfunctioned.

#### Heat transfer fluids

Antifreeze solutions in liquid solar heating collectors need to be replaced periodically, a task best conducted by a qualified technician. If water with a high mineral content, known as hard water, is circulated in the collectors, mineral buildup in the piping may need to be removed by adding a descaling or mild acidic solution to the water every few years.

## **Storage systems**

Check storage tanks for cracks, leaks, rust or other signs of corrosion.

## **References**

National Renewable Energy Laboratory (produced) for the U.S. Department of Energy. (2003, December). A Consumer's Guide: Heat Your Water with the Sun. DOE/GO-102003-1824.

U.S. Department of Energy. (2010, October). Solar Water Heating System Maintenance and Repair. Retrieved January 25, 2011, from: [http://www.energysavers.gov/your\\_home/water\\_heating/index.cfm/mytopic=12950](http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=12950)

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