

Solar Water Heaters

In Louisiana

Effective January 1, 2006 through December 31, 2011, under EPACT 2005, purchases of solar water heaters for residential use are eligible for a 30% tax credit of up to \$2,000

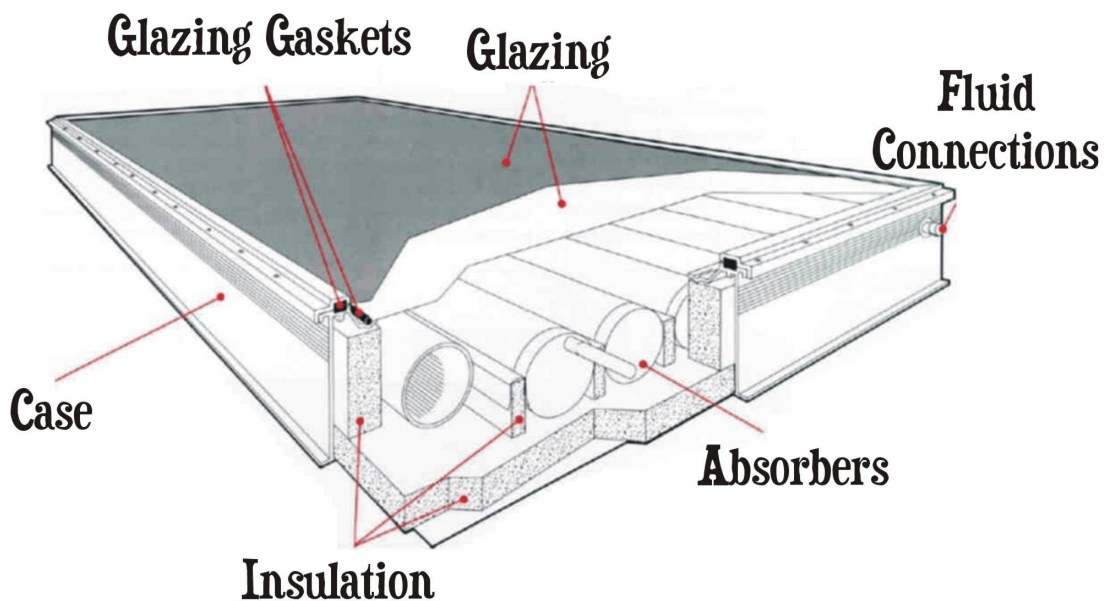
About four years ago we took a very informal survey of residences in Louisiana that had solar collectors (water heaters) installed on their roofs. There was nothing scientific about the survey, there was no data collected that was randomly sampled and plugged into some sophisticated analyzing software program, and we drew no major conclusions that were worthy of print in any national publication, but we did find out some very interesting information. Our survey criteria consisted of if we saw a home that had a solar collector on the roof we stopped, knocked on the door, and if anyone answered the door we asked them two questions: "How long have you had the collector installed on the home?" And "Does it still work?" What we learned from these two questions was that all but four of the 30 plus homes that we surveyed had collectors that were over 10 years old. We also learned that only one quarter of the survey group's collectors were still operational. We also learned that about one half of the failed systems failed within five years of their installation (usually after the first extended freeze after being installed). We also learned that virtually every failed system that was still installed was not removed because the home owner didn't know who to call to remove the system. Other important information that we discovered was that about 75% of the collectors were bought, and installed through a federal incentive program, the installers were not local, and were hard to reach after the equipment was installed, and every one of the failed equipment owners wanted nothing to do with solar water heaters ever again. We were unable to closely observe every failed system that we encountered, but of the eight systems that we did closely observe virtually all failed due to improper installation, or improper application such as system pumps that simply needed replacement, systems with pumps that were improperly sized, and system that had pumps installed on systems that did not require pumps, but by far the highest occurrence of failure was failure due to improperly installed freeze protection, or no freeze protection installed on systems that require some type of freeze protection. Overall the majority of the failed systems were systems that were not suited for their location. Many of these individuals who owned systems that had failed were not wrong in their feeling that they had been taken advantage of, not because solar water heaters aren't effective, but because the installers didn't have the knowledge or expertise to provide the service to these homeowners that they deserved. Circumstances such as these can be very damaging to companies and new technologies struggling to become recognized and make it difficult for subsequent attempts at becoming established.

If the correct type of system is installed, and installed by a qualified installer Louisiana's climate can be highly suited to the use of solar collectors for hot water generation. Because Louisiana's winters are milder than our neighbors in the Northern United States, in most areas of Louisiana, particularly South of Interstate 10/12, a solar collector system can be installed for much less than it can be installed for in most Northern parts of the country. Our winters are much milder with temperatures rarely falling below freezing for

any extended period of time, therefore the need for elaborate, very expensive freeze protection measures, which are needed in the North, and with specific types of collectors are not as critical in Louisiana. Even in Northern Louisiana, where the temperatures generally fall lower during winter than they do in South Louisiana, minimal freeze protection measures will sustain a solar collection system. Without the need for expensive freeze protection systems, the cost for installing a solar collector water heater can have dramatic pay back.

Domestic hot water falls only behind heating and cooling as the highest energy consumers in residences. Integrated Collection Panels or ICP's are solar collectors that integrate water storage capacity into the collector. ICP's perform extremely well in climate zones 1 and 2 (Southern Florida, and Southern Louisiana) with no freeze protection, and perform extremely well in climate zone 3 (Northern Louisiana) with minimal freeze protection,. ICP's perform well without freeze protection simply due to their mass and size. The ICP absorber tubes are large (4" diameter), and the tube case maximizes heat retention. The ICP's design of mass and volume simply protect it very effectively from freezing.

Integrated Collection Panel

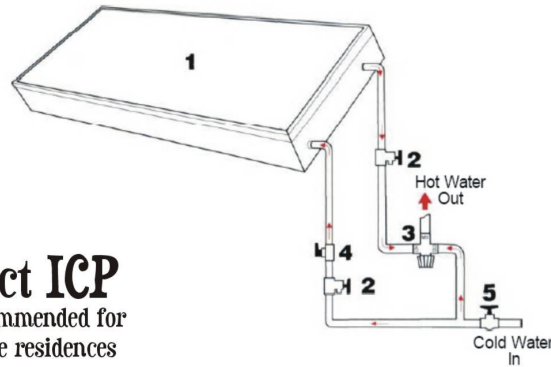


ICP's serve as the hot water storage tank, therefore they are purchased according to capacity as you would purchase a conventional electric or gas water heater (30 gallon, 40 gallon, 50 gallon). This also means that the amount of hot water available is as predictable as with a conventional water heater. ICP's can be configured in many ways, even as a direct system where it alone provides the only source of hot water, however the recommended installation for the ICP is to be used as a pre-heater for your existing water heater. With ICP's properly sized, and installed as pre-heaters they alone can handle total home hot water needs except on those rare occasions

where high demand may call for the use of the existing water heater to supplement the water heating output of the ICP. This means that you will only pay for hot water during those rare occasions when you exceed the output capacity of the ICP (the rest of the time heating your water costs nothing), and since the ICP serves as a storage tank – you double your hot water capacity and should never run out of hot water.

Direct ICP

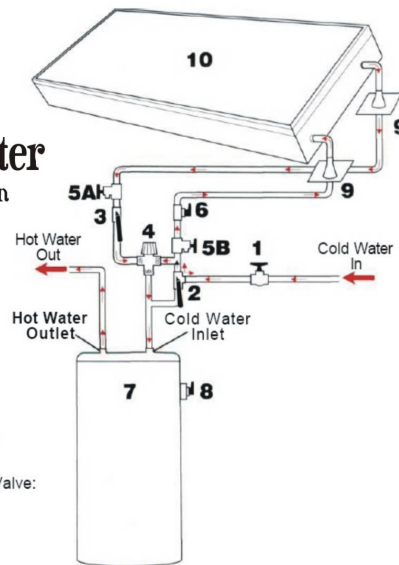
Not recommended for full time residences



1. ICP
2. Boiler Drains: *Bronze*
3. Tempering Valve: Set between 140°F and 160°F
4. Pressure Relief Valve: 150 psi
5. Supply shut off valve.

ICP as Pre-heater

Recommended installation for residences







1. Supply shut off valve
2. 3-way Ball Valve: *Bronze*
3. 2-way Ball Valve: *Bronze*
4. Tempering Valve
5. Boiler Drains: *Bronze*
6. Pressure Relief Valve: 150 psi
7. Conventional Water Heater
8. Temperature/Pressure Relief Valve: 210°F/150psi
9. Roof Jacks
10. ICP

A 50 gallon ICP system will cost about three and a half times as much as a conventional 50 gallon electric water heater, and about two times as much as a conventional gas water heater (before applying the tax credit incentive) but will pay for itself in about three years in the way of

saved utility. Based on a 10 cent per Kwh rate, after the three year payback you can expect to save about \$25.00 per month or \$300 per year over electric water heating utility. A 30 gallon ICP will yield about one third less savings or about \$200 per year.

Performance Data for ICP

 <p>Florida Solar Energy Center (FSEC - GP - 5 - 80) (FSEC - GP - 6 - 80) (FSEC - GP - 7 - 80)</p>		 <p>ASHRAE 95-87 Thermal Performance Standard for Solar Water Heaters</p>		 <p>Solar Ratings & Certification Corp. SRCC Standard 200 - 88 (RA 92) SRCC OG - 300</p>		 <p>Uniform Solar Energy Code International Association of Plumbing & Mechanical Officials</p>	
FSEC Qnet			Florida Energy Factor		SRCC Solar Energy		
MODEL	(BTU/day)	(KWH)	North	South/Central	Efficiency	Factor	
30 Gallon	22,100	6.48	2.6	2.9	67.0%	1.4	
35 Gallon	22,400	6.56	2.6	2.9	67.9%	1.4	
40 Gallon	28,400	8.33	4.1	4.9	63.4%	1.6	
50 Gallon	28,700	8.42	4.2	5.7	64.1%	1.6	

For more information visit:

www.solardirect.com/swh/swh.htm

www.lses.org

To find a vendor visit:

www.tctsolar.com

To find a Louisiana contractor visit:

www.findsolar.com/index.php?page=findacontractor