Letters

Using PEX in Solar Water Heating

In the article "Solar Hot Water 101" (10/05), the author states, "We don't use PEX because in California it's illegal to use it for potable water — plus the high temperatures found in the closed loop of a glycol system could easily be too hot for it."

This statement concerns me. If the product's illegal for potable water, that makes it unusable, in my opinion.

Shawn McFarland, AIA
Houston

Author Gary Gerber responds: It is my understanding that PEX has not yet been made legal in California for potable hot- or cold-water use. It is legal in many other states, and in my opinion it should *be legal everywhere.*

My main caution for using PEX in a solar system is that the material softens at higher temperatures, so care should be taken not to exceed the manufacturer's temperature and pressure limitations. In some solar hot-water systems, temperatures can exceed 300°F at the collector during stagnation.

I wouldn't worry about using PEX for connecting to the tanks of thermosiphon systems, but in a system where the PEX could be directly connected to an empty glazed collector, that connection could experience extremely high temperatures and pressures should the collector be left empty in the full sun. One solution might be to use copper pipe for some distance from the collector — say, 10 feet — and then transition to PEX.

Solar Hot-Water Storage

I appreciated Gary Gerber's article on solar hot-water systems. I'd like to offer another viewpoint on one area, however. He gives an optimum amount of storage in gallons per square foot of collector, and says that this optimum varies with location (climate). For example, he states that the optimum for my part of the country, the Northeast, is 0.75 gallon of storage per square foot of collector. My experience is that on a clear day a square foot of collector can put 800 or more Btu into the storage tank. This amount of energy would raise 0.75 gallon of water 128°F! Since the collector runs more efficiently when the water is at a low temperature, it is actually best to have more storage. This keeps the temperature of the fluid returning to the collector lower, and increases the energy harvested.

I size solar domestic water systems in the range of 1.5 to 2 gallons of storage per square foot of collector. This sizing is based on clear-day solar gain. In the Sun Belt, there's more solar gain to be had, but the difference is mostly due to the proportion of clear days, not the amount of clear day insolation. So don't undersize your storage tank, even if you live in the Northeast or Northwest.

Marc Rosenbaum, PE
Energysmiths
Meriden, N.H.

How Does Hot-Water Recirculation Work?

I was interested in the article on the retrofit pump for hot-water recirculation (*Kitchen & Bath,* 8/05), but have a question: How can a pump circulate water through a pressurized system? Does the system account for the street-line pressure pushing against the pump?

Ken Cronon
Via e-mail

The editors respond: Since both sides of the supply system — hot and cold — are under street pressure, the difference between them is effectively zero. Therefore it doesn't take a large pump to move water from the hot side through the cold line back to the water heater. The hot water coming out of the tank is simply replaced by the cold water coming back, so there is no head of pressure to overcome.

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KEEP 'EM COMING!

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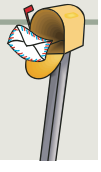

Letters

Leak Testing Questioned

In "Rainproofing Stucco Trim" (10/05), the author describes using the ASTM E1105 standard for testing window trim and stucco cracks against water penetration. This is a stand-alone test and has not been adopted by either the stucco or window-installation industries. Using it to evaluate a trade that hasn't adopted the standard is irresponsible. The wood trim in this application was a poor design, whereas the stucco is performing within industry standards but was tested with an invalid testing procedure.

Conrad Slabbert
San Diego

Author David Dobson responds: ASTM E1105 was created for the American Architectural Manufacturers Association as a standard to test windows for certification and to set performance standards. The test uses a spray rack to simulate wind-driven rain equal to 8 inches per hour at a wind speed of 33 mph for 15 minutes.

Not all experts agree to the use of the calibrated spray rack in the field to test windows. However, when window and wall leaks are present during construction defect litigation, experts for both the plaintiffs and the defendants often use spray racks calibrated per ASTM E1105 as a diagnostic test to locate leaks — a fact that shows it is an accepted standard for determining the source of leaks.

Occasionally experts and attorneys cry foul when the spray rack is used to test windows that have been in place for several years, claiming that the spray racks simulate a rate of rainfall that has never been recorded. While this is in fact true — to my knowledge, there has never been 8 inches of rain per hour recorded anywhere — all structures should be designed with a safety factor to withstand forces and conditions they are never expected to meet, to ensure adequate performance for the life span of the structure or assembly.