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Solar hot water giving you cold showers? Eight tips to warm you up

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Solar hot water giving you cold showers? Eight tips to warm you up

Abstract

In Australian homes, reliable hot water supplies for taking showers or bathing the kids are taken for granted. But this has a significant cost - conventional hot water heaters can account for up to 30% of household energy use and can be significant carbon emitters. One alternative is solar hot water, which can supply more than 90% of household hot water and reduce energy bills by 50-85%, as well as lowering carbon emissions. Unfortunately, it is likely that households are not getting the most from their solar hot water systems. In Australia and overseas, there is evidence that the potential of solar hot water is not being realised. So how can you get the most out of your solar hot water system?

Keywords

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THE CONVERSATION

Solar hot water giving you cold showers? Eight tips to warm you up

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Solar hot water may be green, but sometimes it can leave you out in the cold. Cold shower image from www.shutterstock.com

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In Australian homes, reliable hot water supplies for taking showers or bathing the kids are taken for granted. But this has a significant cost – conventional hot water heaters can account for up to 30% of household energy use and can be significant carbon emitters.

One alternative is solar hot water, which can supply more than 90% of household hot water and reduce energy bills by 50-85%, as well as lowering carbon emissions.

Unfortunately, it is likely that households are not getting the most from their solar hot water systems. In Australia and overseas, there is evidence that the potential of solar hot water is not being realised.

So how can you get the most out of your solar hot water system?

Missed opportunities to reduce energy use

Solar hot water systems use solar energy to heat water using the familiar roof-mounted solar panels. This water can then be stored in an insulated tank. While these systems can produce up to 90% of a household's hot water needs, the system may need a boost with gas or electricity when the sun isn't shining or hot water demand is high.

Moreover, an Australian study highlighted installation problems that led to "zero solar performance" or "dramatic underperformance".

With this information in mind, and with our research already showing that being green is not always as straightforward as it may seem, we went out and talked to householders about their experience of owning a solar hot water system.

We assessed the efficiency of the systems themselves and found them to be highly variable. But the key thing we found was that people struggled to fit solar heating into household routines. While solar heating is conceptually simple, households often inadvertently heated water with electricity or gas instead of letting the sun do the work.

The task was made more complex by variable weather, electricity tariffs, high hot water demand by teenagers, and deeply ingrained habits. Families treated hot water systems as background “infrastructure” that they expected to deliver hot water regardless of circumstances.

The quality of the actual installations was also variable. Basics, notably pipe insulation, were often lacking or substandard. The most motivated households actively experimented with their solar hot water systems. But, after a few cold showers, significant numbers gave up and relied on mains energy to boost their system.

The result is that the energy and carbon savings potential of solar hot water is not being realised.

Eight tips to get the most from solar hot water

We argue that policy needs to look beyond installation and that installation practices need improving, but what can you do to get an effective installation?

First, seek out independent advice from sources such as local sustainability events and organisations. They can help you understand what suits your circumstances and what characterises an effective installation.

A good organisation is the Alternative Technology Association. They provide free advice to members, sell a solar hot water guide, and organise open house events where you can see and discuss domestic sustainability technologies.

Second, consider whether solar hot water is the best option. It may be that a hot water heat pump or an instant gas system is a suitable choice, depending on where you live, how much cloud cover you have, or what sort of building you are in.

Third, make sure all your hot water pipes are insulated, especially the pipes that go to and from the tank and solar panels. You typically need insulation to be 15 mm thick. Without proper insulation you could lose half the energy you are trying to collect.

Fourth, get a booster switch installed in a convenient place inside, so you can easily turn the booster off if there is plenty of sun, or on if it's cloudy or you need more hot water.

Fifth, if you go solar, install a system that has a sufficiently large tank matched with a sufficiently large solar array for your needs. Water is very good at storing heat. A large tank could help you store solar energy for those rainy days.

Sixth, you may need to change electricity tariffs if your booster is electric, to ensure the sun gets a chance to heat the water before the electricity does.

Seventh, you may need to change your peak hot water use habits so that the tank water is at its coldest after morning use, after which the sun can then heat it during the day. The booster can “top up” overnight, ready for morning showers.

Eighth, before you install solar hot water, examine and discuss household expectations around hot water use. Will they need to change? Are members of your household prepared to make that change?

This may be the most profound change you can make, but also perhaps the most challenging.



Electricity

Renewable energy

Gas

Solar Energy