

# The science is clear: Flexible STRIP collector is more efficient and better value than GLAZED and EVACUATED TUBE collector.

**Marketers use 'buzz-words'** to give their product unspoken and very positive attributes. These buzz-word benefits are never actually stated, so they never have to be proven – they are just taken for granted, even when they make no sense at all.

Since its inception solar pool heating has seen many newcomers who ignore the science and try to leap-frog into the market through smart marketing. The so-called “high efficiency” solar pool heating is the latest and it comes with a number of important hidden assumptions:

1. The product will take up less space on the roof.
2. The product will save the pool owner money.
3. The product will be better for the environment because it consumes less energy and therefore produces less greenhouse gas.

These are all very positive attributes, but do glazed or evacuated tube solar pool heaters deliver on all these promises?

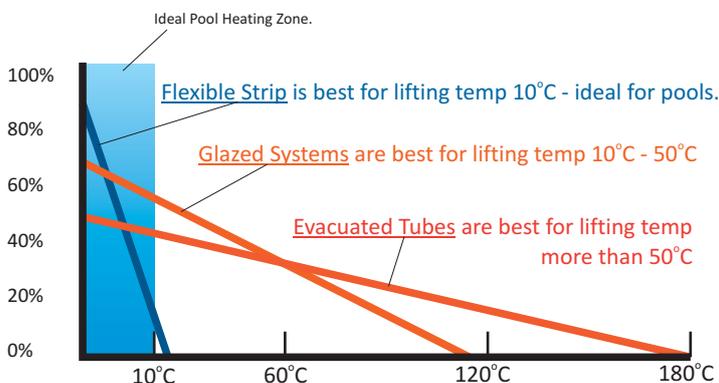
## 1. Does the product take up less space on the roof?

The science is clear; the answer is **'No'**. The marketing argument here is based on the fact that glazed systems can generate hotter water than flexible systems, which is then used to suggest that they heat a pool with less solar collector.

But it's not about how hot you can get a small volume of water; it's about raising the temperature a very large volume of water by just a few degrees.

The chart below is based on CSIRO research. The horizontal axis shows the rise in temperature above the ambient air temperature, starting at zero and rising up to 180°C. The vertical axis shows the percentage of solar energy captured by the solar collector.

Lifting the water temp by around 10°C is usually more than enough for swimming. For household hot water, a glazed system or an evacuated tube system is appropriate. They will lift a bath full of water - 200 litres - by 50°C whereas pool heaters need to lift 60,000 litres - but only by 10°C - and for that, the large scale flexible systems are still superior.



Source: [www.learn.altenergystore.com](http://www.learn.altenergystore.com) & CSIRO TECHNICAL REPORT 19 - Swimming Pool Heating by Solar Energy 1978

So what does that mean for collector area on the roof?

The blue shaded area indicates the amount of heat required to warm a pool. In this area both the flexible strip collector and the glazed collector are operating at around 70% - and up to as much as 90%. That means they are already collecting around 70% to 90% of the solar energy falling on the roof.

As the **CSIRO Tech Report TR19 1978 - Swimming Pool Heating by Solar Energy** states, “the efficiency of solar energy collection of about 70% can be expected from both glazed and unglazed systems when operating near ambient air temperatures.”

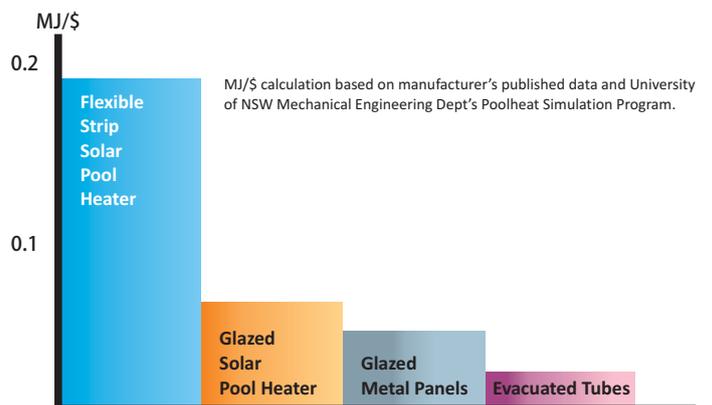
Put simply, that means on a sunny day, when the air temperature is up to 10°C above or below the temperature you want in the pool, both systems are around the same in performance.

AND MORE IMPORTANTLY, what it also means is that, in the view of the CSIRO, if you put 30% less collector on your roof - be it glazed or flexible - you will get 30% less performance!

## 2. Will the product save the pool owner money?

The science says **'No'**. Both glazed and unglazed systems draw their energy from the Sun so there is no running cost benefit to glazed systems. However, there is a massive difference in the up-front purchase prices of the relevant systems.

The following bar graph puts this into perspective. It clearly shows how many megajoules of useable heat the pool owner gets from each of the various systems based on the dollars invested.



## 3. Are Glazed and Evacuated Tube systems better for the environment than Flexible Strip systems?

Finally, again the answer is obviously **'No'**. Such a claim would make no sense. All three derive their heat energy from the Sun. All three require a pump and all three consume some fossil fuel energy during their manufacture. If anything, the flexible system probably consumes less fuel energy in manufacture than the other two.