Heating your geyser for less: The hidden costs of solar thermal and heat pumps systems

This year South Africans are bracing for electricity hikes of up to 25%, this means your geyser - the biggest electricity guzzler in your home - is going to cost 25% more to run. What's more, the National Energy Regulator of South Africa (Nersa) is planning to target grid-tied solar users, driving the cost of electricity used at night peak times up and effectively destroying the business case for installing solar PV (electricity), unless you're totally off the grid.

Geysers generally make up 40% of a household's electricity bill. Until recently, solar thermal (hot water) systems and heat pumps have been the main technologies available to consumers to keep these heating costs down. Although these systems are effective and can save you between 50% and 70% on hot water costs, these savings drop off significantly during winter when daylight hours are shorter and the sun's lower trajectory means the panels are less effective.

Solar Thermal systems use solar thermal (heat) energy to heat water, producing – it is commonly believed – about 70% of the energy required to heat the water. However, this assumes that your geyser is big enough to store enough hot water for evening and morning use, which is often not the case as most homes have a 150L or 200L geyser. With a bath typically using 100L of hot water and a shower 50L, a typical geyser will not store enough hot water for a family of four. This means your standard geyser element is working every night to "top-up" the solar geyser for morning use, reducing the proportion heated by the sun. This even more so in winter. A poorly maintained, pumped solar thermal system can actually cost you more money if it is pumping the heat back into the atmosphere.

There can also be expensive services and maintenance costs associated with solar systems that must be considered, and that extend the payback period of your system. Should the pump in your solar system fail, replacing it costs about R1,650. Replacing blocked-up non-return valves, cost R750. Replacing TP and PRV valves, cost up to R1,250. These costs add up.

Heat pumps claim 67% efficiency, but did you know that this is based on an ambient temperature of 21 degrees. When the temperature drops below this, which it regularly does especially in winter, the energy efficiency of the heat pump also drops. The actual saving depends on the specific environment and condition of the heat pump and then there are also the annual servicing costs (R950) to consider. Since heat pumps are made of many moving electrical parts, these may sometimes need replacing. Here are some examples: replacing PC boards, cost up to R2,850; replacing compressors, cost up to R6,500; refilling the refrigerant gas cost R3,500.

The good news is that there is a cheaper and energy-efficient alternative to these costly systems – a long-lasting ceramic

element for your geyser from [Xtend](#). An Xtend ceramic element reduces water heating costs by 25% over the life of the element. The cost: Around R3,000–R4,000 installed, depending on the specific situation.

Xtend elements that are protected by a stainless-steel tube, can also be combined with solar PV systems, turning your geyser into a thermal battery and storing power generated in the day as hot water for use later, when you need it. Solar PV systems produce more energy in the middle of the day, when demand is usually at its lowest, resulting in the system throttling down (reducing production to meet the decreased demand). If you use Xtend and turn the geyser on during the day, it will use this spare power capacity to heat the geyser for free. The geyser then keeps warm until the evening usage.

As living costs increase across the board, petrol, electricity, food – Xtend offers an affordable way to reduce electricity costs. If you do install Solar PV, Xtend uses less power, leaving more for the battery and other appliances.