

## Bold Independent Power

### Comparison between Water Heating Systems, Evacuated tube Systems, Flatplate Systems and Heat Pumps



#### Basic Water Heating Systems Components

- 1 An Element, Solar Collector or Heat Pump, heated by an element, sunlight or ambient air temperature.
- 2 A circulation system, transferring heat to the water to be stored in the geyser, for usage in the home.
- 3 Important to note, water storage bodies need to be sized correctly, we calculate 42l of hot water usage per person per day.

#### Electrical Geyser

The electrical geyser, being the most inefficient manner of heating water, uses an element drawing 2.5kw to heat a 5kw body of water, there is also a 15-20% heat loss overnight in a ceiling cavity.

This appliance is responsible for 43% of a homes electricity bill and is very inefficient.



#### Evacuated Tube System



#### Evacuated Tube System- High Pressure Pumped System

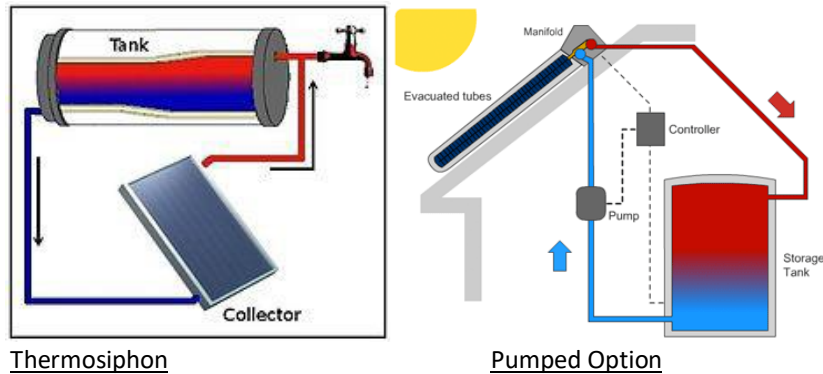
A solar collector absorbs sunlight, runs the cold water across the pure copper tubes within the radiator heating this water which will be circulated to the geyser and stored there for usage by the home.

This uses a small brass circulation pump. This method offers better control, by automatically pumping the water when set temperatures are reached etc. and preventing freezing on those very cold winter nights, by circulating when temperatures drop to 7degrees C.

With the keypad it enables manual heating should it be required, setting of timers, and monitoring of the temperatures. The Evacuated Tube System uses very little electricity namely 0.13kw to heat a 5kw body of water. Has very few moving parts and is maintenance free. Expected savings are 30-35% of electricity bill. The system heats to 60degrees C with very little effort.

## Evacuated Tube and Flatplate Systems-Low Pressure Thermosiphon System

Uses the natural phenomena that hot water rises and colder water sinks, to create circulation, it works on gravity and the storage tank or geyser needs to be higher than the collector.



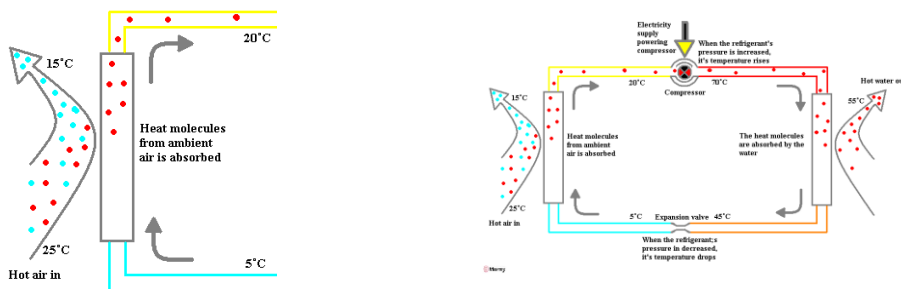
## Flatplate System Facts

Are of the older technologies, normally used in thermosiphon systems, liquid is filled into the entire flatplate to be heated, as there is a flat sheet of tempered glass, there is a glare factor early morning and later afternoon, reducing efficiency. To prevent this from freezing overnight, there is an anti-freeze agent that is inserted inside this, however this needs to be changed every two years as when it becomes ineffective the entire plate will freeze and burst in winter.



## Heat Pump

A heat pump extracts heat from ambient air by circulating air over a coil called an evaporator. Inside the evaporator is a refrigerant, which is at a lower temperature than the air around it. By blowing ambient air over this colder evaporator, the refrigerant extracts heat molecules from the air. The refrigerant is then compressed by a compressor, causing the temperature to increase dramatically.



## Heat Pump Facts:

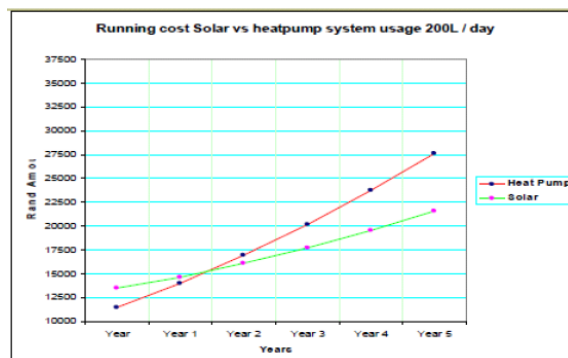
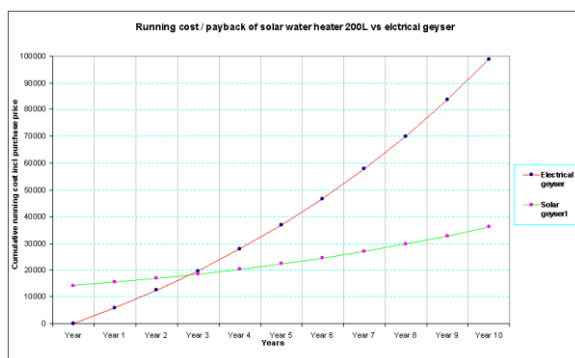
A heat pump requires electricity to operate and do require annual servicing.

Heat pumps are very efficient when it is hot, but efficiency is poor when ambient air temperature is colder than 10 degrees, expected savings are 20-25% of electricity bill.

Slightly more expensive upfront, and only certain models heat beyond 55degrees.



## Below a running cost comparison Evacuated Tube System vs Heat Pump and cost comparison of an Electrical Geyser



## Heat Pump vs Solar Geyser

## Solar Geyser vs Electrical Geyser

### Summary

It can be seen that an alternative to an electrical geyser is by far more economical provided the system is sized correctly. The Solar Geyser Evacuated Tube does outperform the Heat Pump. The choice stands with your personal situation and circumstances.

Should you wish to discuss this further, kindly contact me directly,

Many kind regards

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