DOMESTIC HEAT PUMPS
Versus
SOLAR WATER HEATING

its solar

South Africa's leading Solar Water Heating Supplier

BRIEF: In this study we have set out to look at the difference between the payback period of our domestic hot water **heatpumps** and our **solar water heating systems**. In both cases actual usage figures of retro-fitted systems where used (systems where connected to existing hot water cylinders).

Operational cost of different systems:

Operating cost of electrical geyser:

kWh/L	L/day	Cost/kWh	Year 1	Year 2	Year 3	3 year total
0.115314	200	R 0.90	R 7,581.34	R 9,476.67	R 11,845.84	R 28,903.85

Operating cost of geyser with ITS heatpump:

kWh/L	L/day	Cost/kWh	Year 1	Year 2	Year 3	3 year total
0.025881	200	R 0.90	R 1,701.57	R 2,126.97	R 2,658.71	R 6,487.25

Operating cost of geyser with ITS solar system sized for 10% electrical usage:

kWh/L	L/day	Cost/kWh	Year 1	Year 2	Year 3	3 year total
0.115314	200	R 0.90	R 842.37	R 1,052.96	R 1,316.20	R 3,211.54

Operating cost of geyser with ITS solar system sized for 25% electrical usage:

kWh/L	L/day	Cost/kWh	Year 1	Year 2	Year 3	3 year total
0.115314	200	R 0.90	R 2,105.93	R 2,632.41	R 3,290.51	R 8,028.85

The tables above show yearly opperational cost of four different systems. The first system is a standard 250L kwikot electrical geyser. The second system is the same geyser but with an ITS heatpump connected and the 4kW electrical element disconnected. The 3rd system consists of the 250L kwikot geyser with an ITS solar system connected. The solar system is sized that it covers 90% of the yearly heating required while electricity makes up for 10% boosting of temperatures (rainy days). The 4th system is exactly the same as the 3rd system but with the assumption of more rainy days per year and therefore 20% electrical boosting of temperatures.

In all cases the following assumptions are made: A water usage of 200L per day; A cost per electrical unit of R0.9; A yearly electrical tarrif increase of 25% (as forcasted by Eskom).

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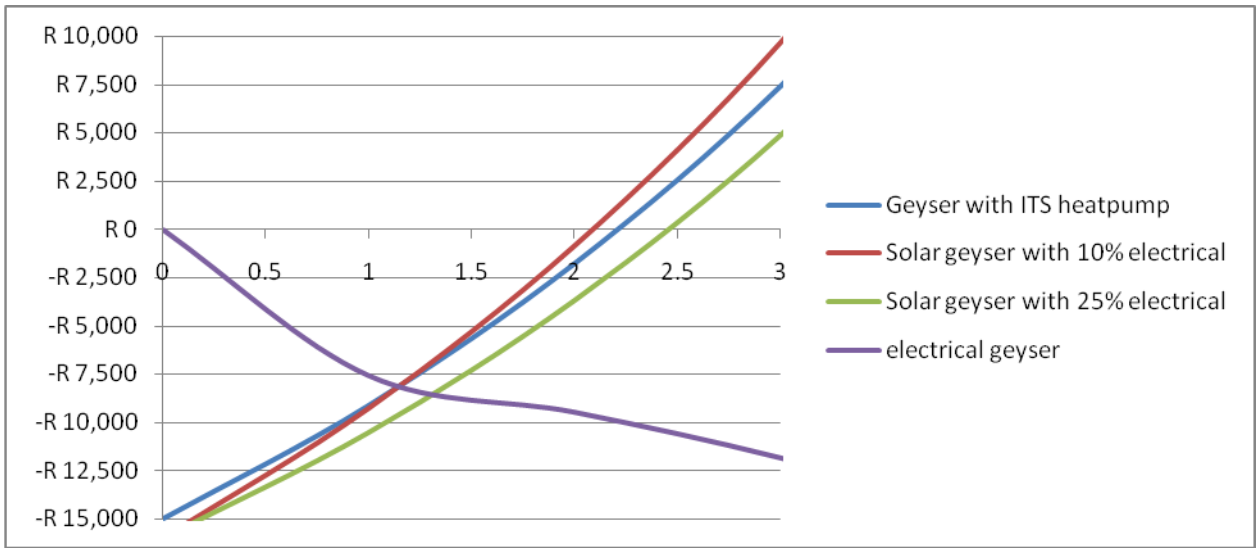
Payback period: The following results were collated and forecasted.



The graph above shows the payback period of the four systems. The installed cost of retrofitted heatpump is estimated at R15 000 while the estimated installed cost of the retrofitted solar system is R16000. For all 3 renewable energy systems the payback period is less than 2.5 years and the long term savings are remarkable.

CONCLUSION

From the above calculations it can be seen that a properly sized and installed solar systems still provides the best return on investment. If however the demand on the solar system is such that it annually requires more than 20% electrical backup the heatpump starts to become the return on investment leader. Please note that Eskom domestic tariffs where used in these calculations. As soon as the Eskom tariff scheme charges for peak demand (light commercial for example) the heatpump will provide a better return on investment since it guarantees a peak demand reduction of about factor 4. This property of ITS heatpumps also makes it the preferred choice for installation on sites where the maximum demand is close to the maximum supply. (We have seen many guesthouses struggling with circuit breakers tripping when it is fully booked and air conditioners are running. These problems where all solved by simply installing ITS heatpumps on the geysers).

Well worth noting is that both the heatpump and the solar system in the above case study **will provide an electrical saving of more than R45000 over a 5 year period.**

ITS SOLAR – South Africa's leading Solar Water Heating Supplier

ITS Solar is a leading manufacturer and supplier of solar thermal products. We specialize in all 3 major technologies namely Evacuated tube solar collectors, Flat plate solar collectors and Heatpumps for both pool and domestic water heating. With our range of domestic heatpump products we can guarantee and instant saving of between 60% and 80% on your hot water electricity bill while providing water at 60 deg day and night, all year round.

Contact us to get your heat pump today!