TIMES OF MALTA

The future of solar power

Opinion

7 January 2006 | Charles Yousif, Sta Venera. | 0

3 min read

The overview on the applications of solar photovoltaic systems (December 31) promises an extremely bright future for solar power. A word of warning so as not to fall into the same trap as that posed by adverts for solar water heating systems.

Adverts used to claim that a solar water heater saved "80 per cent of your electricity needs" while in reality it saved 80 per cent of that proportion of electricity spent on heating only or, in other words, about 15 per cent of the total electricity bill. Many times "adorned-truths" could backfire on the whole promotion concept.

Daniel Talma is claiming that a 1 kWp PV system could produce between "1,400 and 1,600 kWh per annum".

Long-term studies carried out by myself on a number of systems installed at the Institute for Energy Technology of the University of Malta and elsewhere showed that stationary grid-connected systems would produce 1,300 kWh per annum. It is important to point out that this output is only valid for grid-connected systems. A stand-alone system that charges batteries would produce some 40 per cent less power due to the inefficiencies connected with charging and discharging batteries.

When it comes to costs and maintenance, stand-alone systems charging batteries would be very expensive - as batteries would have to be replaced periodically - and would offer no major advantage over grid-connected systems except in rare cases, as the electricity grid is well diffused across the islands.

Mr Talma claims that the electricity produced by a 1 kWp system covers about "20 to 30 per cent of the total electricity consumption of an average family". However, it is important to clarify that this value does not include high power consuming units such as air-conditioning units or electric heating elements.

Perhaps the greatest illusion that Mr Talma wants us to believe is that PV electricity costs 6.4c per kWh, that is, less than the cost of grid electricity.

A very generous calculation would put the life cycle costing to at least double that amount, including government incentives and current prices of solar modules and other electronic components. In fact, there is no payback period for a small PV system under the present situation. A payback period of about eight years could be attained if PV electricity is fully sold to the grid at a preferential rate of 30c per kWh!

The fact still remains that we cannot be biased towards fossil fuelled electricity throughout, since every unit of electricity produced from solar energy saves an equivalent of three to four units of input oil energy and an astonishing 850g of carbon dioxide. In other words, a 1 kWp system would save 1.1 tonnes of carbon dioxide per annum and this is not to be underestimated.

Perhaps one of the main challenges for widespread applications of solar photovoltaics as well as solar heating is marketing, but let us be careful how to tackle it. For example, can one imagine oneself without a mobile phone? Then how can one imagine oneself without hot water on new year's eve or loading lungs with more fumes when it is possible to avoid them.

We have to strive to market solar energy as a necessity and not as a commodity.

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