

PVs do produce more power than it takes to make them!

Michael Harris takes a big stick to an old myth about photovoltaic solar panels

For many years there has been a myth floating around that photovoltaic (PV) solar panels never produce enough energy to 'pay back' the energy used in their production. This has been used as the basis of the argument that they do not have a net environmental benefit. However, this myth is false and is very damaging to a product with major environmental benefits.

Payback time

The payback time for monocrystalline panels in a roof-mounted grid-interactive system is 3.2 years (based on a study by Alsema and Nieuwlaar, 2000). The payback times include the energy consumed in the manufacture, transport, installation, operation and decommissioning of a photovoltaic array. They also include the energy used to produce the other components in a system, such as control equipment and inverters.

For thin-film amorphous solar panels, the payback time is only 2.7 years, with the figure dropping to just 1.7 years with some of the newer technologies.

When you compare these payback times with the actual life of some of these panels, the comparison is dramatic. Mono and polycrystalline photovoltaic panels can have a guarantee as long as 25 years and a panel life of well over 30 years.

When you compare that with an energy payback time of 3.2 years then you have panels that give back around 10 times the energy used in their manufacture.



PVs take more energy to produce than they ever generate? What rubbish!

The worst payback time is for stand-alone PV systems that require battery storage. These can have an energy payback time of eight to 11 years. However, this includes all the components including the batteries.

The origins of the myth

The original belief that PVs never recover the energy used in their production can be traced back to the very early years of PV cell production for the US space program.

Those cells were produced in small quantities with no regard for the energy used in manufacture, and as a result had a payback time of 40 years. Just two

years later this had dropped to 3.1 years for polycrystalline cells.

The energy required to manufacture is coming down, while the life and the amount of energy produced over the systems life is increasing. So next time someone tells you that solar panels don't pay back the energy used to create them, you can tell them that they produce over 10 times the energy used to manufacture them. ✧

This information is based on a paper written by Bryce S. Richards and Muriel E. Watt, University of New South Wales, titled *Use of the Energy Yield Ratio as a Means of Dispelling one Myth of Photovoltaics*.