Intelligent Immersion Heaters for Solar PV Installations - Advantages and Disadvantages

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The electricity produced by your solar PV panels is fed into an inverter which converts the electricity to AC. This electricity is now available for use in the household. Any of this electricity which is not used is automatically fed back to the national grid.

An intelligent immersion system continuously monitors the inverter output. Whenever it senses that surplus electricity is being fed back to the grid it switches on an immersion heater in the hot water cylinder, hence the description 'intelligent'.

ADVANTAGES

- A solar thermal kit costs around £1,500 with possible further costs for installation and perhaps even a replacement hot water cylinder. A basic intelligent immersion kit could cost as little as £200.

- Some models are set up to continuously vary the power supply to the immersion in order to match the surplus power that would otherwise be exported.

- Installing an intelligent immersion involves no plumbing skills.

- The wiring is straightforward as it mostly uses clamps around existing cables. However, manufacturers always recommend using a qualified electrician.

- Some intelligent immersions use wireless technology so that the switching of the immersion can be monitored (or even controlled) from indoors.

- Such a monitor can usually be connected to a computer to enable downloading of historical data about electricity generation and usage.

- Some products can be used to switch on so-called smart plugs to run other facilities (such as air conditioning) from the surplus electricity.

- Larger PV systems, 3 to 4 kWp, are more likely to generate enough surplus electricity for an intelligent system to work efficiently.

DISADVANTAGES

- The more sophisticated kits cost anything up to £700.

- For a medium-sized PV system, 2 kWp say, in a household where electricity or gas is the main fuel source, the savings could be quite modest. Even diverting 1 unit of electricity per day to water heating, which is fairly optimistic, would save around £50 a year. Pay-back time could be several years. More expensive solid fuels and propane gas would shorten pay-back time.

- For those systems which do not have variable control of the immersion heater, if the immersion heater is switched on at full power by an intelligent immersion they would consume more electricity than the surplus from the PV panels. This could easily negate the financial saving. This can be resolved in either of two ways. One is to fit a transformer to make the immersion work at 1 kW. This could add another £60 to the cost. The other is to replace the immersion with a Solaplug immersion, a conventional heater and solar coil in one unit. These are around £250 to buy.

- Some systems have an annually recurring cost of up to £48 for remote monitoring.

Conclusion

Whether or not to invest in an intelligent immersion system inevitably comes down to balancing the financial outlay against projected savings on one's fuel bills. But if the advanced features of the more sophisticated systems are tempting, the longer pay-back times might not matter so much.