

Getting the most out of solar panels and integrating them into a green energy home

Solar panels (photovoltaic panels) have become a normal addition as a sustainable energy solution when householders are looking to improve their energy footprint. Up until April 2019 you could benefit from feed in tariffs from your energy supplier or indeed any of the other energy providers signed up to the government programme. You could either benefit from a metered production and export model if you have a smart meter or a deemed export calculation if you don't have a smart meter. This has been replaced by the Smart Export Guarantee (SEG) where small electric generators are paid for electricity that they export to the grid.

However, there are ways to improve the efficiency of your solar panel electricity production. Here are just some of them that are being currently used or trialled.

If you have an electric car you can fit a smart charger that optimises the use of electricity generated by solar panels or indeed other home production such as wind turbines. You can set your charger to only charge during hours when an energy surplus is being generated which means that if you were to charge this way your electricity used to charge your car would effectively be at no-cost if you are on a deemed feed-in tariff. In the winter and overcast days it is unlikely that you will produce sufficient energy to charge an electric vehicle. In such situations energy companies are increasingly providing periods of time of low usage at super cheap rates. The smart charger can again be programmed to make use of this.

Your electric car can also be used as a battery to store electricity at low usage times and return it to the grid at times of peak use. This is being trialled at the moment by several stakeholders and any damage or deterioration to the car battery is being assessed and should form part of the payment package to those agreeing to participate in such programmes.

Battery storage is improving quickly. Prices are rapidly falling, size, longevity, performance and deterioration are all improving making this a worthwhile improvement to add to solar photovoltaic panel systems. This means that a household or business can affectively produce much of its own electricity and store it to use during hours of darkness or low production, reducing the need to draw upon the grid.

Both of these last two improvements are vital in the switch to greener energy production which does not have the same ability to scale up production as quickly as gas-fired electricity generators in times of increased demand upon the grid. Therefore to reduce those drawing on the grid because they have their own energy buffers and storage or encouraging ev drivers to feed in to the grid to smooth out peak demands is going to be a part of sustainable energy management.

At this stage many people don't have a battery storage system or an electric vehicle. There are still things that can be done to improve electricity usage. A smart management hub can be used to preferentially heat hot water via an immersion heater when solar production is

happening. You can time other electricity usage to take advantage of peak production times. This is applicable for dishwashers, washing machines and even charging cordless vacuum cleaners and garden equipment including cordless mowers, strimmers and hedge trimmers. Even if you don't have the right orientation with a home roof it is amazing what can be achieved in smaller situations. Solar panels and wind generators are increasingly being used to provide power for garden sheds, summerhouses, narrowboats and campervans. They can either supplement or fully resource energy requirements in these situations. You can make a difference in more isolated situations using pond pumps with mini solar panels and solar garden and path lights. The expenditure nor the scale need to be large and it gives valuable experience of harnessing energy from nature to use for your enjoyment and needs.

Improvements to solar systems in the form of photovoltaic tiles should mean that in future all new-build houses should be fitted with roofs that are purpose built solar electric factories and can be individually replaced if faulty by clicking out of place and another replacement tile inserted. Though we have become used to the look of existing solar panels such solar tiles have aesthetic advantages to many people and also cover the entire roof area. No new house, factory, office block or warehouse facility will be allowed to be built in the future without being at the very minimum neutral in energy consumption.