



Introduction to SOLAR PV SYSTEMS



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renewables

RENEWABLE ENERGY & CARBON SOLUTION PROVIDERS

INTRODUCTION TO SOLAR PV



Solar panel electricity systems, also known as solar photovoltaics (PV), capture the sun's energy using photovoltaic cells. These cells don't need direct sunlight to work – they can still generate some electricity on a cloudy day. The cells convert the sunlight into electricity, which can be used to run household appliances and lighting.

A solar PV panel consists of cells of one or two layers made from a semiconducting material like silicon

- When light shines on the cell it creates an electric field across the layers, causing electricity to flow;
- The electricity flows through a cable and is collected at a central point, often located in your roof space;
- The electricity is then converted from a direct current (DC) to an alternative current (AC) and carries on into your home for you to use.



FAQS ANSWERED

What happens when the weather is cloudy or cold?

Solar PV uses light to generate electricity, so the modules still work when it is cloudy; although when it is overcast they are less efficient.

Temperature is less important than how much light there is. What's more a clear cold day is perfect, because PV modules actually operate better at cooler temperatures.

What is the life expectancy of a pv module?

PV modules have an output guarantee of 25 years, although they do last much longer (typically 40+ years) since there are no moving parts.

The above guarantee offers complete peace of mind that the system will withstand the test of time.

How is the electricity produced by a solar pv system connected to the electrical system in my house?

The DC power produced by the solar PV modules is connected to AC by an inverter and this is connected to the electrical system of the property, usually via a 16A circuit breaker in the consumer unit.

How long does the system take to install?

This varies depending on the size of the system. A standard domestic grid-connected 4kWh Solar PV system should only take one to two days to install (depending on whether scaffolding is required).

What maintenance is required for a solar pv system?

If the solar PV system is grid-connected, it will need very little maintenance. A bi-annual visual



inspection should be carried out which usually includes checks such as ensuring the modules are not in shade (by any surrounding growing trees) and in a clean condition (no routine cleaning is needed as normal dirt build up is removed by rain). It is however, still recommended that a qualified electrician checks the wiring and system components within a 10 year period, in accordance with the current IE wiring Regulations. Speak to us about our maintenance packages.

How will i know if the system is working?

As part of the installation, Engenera will setup a remote monitoring system that will alert you to any issues.

Does the system use electricity when it is not generating?

When your system is not generating electricity it automatically shuts down.

FURTHER ENERGY SAVING TIPS

How to live greener, save energy and money, and reduce your carbon footprint

- ✓ Fitting a jacket on your hot water tank will save you money on your fuel bills.
- ✓ Make sure you check the insulation on your pipes and the lagging on your hot water storage tank.
- ✓ Loft insulation could save you up to £110 a year on your energy bills.
- ✓ Lower the thermostat on your hot water heater to 120°F/50°C.
- ✓ Energy efficient light bulbs use only 30 percent of the electricity and last 10 times longer than ordinary light bulbs.
- ✓ Double glazing will cut your heating bills by £90 a year and reduce heat loss by 50%.
- ✓ Install a programmable thermostat to warm your house when you need it.
- ✓ Make sure your time switches match the times you're in the house.
- ✓ Always turn your lights off.
- ✓ Close your curtains on an evening to stop heat escaping.
- ✓ Turn off your computer and monitor when they're not being used.
- ✓ Use seals and brushes to stop heat being lost through gaps in doors, letterboxes and windows and fill gaps in floorboards if possible.
- ✓ By turning down your room thermostat by one degree, you could save up to 10% on your heating bills.
- ✓ Check radiators and heat emitters are not obstructed.
- ✓ Take short showers rather than baths.
- ✓ Make sure any leaking taps are fixed and turned off. A dripping hot water tap can fill half a bath in a week.
- ✓ Only boil the water you need instead of filling a whole kettle. If everyone did this, it would save enough electricity in a year to run the UK's street lighting for seven months).
- ✓ Switch off at the plug instead of using standby. This could save you up to £37 per year.
- ✓ Plug DVDs and TVs into power strips and turn them off when they're not in use.
- ✓ Make sure you have a good quality underlay fitted underneath your carpet to restrict heat loss.
- ✓ Wash only full loads of clothes and dishes.
- ✓ Air dry dishes instead of using the dryer cycle on your dishwasher.
- ✓ Turn your washing machine down to 30 degrees and save up to 40 percent on your electricity a year.
- ✓ Importantly, ensure all gas appliances are correctly installed and serviced by a GAS SAFE registered installer.
- ✓ Why not visit the Energy Saving Trust website and complete a home energy check – they might be able to save you money on your energy bills.
- ✓ Look out for the Energy Saving logo when buying a new appliance, buying one of these models of fridge or freezers can save you money on your energy bills over the lifetime of the appliance.
- ✓ Run your electrical appliances during the day to utilise the sunlight generated energy. Stagger the use of high-wattage appliances to make the most of the free electricity available. This might mean waiting for your washing machine to finish before running the dishwasher.

