



Solar Photovoltaic

Photovoltaic panels are made up of layers of semi-conducting material. Sunlight causes electrons to jump between these layers, generating electricity. The electricity produced will be direct current electricity and is then converted to alternating current (AC) electricity by the Inverter.

The AC power can then be used within the property or transported back to the national grid. The amount of electricity produced will depend on the number of panels installed and the capacity of the panels.

Roof Type ▶

Solar panels can be fitted to most roof types. To obtain the optimum performance from your panels they should be fitted to a roof facing due south and at a 30 degree pitch, however any roof facing due east through south to west will see very good returns. It is also important that there is no shading on the roof. If a suitable roof is not available, the panels can also be mounted on a frame fitted to the ground. Using this method means the panels can be mounted in an optimum location.



Planning Permission ▶

In most cases planning permission is not required for the installation of roof mounted PV panels within England and Wales. However Ground Mounted systems are likely to require permission.

System Size ▶

The size of the system you will be able to install will depend on the roof space you have available and whether there are any obstacles on the roof, such as velux windows or chimneys. In most cases the panels can be fitted around any obstacles.



Feed-In Tariff ▶

Any PV system installed in the UK is likely to be eligible to claim the Feed in Tariff. Please see our Information Sheet on the Feed in Tariff for more information.

Solar PV
Solar Thermal
Biomass Boilers
Ground Source Heat Pumps
Air Source Heat Pumps

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Case Study

50kW PV System in Shropshire ▶



This 50kW system was completed by ESP Energy in March 2013 for a customer based in South Shropshire. The system comprised of 204 Canadian Solar panels, each panel capable of producing up to 245W.

The panels were mounted on the roof using the sturdy Schuco mounting system. The power produced by the panels is transported down to three SMA Tripower inverters located within the barn. The job was completed by a team of three roof installers and two electricians.

The roof material was tested and found to contain white asbestos. ESP Energy installers are all fully trained and certified to work on and install panels safely on this type of material so the installation presented no problems for us.

The roof was checked structurally and even though not a new roof the customer was satisfied it would last in excess of 20 years. Crawler boards were used on the roof to avoid damaging the sheets and nets were used internally for the safety of the installers.

The fixtures and framework used were suitable for a much taller and more exposed installation, but ensured that a "belt and braces" approach was carried through the whole project.

The SMA Tripower inverters were selected for their proven track record and the customer's requirement for the ability to extract detailed information about the performance of the system.

The customer also had an export meter fitted by his electricity supplier. This shows how much of the total production is being used on site and how much is exported back to the grid. The electricity exported to the grid will generate an additional payment and the electricity used on site will generate savings on the farm electricity bill.

We have also provided the customer with a Wattson monitoring device to enable the people on site to monitor the PV system in the farm office. The Wattson meter glows in different colours to enable the viewer to immediately see whether the system is producing electricity and then when it is exporting electricity or using it on site.

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