The Solar Power Specialists

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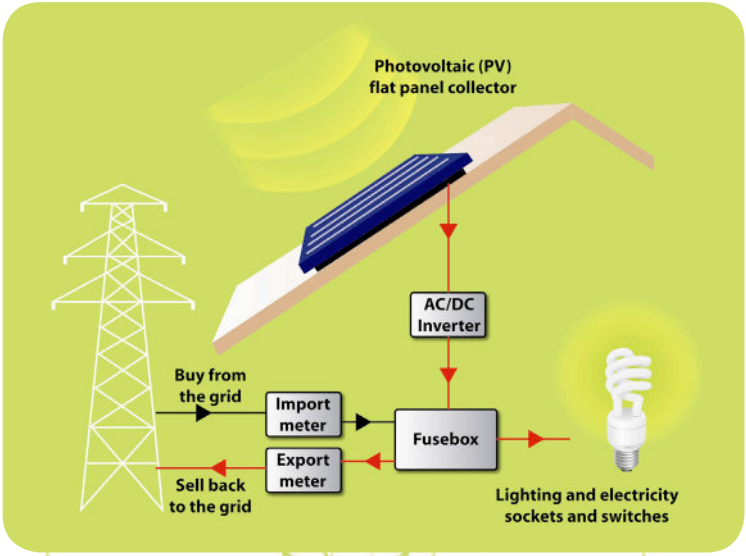
How Does Solar Energy Work?

Solar photovoltaic systems are a fantastic way of generating clean electricity for your home, all year round, but how do they work?



- Solar power is simply the conversion of sunlight into electricity.
- At the heart of a Solar PV system are photovoltaic cells which convert light into electric current. They are quite delicate and because of this they are combined into PV modules (or panels) to protect the cells from moisture and mechanical damage.
- Solar panels produce a type of electricity known as DC or 'direct current'. However you can't use this type of electricity directly and instead require AC or 'alternating current'. To convert the electricity into the required form an additional device called an inverter is necessary.
- Once converted into AC electricity by the inverter, the electricity generated by the Solar PV system is automatically used to power the lights and electrical appliances in your home. Any unused electricity generated is automatically sold straight back to your supplier via the national grid.
- The installation of a Solar PV system is usually quick and trouble free, with minimal disruption to your home or business.

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Reasons To Convert To Solar

FINANCIAL

- By installing solar panels you can avoid rising energy prices in the future as you will be generating your own electricity.
- Every unit of electricity that the solar panels produce and use is one less that you need to buy which will allow you to live off-grid. This simply means being self-sufficient and not relying on public utilities.
- The Government introduced the Feed-In Tariff Scheme in April 2010. This scheme requires Licensed Electricity Suppliers (FIT Licensees) to pay a non-taxable generation tariff to small-scale low-carbon generators for the electricity they produce through Solar PV, whether or not the electricity is exported to the national grid.
- The units that you do not use will automatically be sold back to the grid and you will get paid an export tariff of approximately 3p per kWh on top of the Feed-In Tariff.

ENVIRONMENTAL

- Solar energy is an infinite resource.
- Energy generated via solar panels (also known as Photovoltaic Solar) is one of the most sustainable ways we have of generating electricity today as these generate energy without emissions of any kind.
- Climate change is arguably one of the biggest challenges facing mankind. The UK has committed to cutting its emissions by 34% by 2020 and 80% by 2050. Renewable energy, solar in particular, is central to achieving the Government's low carbon strategy.
- Installing a 5 kilowatt system can prevent the release of approximately 4,680 kilograms of CO^2 every year for the life of the system.

GET PAID FOR GENERATING YOUR OWN ELECTRICITY WHILE YOU ARE DOING YOUR BIT FOR THE ENVIRONMENT

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Is Solar Electricity Suitable For Your Home?

To assess if solar electricity is right for you, there are a few key questions to consider:

- **Do you have a suitable place to put it?** You'll need a roof or wall that faces within 90 degrees of south, and isn't overshadowed by trees or buildings. If the surface is in shadow for parts of the day, your system will generate less energy.
- **Is your roof strong enough?** Solar panels are not light and the roof must be strong enough to take their weight, especially if the panel is placed on top of existing tiles. If in doubt, Metartec's MCS approved installers will be able to advise you if the roof will need strengthening before the solar PV system is installed.
- **Do you need planning permission?** In England, Wales, Scotland and Northern Ireland, you don't need planning permission for most home solar electricity systems, as long as they're below a certain size - but you should check with your local planning officer, especially if your home is a listed building, or is in a conservation area or World Heritage Site.

Ideal Conditions for Generating Solar Energy

- The total amount of electricity the system actually generates in a year will depend on the system's orientation, shading and how sunny your site is, as well as the size of the system (in kWp) that you have installed.
- Your roof should ideally face due south at a pitched angle of between 30° and 50° from the horizontal to give the best overall annual performance. Installations facing anywhere to the south of due east and due west are feasible, although output will be reduced. Installation is not recommended on roofs facing north.
- Solar electricity doesn't necessarily require direct sunlight and can still generate electricity on cloudy days. You will generate approximately 1/3 of the energy on a cloudy day as on a sunny day at the same time of year.
- A system can tolerate some shading early or late in the day without much reduction of overall output but it should not be shaded between 10am and 4pm.

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Why Choose Metartec?

- Metartec are Critical Power Specialists who deliver a complete, cost-effective, tailor-made solution for all your power supply needs. We have now expanded our extensive product portfolio and expertise in the supply of Solar PV equipment.
- Metartec supply MCS Approved, high-quality, competitively priced solar devices to make green energy more affordable and accessible.
- Metartec supply leading international solar panels and inverters for photovoltaic application and can create a tailor-made solar solution to suit your renewable energy needs.
- Metartec is always driven by new technology and innovation and can therefore easily keep up to date with the trends of the photovoltaic industry.
- All of Metartec's solar products meet the European Industry and Safety standards and every Metartec solar panel has a guaranteed 25 year warranty*.
- Metartec believe that customer service is just as important as the quality of the products we supply. Therefore, we provide premium customer service throughout the whole installation process from the site survey to after care.

25 year Warranty!*

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Selling Your Own Electricity

The Feed-In Tariff Scheme will pay you for creating your own "green electricity"

Feed-In Tariffs (also known as FITs) were introduced by the Government in April 2010 to help increase the level of renewable energy in the UK. In a bid to achieve our national target of 15% of total energy coming from renewable sources by 2020, the electricity companies are now obliged, by law, to pay a tariff for energy generated by solar applications.

The Feed-In Tariffs offer the following financial benefits:

- A payment of up to 43.3p/kWh* for all of the electricity you produce. (Depending on the size of the system and if it is a new build or retrofit)
- Additional bonus payments for electricity you export into the grid - the current export tariff is 3.1p/kWh*.
- Every kWh of electricity that you generate and use is one less that you need to buy, saving you between 12-15p/kWh*.

The Feed-In Tariff rate will be 'locked in' for 25 years from the day your system is commissioned as long as the system is installed before 31st March 2012. After this date the tariff will fall. The size of the tariff depends on the size of the solar system and whether it is on an existing roof or on a new build.

Unlike the rest of the UK, Northern Ireland has not yet signed up to the Feed-in Tariff Scheme. However, due to the Northern Ireland Renewables Obligation Certificate Scheme (NIROC), switching to solar energy can be just as cost effective for residents in Northern Ireland.

*Prices are subject to change

Sample Calculation of Potential Savings

If an average household, for example a three or four bedroom house, installed solar PV panels that generate electricity, the Feed-In Tariffs would provide the following benefits:

- The electricity generated would pay the homeowner £836 a year tax-free
- Remaining electricity costs would be reduced from £450 to £300: saving an additional £150
- Therefore the total potential savings would be £986 per year

This is based on an average use of 4,500kWh of electricity per year and the installation of 2.5kW of solar PV panels.

For more information on the Feed-In Tariff and NIROC Schemes and for accurate saving calculations, contact our experts.

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What To Consider When Choosing A Solar Panel

DURABILITY

- Solar panels are highly durable with a life span of up to 25 years depending on the system that is installed.
- All of Metartec's solar panels are supplied with a 25 year warranty*. This allows the panels to pay for themselves in energy cost savings before the warranty expires.
- All of Metartec's solar panels are both water and scratch resistant therefore will perform at their optimum working condition.

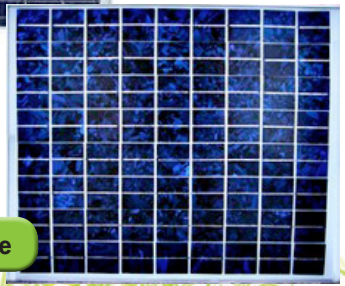
TYPE

- There are several different types of solar PV panels with different characteristics, costs and benefits.
- Metartec supply two main types of solar panels mono-crystalline and poly-crystalline.
- Though they slightly differ in price, they are the most efficient panels in converting solar energy into electricity, providing you with maximum return on investment.

SIZE

- The size of the solar panel(s) you install will depend upon what your energy needs are, and how much physical space you have.
- Metartec's solar PV systems can be designed to accommodate virtually any size and shape of roof.

Mono-crystalline Module



Poly-crystalline Module

*Conditions Apply

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Metartec's Solar Panels

Below is a sample of Metartec's range of domestic Solar PV modules to suit any application

Metartec's solar panels consist of highly efficient solar cells. This ensures high performance of the solar module and creates maximum power output and efficiency. The table below shows how the size of the module (maximum output) increases the amount of Watts of energy produced by the solar panel and its efficiency.

Model	Max Output	Dimensions	Cell Array	Watts / m^2	Efficiency	Cell Material
MS180M	180W	1580mm*808mm*45mm	6*12/125*125	141	14.1%	Mono-crystalline 125*125
MS185M	185W	1580mm*808mm*45mm	6*12/125*125	145	14.5%	Mono-crystalline 125*125
MS190M	190W	1580mm*808mm*45mm	6*12/125*125	148	14.9%	Mono-crystalline 125*125
MS240M	240W	1575mm*1082mm*45mm	8*12/125*125	141	14.4%	Mono-crystalline 125*125
MS250M	250W	1575mm*1082mm*45mm	8*12/125*125	147	15.0%	Mono-crystalline 125*125
MS255M	255W	1575mm*1082mm*45mm	8*12/125*125	150	15.0%	Mono-crystalline 125*125
MS230P	230W	1650mm*992mm*50mm	6*10/156*156	140	14.3%	Poly-crystalline 156*156
MS240P	240W	1650mm*992mm*50mm	6*10/156*156	146	14.9%	Poly-crystalline 156*156
MS290P	290W	1650mm*992mm*50mm	6*10/156*156	177	15.2%	Poly-crystalline 156*156
MS295P	295W	1650mm*992mm*50mm	6*10/156*156	180	15.2%	Poly-crystalline 156*156

Metartec has a large range of both domestic and commercial panels to suit all your solar energy requirements.
Contact the Metartec team for further details on which unit is most appropriate for your energy needs.

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Metartec's Solar Inverters

What is a Solar Inverter?

The National Grid supplies your home and appliances with AC (alternating current) electricity, however, solar panels generate DC (direct current) electricity. The role of the solar inverter is to convert the DC electricity to AC enabling the energy generated by your solar panels to power your home.

The solar inverter always draws the maximum power from the solar modules. This function is called MPPT (Maximum Power Point Tracking) and is carried out with a rate of accuracy of more than 99%. After dark, when the energy offered is no longer enough to feed the utility transmission grid, the inverter automatically cuts the connection to the grid and stops operating.

Metartec's range of solar inverters are designed to meet the energy needs of both domestic and industrial sites and conform to industrial standard protection settings. These standards are a necessity for connection to the distribution network operators system and to satisfy the requirements of both the NIROC programme in Northern Ireland and the Feed-In Tariff scheme operated on the rest of the UK.

Metartec's solar inverters have the converting efficiency of up to 97.9%

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Warranty

All of Metartec's solar panels are accredited under the Microgeneration Certification Scheme (MCS) and come with a 25 year performance guarantee*, so quality is guaranteed whichever panel you choose.

Solar PV Systems are virtually maintenance free

- Once your solar panel system is installed, it is virtually maintenance free.
- There are no moving parts associated with Solar panels. This means that all you will have to do is occasionally wipe or spray off any particles of dirt on the surface to ensure that nothing interferes with the system's ability to collect solar energy.
- Although it is optional we would highly recommend that the photovoltaic system is serviced once every 5 years.
- The wires and the overall electrical system should also be checked in a routine manner (just like you would check other appliances).
- Maintaining the system ensures that the solar panels are kept in optimum working condition and that any potential defects are spotted and resolved at an early stage.
- Metartec can help improve the performance and longevity of solar panel installations through our maintenance and servicing options.

*Conditions Apply

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What Metartec Can Do For You

WHY CHOOSE METARTEC FOR YOUR SOLAR PV NEEDS?

- **COST –** Metartec provide competitively priced solar devices to make green energy more affordable to everyone and to provide the best return on investment for our customers.
- **WARRANTY –** All of Metartec's solar panels have a 25 year guarantee* which ensures that our customers receive the best possible return over the 25 years that the Feed-In Tariff is guaranteed to be paid for.
- **PRODUCT RANGE –** Metartec can supply an extensive range of Mono-crystalline and Poly-crystalline Solar Panels and Inverters enabling us to create a bespoke solution to suit any application. This ensures you can generate sufficient energy to satisfy your output needs.
- **MCS INSTALLERS –** All of Metartec's Solar Installers are MCS (Microgeneration Certification Scheme) approved insuring that your installation is eligible for the Feed-In Tariff payments which allows you to save money on energy bills whilst getting paid for the electricity you do not use.

For further details on Metartec's Solar PV equipment, and to ensure you receive the most suitable photovoltaic solution to suit your needs, talk to one of our experts on:

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visit www.metartecsolar.com or email info@metartecsolar.com

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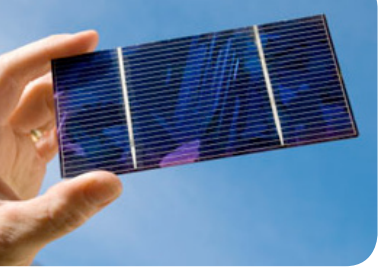

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