

Solar PV Energy

Clean, renewable power from the sun.



Solar Photovoltaic (PV) arrays generate electricity from sunlight, providing a source of free, renewable and environmentally-friendly energy for homes and businesses.

Solar PV systems can be used as part of a stand-alone power system or in conjunction with conventional power sources to add renewable solar electricity to deliver a practical, integrated energy solution.

How it works

- The solar panels produce direct current (DC) power when the sun hits them.
- The DC solar power is then fed into the inverter and converted into usable 240V alternating current (AC) power.
- This AC solar power is fed into the switchboard for immediate use on site.
- The ability to export unused electricity generated to the grid can be enabled.

Benefits

Reduced energy bills

A 2 kilowatt (kw) solar PV system can generate about 1/3 of the electricity required by a typical household, with negligible operating costs.

Environmentally friendly

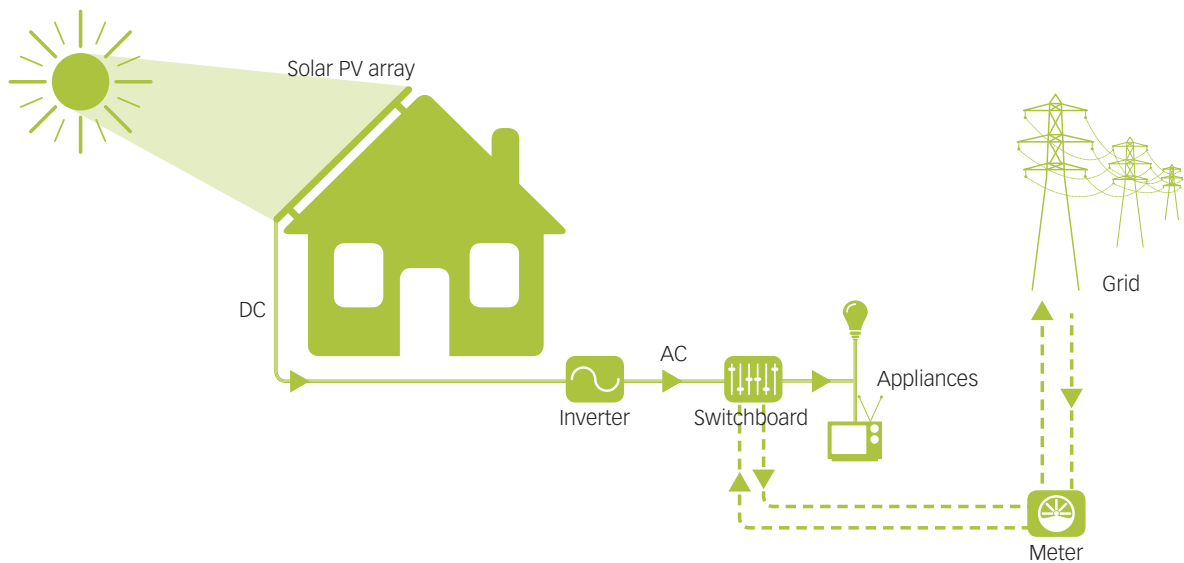
With zero emissions or pollution, no noise and no hazardous waste produced, solar PV systems are among the cleanest energy sources available.

Socially responsible

Using solar energy reduces your greenhouse gas emissions and protects the environment, decreasing the harmful effects that may contribute to climate change.

Reliable, controllable energy

Solar PV systems produce power even on cloudy days – with little upkeep. And the performance of your system can be tracked and monitored via a simple web-based reporting tool.



Technology overview

What are photovoltaic (PV) cells?

Photovoltaic cells convert light into direct current (DC) electricity. Each PV cell is made up of layers of semi-conductor material (typically silicon), protected by glass or plastic and sealed from moisture.

How does Solar PV generate electricity?

1. Photons in sunlight hit the solar panel and are absorbed by semiconducting materials, such as silicon.
2. Electrons (negatively charged) are broken apart from their atoms, allowing them to flow through the material to produce electricity. Due to the special composition of solar cells, the electrons are only allowed to move in a single direction.
3. An array of solar cells converts solar energy into a usable amount of direct current (DC) electricity.

What advantages does thin film solar PV offer over other types of solar panels?

Conventional crystalline and thin film solar PV have their own characteristics, giving you the option to choose the right technology for your situation.

Thin-film solar PV is lower cost per watt and easy to install and maintain. It has also been shown to perform better in both shady and very hot conditions.

If part of a crystalline solar cell is shaded, the entire cell won't produce any energy. With thin film PV the output is only reduced by the amount shaded.

It also takes less energy and material to manufacture a kilowatt of thin film PV solar cell. This makes thin film PV the environmental choice for solar power generation.

For more information, please visit <http://www.vector.co.nz/solarpower> or email renewables@vector.co.nz today.