



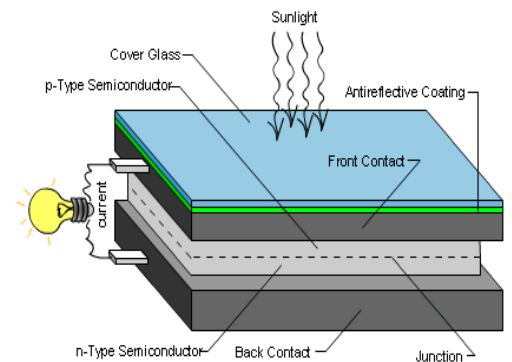
Description

Axter Ltd has been designing and supplying integrated solutions to the roofing industry for more than 35 years. The Company was the first to introduce polymer modified membranes into the UK and has continued to lead the market with the introduction of new techniques: mechanical fastening, self adhesive membranes and more recently a second generation hot melt, structural waterproofing system. The Company encourages its early involvement in the design of a building so that it can become part of the project team, promoting through innovative materials the importance of health and safety and reduction of build and lifetime maintenance costs.



How do solar cells work?

The sun is the ultimate energy source for our planet blasting the earth with enough energy in one hour to provide all humanity's needs for a year. Photovoltaic cells are made up of semiconductors which convert part of this energy (sunlight) to electricity, reducing a building's dependence upon fossil fuels thus lowering its carbon footprint. Traditionally the semiconductors have been made from expensive mono or polycrystalline silicon crystals combined into solar panels but newer materials using smaller, cheaper amorphous crystals can be shaped into flexible films.



California Energy Commission

Efficiency

Mono or polycrystalline panels typically have an efficiency between 15 and 18% but because the technology is expensive to manufacture it does not scale up too well. Thin film technology, though not so efficient, between 7 to 10%, is cheaper and is therefore ideal for large surfaces. Output is measured in kilowatt peak (kWp) and in the UK approximately 800 kWh of energy will be generated in a year for every kWp installed.



Crystalline panel 100 to 130 Wp/m²

Explanation of the application and its benefits

General Solar PV is a roof waterproofing membrane with thin film technology photovoltaic cells embedded into its surface. The system is installed onto the usually under resourced roof area as the top layer in a multi layer waterproofing and insulating system. Because they perform much better in low light conditions, thin film collectors have been shown in trials to generate more electricity per kWp installed than do traditional panel systems. The solar collectors cover 100% of the surface of the membrane thus maximising generation from the available space. Approx 17m² are required for 1kWp which, in the London area, means that a 100m² roof would generate approximately 5,000 kWh and save 2.5 tonnes of CO₂ per year. The system is guaranteed to continue to generate at least 80% of the installed power after 25 years.



Amorphous thin film 66Wp/m²

Connection to supply

The electrical current generated by PV cells is in the form of direct current, DC, and this has to be converted by way of a piece of equipment called an inverter to alternating current, AC. Connection can then be made through an electrical meter to the building's distribution board.

How does General Solar PV help the environment?

The installation of Axter's General Solar PV helps designers:-

- meet their CO₂ reduction targets and contributes to the UK Government's Renewable Energy Strategy as electricity is generated, even if the building is not occupied, with no release of CO₂ to the atmosphere
- ensure that buildings comply with Local Authority Development Orders
- comply with level 5 or 6 of the Code for Sustainable Homes.

Axter's General Solar PV modules are recyclable.

Feed-in Tariff - 2010 (revised 2012)

Schemes approved under the Microgeneration Certificate Scheme on buildings that achieve an Energy Performance Certificate of D can benefit from the Government's feed-in tariff. Though less advantageous than the original scheme it should still generate a rate of return between 4.5 and 5%. A typical household installation of 2.5 kWp would earn £410 a year and save £140 on the annual electricity bill; an investment pay back of between 9 and 10 years. In addition approximately 1000 kgs of CO₂ emissions would be saved each year.

Axter's General Solar modules have MCS accreditation.

Projects completed

Over 33 MWp of General Solar PV has been installed throughout Europe including in the UK 22kWp at Southbury Road, Enfield; 30kWp at Court Bushes Road, Whyteleafe and 50kWp on the former Acton Bus Depot, London W3.

Future

Photovoltaic technology, though it has been around for 50 years, is still in its infancy. With the desire for clean technology many companies are investing in new ways of converting sunlight to electricity such as printing semiconductor material onto fabrics and solar reactive paints. These techniques have yet to be proved to be commercially viable but today's crystalline and amorphous technology is proven, reliable, efficient and environmentally safe and can contribute to UK targets to reduce dependency on fossil fuels.

Sources

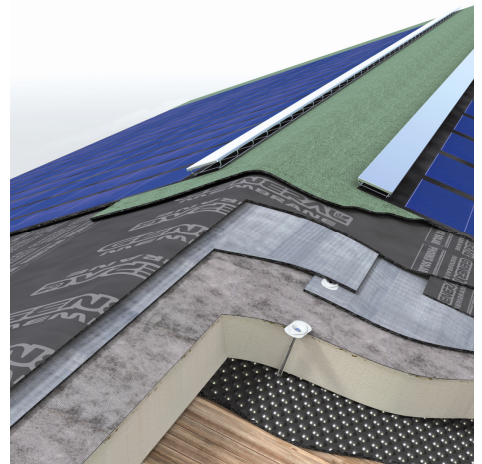
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Department of Energy and Climate Change - Comprehensive Review Phase 1: Consultation on Feed-in Tariffs for solar PV



Contact details

Phillip Wilcox-Moore
Managing Director
Tel: 01473 724056
Email: info@axterltd.co.uk

Beverley Gugenheim
Marketing Manager
Tel: 01473 724056
Email: marketing@axterltd.co.uk

Axter Ltd
West Road
Ransomes Europark
Ipswich
IP3 9SX
Tel 01473 724056
Fax 01473 723263
www.axter.co.uk

