

A clear message about dirty glass



Stephen Byers.

The recent Ecobuild event saw Ritec present some startling facts and figures to show how dirt significantly reduces the efficiency and output of solar panels. Here, the company's managing director, Stephen Byers, explains the problem.

The demand for solar panels is ever-increasing due to 'green' initiatives and requirements for energy efficient activities. When new, solar panels are effective in harvesting sunlight and converting it into other forms of energy, but they can quickly and easily lose their original efficiency due to the build-up of dirt and glass surface corrosion. Solar panels rely on the high light transmission level of a clean surface to maintain energy conversion efficiency. For thermal solar panels, reductions in sunlight because of dirty glass means reduced efficiency of hot water heating systems. For photovoltaic (PV) solar panels, dirt on the glass results in less output of electricity and longer payback periods.

At Ecobuild, Ritec presented the results of scientific studies showing that power output of a PV solar panel is reduced up to 50% when only 1.4% of the glass surface area is shaded by dirt. This dramatic reduction in output is caused by extra loads placed on un-shaded areas of the solar panel.

According to the 22 August 2010 issue of 'Scientific American', the best places to collect solar energy are also some of the dustiest on Earth and beyond. A dust layer of four grams per square metre can decrease solar power conversion by 40% and, to put this in perspective, dust deposition in Arizona is about 17 grams per square metre per month. The situation is worse in other locations such as the Middle East, Australia and India. Other studies show that up to 20% of the output of roof mounted PV systems is lost due to dirt on the glass. This varies, of course, depending on whether the solar panels are mounted flat or at an angle.

Studies published by Google on the output of PV panels installed on rooftops and car shelters at their headquarters near San Francisco, California, are even more astounding. Fifteen months after installation, flat panels were cleaned and their energy output doubled overnight. Google waited another eight months and cleaned the panels again, with a 36%

improvement in efficiency.

Dealing with the problem of 'dirty glass' is, therefore, vital to maintain the efficiency of solar panels. Like any exterior unprotected glass, panels are subject to surface contamination and dirt including traffic film, industrial pollution, bird droppings, dust, tree sap, pollen, hard water residues from water used for glass washing and sea spray if within 10 kilometres or six miles of a coastline. Some dirt is washed away by rainfall or rinse water, but most of it reacts with the glass, bonds firmly and cannot be removed by conventional cleaning methods.

So what's the solution? Ritec's ClearShield system converts ordinary glass into new ClearShield High Light Glass with durable, 'non-stick' surface protection and 'easy-clean' performance. This high performance glass maintains original light transmission, ensuring that owners of solar panels get the most out of their investments through higher output and shorter payback periods.



A solar panel, half treated with Ritec's ClearShield.

At Ecobuild, ClearShield High Light Glass generated considerable interest from solar panel manufacturers and installers alike. Launched at the show, Ritec's new Solar Panel Starter Kit, provides installers with an exciting added value business opportunity by offering their customers the benefits of ClearShield durable glass surface protection. The kit contains everything an installer needs to upgrade solar panels to ClearShield High Light Glass in their workshops or in situ and so ensure that panels maintain their original performance.

This year's Ecobuild was a great start to our 30th anniversary celebrations and the ideal opportunity to deliver an important environmental message about 'dirty glass'. Investing in ClearShield durable glass surface protection will help to maintain the original standards for light transmission – from solar panels to architectural glazing – and cleaner glass is more energy efficient glass!

For further information, visit: www.ritec.co.uk



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