Future Car Technology â€“ Could Windshields act like Solar Panels?

by Jesse Wallace

Article published on May 25th 2012 | Travel

As the modern world faces the many serious problem associated with climate change, going green has never been more important. And it is no secret that the cars people drive are one of the major contributors of CO2 emissions into the atmosphere. As the demand for motorised transport continues to grow, scientists and car manufacturers are in a race to improve and evolve the way cars use energy. How vehicles might harness solar power is just one of many areas of areas of research into how cars could become more energy efficient. One of the questions scientists are currently asking is would it possible, for instance, to have transparent solar panels that could double up as windshields? And would it be safe?

The short answer is no - not at the moment at least. The problem being that if light is passing right through a solar panel the photovoltaic cell cannot be producing any power: i.e transparency equals inefficiency. The only solar panel you could realistically have on your windshield currently would be a thin one bordering the main part of the glass.

Hereâ€™s the science part: the way solar panels work is by the photovoltaic cells they contain actually "destroying" light. The photons (in simple terms - the stuff light is made of) are absorbed by atoms in a process that releases energy. The photon is now gone - the energy in the light having been transformed into electrical energy.

In a sense all solar panels allow some light to travel through them â€“ but most photovoltaic cells have a thin reflective layer on the back so this light that has managed to penetrate through bounces back into the cell. The more transparent a solar panel is, the less electricity it will produce.

But rapid developments are being made in the field by the brightest scientific minds. For example, a group of scientists in California are developing liquid solar cells made from nanocrystals. These cells are only nanometers in size (you could fit 250 billion onto the head of a pin) and could be effectively painted onto a clear surface. Unfortunately the commercialisation of this technology is many years away.

Another step towards photovoltaic glass is being made by Swiss scientists using the chemical chlorophyll. These cells would mimic, if you like, the way a leaf gets energy from the sun. But although the cells currently under development would be transparent - unfortunately they have only a relatively low efficiency.

This technology has exciting potential. It wouldnâ€™t just be your car windshield that was producing energy - imagine a skyscraper, with each window doing the same thing. Imagine a city full of skyscrapers all harnessing the power of the sun. In the field of solar power â€“ the sky is very much the limit!

Article Source:
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Jesse Wallace - About Author:
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Article Keywords:
Future Car Technology â€“ Could Windshields act like Solar Panels?

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