Solar Power: A Feasible Future

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A straight to the point article on how solar panels work

If you've ever wondered how solar panels work, the answer is simpler than you may expect. Solar panels are made up of many photovoltaic cells, which is a fancy term for a cell that converts sunlight to electricity. These cells typically consist of a top layer of metal conductor strips, below that, a layer of antireflective coating, then two silicon layers and a metal backing. The action happens in the two silicon layers, and these are so cool because they are simply genius.

Essentially, these two layers are semiconductors. Semiconductors are materials that have the ability to generate an electrical current between conductors such as metals (think wires) and insulators (think the rubber around a wire). What's really cool about semiconductors is that at room temperature they may not be able to conduct electricity, but if they're heated up they will. This is so important for solar cells because they absorb light to generate a current.

In solar cells there are positively (p-type) and negatively (n-type) charged semiconductors. The free electrons from the n-type semiconductor jump over to fill the holes in the p-type conductor. The reason this happens is because the n-type semiconductor has extra electrons, and the positively charged p-type doesn't have enough, so electrons are donated. For a short time there is balance in the force, but when the sun is out photons (light energy) can knock one of these donated electrons free, leaving a new hole for another electron to fill its place. This happens millions of times every second, and the electrons that are knocked loose get directed into a path. This path of electrons we create is an electrical current, and this current is newly generated electricity.

We are in the midst of a solar revolution. In 2004, the global solar output was just 2.6 GW, which was only 0.01 % of our global energy demand. In 2015, we were able to create 302 GW, which met 1.8% of the world's energy demand. The International Energy Association predicted in 2014 that by 2050, 27% of the world's energy could come from solar power. This is a huge opportunity for everyone. We have the chance to innovate and develop industries, and create so many new jobs. The match has been lit, now it's time to fan the flames.

Tags

Sustainability

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