

Harvesting Energy While You Walk

Sep 10, 2013 By Sarika, Young Editor



Mark any areas of confusion and show evidence of a close reading.

Write comments and questions in the margins.

When you're finished, write a ½ page written response sharing your thoughts about this topic.

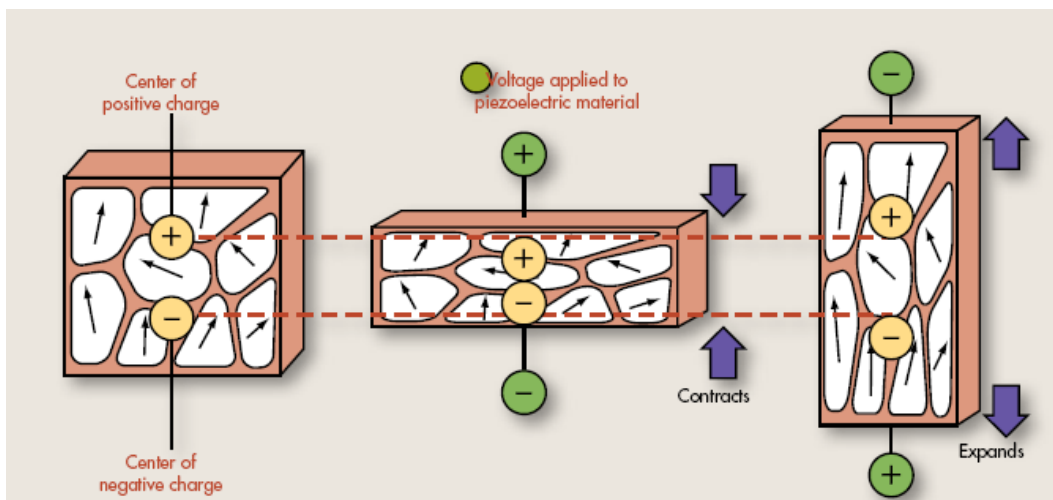
In modern-day society, we are always looking at ways to harvest sustainable energy sources and reduce our greenhouse gases. But as strange as it may seem, our footsteps may help reduce our carbon footprints.

At least, that's the idea of Laurence Kemball-Cook, a 27-year old London-based entrepreneur. His company, Pavegen Systems, produces floor tiles that generate electricity from a simple step.

How does it work?

Pavegen tiles are piezoelectric, which means that they produce energy when being squeezed or stretched. According to Dr. Paul Weaver of UK's National Physical Laboratory, piezoelectric technology will never produce the power required to make a dent in global energy demand, but are a good replacement for small-scale power applications. In addition, they don't require maintenance and are less polluting than batteries.

How does piezoelectricity work?



1. The piezoelectric effect causes crystal materials like quartz to generate an electric charge when the crystal material is compressed, twisted, or pulled. The reverse also is true, as the crystal material compresses or expands when an electric voltage is applied.

Every time someone walks over a Pavegen tile, renewable energy is generated from the footstep (using the combination of the weight of the person and a 5mm movement). How exactly does this work? Well, the exact technology is not disclosed by the company, but we do know that it uses a "hybrid black box technology." This employs a variety of mechanisms, including induction and the piezoelectric effect, to generate enough power to run low-voltage equipment. Each tile is made of recycled polymer, and each step can power a LED street lamp for 30 seconds.

What can it be used for?

For now, Pavegen tiles are only being used for lighting, but the company is coming up with new ways to harvest this incredible source of energy.

Pavegen Tiles are designed for areas with lots of people passing through, such as railway stations, stores, offices, and public buildings. Last year, it was tested in one of the main transport hubs for the Olympic games. More than one million people tramped over these tiles through the West Ham underground station en route to the Olympic Park, generating enough electricity to keep the station's lights on. Pavegen also created a dance floor in which the dancers were able to generate enough electricity to run the event by jumping on the tiles.

Pavegen is looking to scale up and industrialize their product. The company sees their work as a way to reduce the amount of energy needed from power plants, reducing the amount of fossil fuels used. These tiles are just one of many examples of piezoelectric technology, which are revolutionizing the field of energy harvesting. To the future!

Write a ½ page response:

- What is your opinion on this new technology?
- What impact could it have on our electricity usage?
- Where could this technology be the most useful? Where would it be a waste of money?