

Producing electricity by just walking

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RESEARCHERS in Switzerland are working on a new technology enabling them to produce as much electricity as possible from mechanical stress applied to wood. The idea is to make the material more malleable, more spongy, in order to boost its natural piezoelectric properties.



When applied to a wooden floor, this technology could be used to produce electricity simply by walking around the home.

The Swiss Federal Laboratories for Materials Science and Technology (EMPA) and ETA Zurich have developed a system destined to produce electricity from renewable sources, more precisely, from wood, according to a paper published in Science Advances.

Due to its piezoelectric properties, wood could, theoretically, allow the direct conversion of mechanical energy into electricity. However, this property hasn't previously been fully exploited.

While the piezoelectric output from raw, unprocessed wood is relatively low, it can be considerably improved by making wood more elastic. The scientists tested this on balsa wood using a special, environmentally respectful, treatment process based on hydrogen peroxide and acetic acid.

This resulted in multiplying the piezoelectric output by 55.

Concretely, when a load is applied to the wooden floor, this deforms very slightly and an electrical voltage is generated.

For the moment, this laboratory research only concerns small surfaces. The team used a test cube with sides measuring 15mm in length, which, after treatment, was found to produce a maximum voltage of 0.87V.

In the future, it could be possible to develop ecological construction materials capable of providing energy in future homes, although there are still various steps to be taken before this specially treated wood could be used as electricity-generating flooring.

The idea of producing electricity simply by walking isn't new, and that isn't limited to the home.

In London, the Pavegen startup has found a solution for turning kinetic energy from the footsteps of passersby into electricity, thanks to a system integrated directly into the street.