The power of footfall: Harvesting energy from human traffic

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For many years wind power, solar power, tidal power and many other sustainable solutions to electricity generation have been in place. But, what about harvesting the energy of human traffic on city streets and

other environments?

Research published in the *International Journal of Biomechatronics and Biomedical Robotics* demonstrates how the energy of footfall from people simply going about their business on the streets, in shopping malls, the workplace, and elsewhere might be harvested to generate electricity without affecting how people walk on the surface nor being too costly to implement or maintain.

Dazzle Johnson, Mikhael Sayat, and Kean Aw of the Department of Mechanical and Mechatronics Engineering at the University of Auckland in Auckland, New Zealand, describe a pavement energy harvester.

The system can convert the pressure of footfall from human traffic on the pavement even though the vertical displacement is a mere 1.5 millimeters, which would be hardly noticeable to pedestrians walking on such as surface. That tiny movement of the ground beneath one's feet would not affect one's gait but with each footstep can generate 164 milliwatts of electricity across a 27-ohm load resistor. If someone jumps on to the power pavement area almost a Watt is generated (833 mW).

If we imagine a network of power pavement with millions of footsteps every hour in a busy shopping center, for instance, then the power generated would quickly add up to usable amounts that could be buffered by charging up embedded batteries and used to power lighting or power outlets. The team is currently testing the prototype system and will work to develop connected harvesters. They need to determine how much vertical displacement each slab might be capable of to generate more power without affecting the way people walk on the surface.

More information: Mikhael Sayat et al, Harvesting Energy from Human Traffic, *International Journal of Biomechatronics and Biomedical Robotics* (2022). DOI: 10.1504/IJBBR.2022.10051712

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