

Development of a Footstep-Powered Energy Harvesting System Using Piezoelectric Materials for Military Applications

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In military operations, which often span several days, relying solely on traditional power sources is impractical, as communication equipment must always remain operational. Although storage can be facilitated using traditional energy generation techniques such as solar panels to store energy for up to four to five days, it often relies on factors like the weather or constant camouflage. Piezoelectric technology is increasingly recommended for military applications over traditional power generation methods. This project proposes a reliable solution by developing an effective footfall energy harvesting system specifically designed for the use in terrains like jungles. With this system, each step soldiers take generates energy, allowing them to recharge their battery backups. This innovation enhances both the operational efficiency and resilience of the soldiers. This environmentally friendly approach has the potential to fulfil the energy demand required for military operations that are conducted in isolated and restricted areas. The proposed system aims to maximize energy conversion while ensuring robustness and reliability under challenging conditions. It also offers a durable and effective solution by harvesting energy from foot traffic and decreasing reliance on external power sources.

Keywords: *footstep energy harvesting, power generation for military applications, piezoelectric power generation*