

A Systematic Review of Energy Harvesting from Roadways by using Piezoelectric Materials Technology

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Abstract

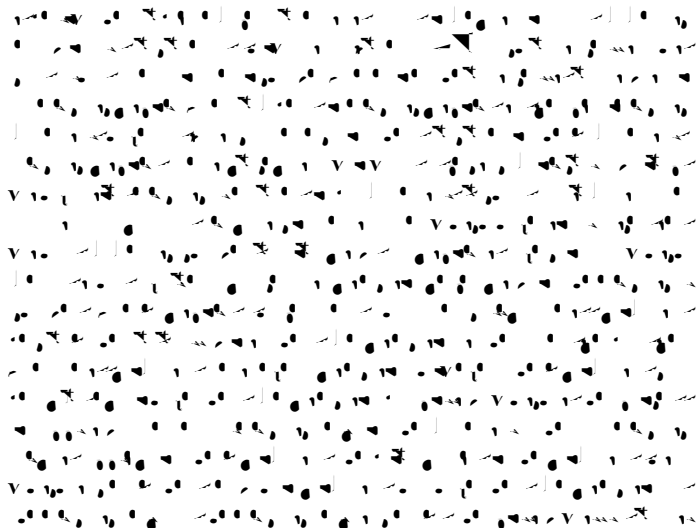
Piezoelectric energy harvesting technology is attracting more attention in recent years due to the trend of harvesting energy from roadways starting from the used piezoelectric materials, harvesters and the conditions of the roadways. Many papers were evaluated and analyzed to study the current progress in the area including in practical applications.

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Energy harvesting from roadways using piezoelectric materials technology is a promising and sustainable approach to generate power for various applications. This technology converts mechanical energy from traffic into electrical energy, which can be used to power sensors, lighting, and other low-power devices. The piezoelectric effect is the ability of certain materials to generate an electric charge in response to mechanical stress. This property is used in piezoelectric materials to generate electricity from the vibrations and stresses caused by passing vehicles. The piezoelectric materials are embedded in the road surface, and the electrical energy generated is collected and stored for use. The advantages of this technology include its simplicity, low cost, and the fact that it does not require any external power source. However, there are some challenges associated with this technology, such as the need for a large area of piezoelectric material and the fact that the generated power is relatively low. Despite these challenges, energy harvesting from roadways using piezoelectric materials technology is a promising and sustainable approach to generate power for various applications.

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