

Matthew Schurmann

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Piezoelectric Asphalt

Every day, millions of cars, and trucks ferry tons commuters, travelers, and cargo into and out of the New York metropolitan area. As they pass by, each flexes the asphalt of the road beneath it, and creates vibrations - energy which is normally dissipated as heat. In a world that is constantly looking for sustainable energy sources, and ever increasing efficiency efforts – piezoelectric asphalt could be one piece of the “green energy” puzzle that the world so desperately needs to solve.

The basic operating principle of piezoelectric asphalt (and where it derives its name from) is the *piezoelectric effect* – a physical property of some crystalline materials which creates a current when a pressure is applied to them. Either a plate or piezoelectric material, or a network of smaller crystals (further research is required to determine the best topology) would be placed under the asphalt of roads and highways, and connected to the power grid. Each time a vehicle rolls over a stretch of piezoelectric road, a small amount of electricity will be produced and fed back into the power grid. Multiplied over the millions of vehicles per day, and the thousands of miles of road in a metropolitan area – piezoelectric asphalt therefore has the ability to create quite a bit of energy for a city. This energy could be used to supplement existing sources of energy, thereby reducing the city’s dependence on non-renewable sources of energy.

The potential impact of piezoelectric asphalt is huge: given the very sophisticated system of roads that exists in highly developed nations – and the world’s ever-increasing energy consumption demand – there is a definite (and growing) need to find more clever, efficient, and cheap ways to produce enough energy to meet demand. While it would not solve the problem of sustainable energy in and of itself, it does present a step in the right direction that can be implemented today – saving money, using existing conditions more efficiently, and relatively cheaply if done correctly. If adopted by governments, there would be huge demand for the product, that would eventually level-off but still be quite large: anyone who has ever lived in a city knows this - roadwork never ends. The product could also be implemented piece-by-piece

giving governments time to evaluate it, as well as find the necessary funding to implement it nation-wide.

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