Piezo Power: A Piezoelectric Tile That Uses the Pressure From Steps and Converts It Into a Useable Voltage Current

Stander, Samantha (School: Shoreline Junior High School)
Nelson, Cambria (School: Shoreline Junior High School)

Most energy sources are non-renewable, like fossil fuels. One way to get around this is to have more renewable energy sources. One idea is to harness the steps and physical movement that individuals are already doing. Piezoelectric tiles become a great option. The tiles use the steps that commuters make every day and convert it into energy. Otherwise, there is wasted potential energy. Piezoelectric tiles are an inexpensive way that convert energy. Minerals that are used in other renewable energy sources are quite rare, so scarcity limits the number of renewable sources that could be made. Piezoelectric tiles mainly use lead zirconate titanate, which is a synthetic mineral, and is readily available. The tile was made using an LCD display, piezo discs, an Arduino Uno, a battery, and wires connected to the breadboard to enhance performance. The tests performed showed that for every pound there was a linear progression of .017 volts produced. This information showed that if the average American stepped onto the tile, each step produced around 3 volts. Piezoelectric tiles are a great way to produce energy, encourage movement and use readily available materials.

Awards Won: