Walk-Move-Charge: Piezoelectric Shoes To Generate Electricity

Tovmasyan, Edvard (School: High School 139 after Karen Demirchian)
Arakelyan, Anush (School: High School 139 after Karen Demirchian)

There are numerous natural ways to generate electricity, such as water, wind, atomic power, sun, etc. The problem is that those sources are not stable, some require special isolated conditions, some work only during the day, and some will end someday, so we need a new method which will let us get electricity from something we do every day and which will be with us all the time. We built a special construction that generates, converts, and stores electricity from our steps using piezo crystals to always have a source of electricity with us, never fearing that our devices will run out of charge. This construction will be put in shoes so that they will become "moving power banks" and will be charged from our every step. After conducting enough experiments and gathering a sufficient amount of data, we showed that the amount of generated electricity depends on the piezo crystal, the weight of the user (mechanical stress), and other factors. Experiments showed that heavy people generated more electricity during simple walking than slimmer ones and vice versa for the running. The more piezo crystals are bent or deformed, the more electricity they will generate. These shoes will be an amazing addition to sports halls for runners, mountain climbers, travelers, etc. We also suggest putting this kind of piezo element in the streets, so whenever people walk on them, they will generate electricity which will be used to light up the streets at night.

Awards Won: