

Portable Charger Powered by Piezo-electric Crystal Vibration

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With the increment of the world population, world has faced a huge problem in terms of generating the required power necessity. Due to the rapid industrialization, the world is expecting more and more power. In present, numbers of power sources could be seen both non-renewable and renewable. However, due to increasing usage, a lot of energy resources have been exhausted and wasted. Also, there can be identified another huge problem arising when generating power that is environmental pollution. Piezo-electric material can be identified as an alternative eco-friendly method for power generation. Piezo-electric materials have the unique ability to interchange electrical and mechanical energy. Because of this property, piezo- electric plates can be used to absorb the mechanical energy and transform it into electrical energy. Usually, the ambient vibration or pressure will act as the mechanical energy source. A small amount of piezo plates is not capable of generating much energy. Therefore, methods of accumulating and storing of energy generated until sufficient power is captured were developed. The research was carried out by combining several piezo electric plates serially and parallelly with the use of rectifying filters. Small vibration motor was used as the energy source to generate vibrations. It is observed that serial combination of three plates gives sufficient voltage to charge a battery. This stored energy is intended to use. In everyday life, as it can be identified some instances, where small-scale power necessities arise. As examples mobile phone charging, lighting a table lamp, charging rechargeable batteries. As a future development, the device will be tested in real-world applications such as harness energy from human walking and vehicle vibration.

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