

ABSTRACT

The increase in population, economic growth and technology in Indonesia is being intensified. Various groups from small children, teenagers to adults today cannot be separated from the use of electronic goods that consume electricity. Dependence on limited fossil fuels triggers the need for alternative energy solutions. Mechanical energy from human footsteps, which is often wasted, can be utilized as a new power source. Therefore, a prototype design model of vibration energy harvester using piezoelectric transducers is needed. Piezoelectric transducers convert vibration energy into electricity. This prototype uses piezoelectric transducers assembled in parallel to optimize energy output. The mechanical energy from the footrest is converted into AC electricity, then rectified using a diode bridge and stabilized with a capacitor to produce a stable DC voltage. The system was tested with variations in mass and pressure frequency to measure performance. The system generates a voltage between 1V to 6V DC, depending on the pressure load. Results show that this prototype is suitable for low-power electronic devices and has great potential to be applied in public facilities.

Keywords: Renewable Energy, Piezoelectricity, Energy Harvester