

ABSTRACT

The research is about designing the energy harvesting of electrodynamic vibration by using FR4+Cu and FR4 membrane as spring in the device with fixed magnet, the first step is to simulate the membrane properties using Comsol 4.3 as the design for the fabrication of the device. The device consists of membranes, coils, magnets and frames. Membrane and frame making is done by laser cutters while coil by manual rolling. This device is made to harvest low-frequency vibration energy between 30 Hz to 100 Hz converted to electrical energy. The result of the research result of membrane of FR4+Cu and FR4 have resonance frequency 11,15 Hz and 40 Hz in simulation process, while in the process of characterization using the speakers as a source of vibration and electrical circuit voltage measurement resulting resonance frequency value 26 Hz and output voltage value 0.464 V and maximum daya 70.2 μW with load value equal to the value of load on the device for membrane FR4, while for membrane FR4 + Cu resulted in a resonating frequency value of 40 Hz and an output voltage output value of 0.401 V and a maximum daya of 11.9 μW .

Keywords: electrodynamics, FR4 and FR4+Cu membrane, resonance frequency, vibration, voltage, energy harvesting.