

ABSTRACT

Energy harvesting of electrodynamic vibrations begins with harvesting the vibrational energy and converting it into electrical energy. Working principle used in electrodynamic vibration energy harvesting is magnetic induction and Faraday's Law. In this final project conducted a simulation, fabrication and characterization of cantilever FR4 using FEA Comsol 4.3. There are three components in this energy harvesting device are; coil, NdFeB magnet and cantilever. The calculation values of resonant frequency based on simulation result. The simulation and characterization result of resonant frequency in this experiment're 10, 12, 13, 25, 26 and 28 Hz. Energy harvesting devices are successfully fabricated by using CNC cutting method to get accurate precision from FR4 cantilever cutting according to design specified. The maximum and minimum displacement obtained in this study are 0.24 and 0.052 Volts at resonant frequency 13 and 25.94 Hz. Maximum deviation obtained in this research is 45.129 mm at resonance frequency 12 Hz with acceleration 0.6 g. The minimum deviation obtained in this study was 0.0684 mm at 28 Hz resonant frequency with 0.4 g acceleration. Based on these results it can be concluded that the difference between FEA simulation results and characterization obtained ± 0.3 Hz.

Keywords: *Vibration, Energy Harvesting, FR4, Cantilever, Resonant Frequency*