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**Design and analysis of vibration micro piezoelectric energy harvesting
for wireless sensor nodes**

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Abstract : In this paper, PMPG (Piezoelectric Micro Power Generator) was investigated by ANSYS FEA (Finite Element Analysis) to decrease operating frequency and improve out power. The micro power generator was designed to convert ambient vibration energy to electrical power as a ZnO piezoelectric material. To find optimal model in low vibration ambient, the shape of power generator was changed with different membrane width, thickness, length, and proof mass size. Used the ANSYS modal analysis, bending mode and stress distribution of optimal model were analyzed. Also, the displacement with the frequency range was analyzed by harmonic analysis. From the simulation results, the resonance frequency of optimal model is about 373 Hz and confirmed the possibility of ZnO micro power generator for wireless sensor node applications.

Key Words : vibration, energy harvesting, micro power generator.