

Conference Abstract

Piezoelectric buzzers for energy harvesting

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Abstract

The energy generating devices are capable of capturing environmental energy and supplanting the battery in a stand-alone module or working alone with the battery to extend substantially its life. Piezo electric and electromagnetic devices are mostly used to convert mechanical vibration to AC electric power. For vibratory harvesting process, a delicately designed power conditioning circuit is required to store the device-output power into the battery as much as possible. The design for this power conditioning needs to be consistent with the electric characteristics of the device and battery to achieve maximum power transfer and efficiency. This study focuses on improving the energy harvesting capability of commercially available piezo buzzer elements. Different materials were sandwiched between pair of piezo buzzers and tested under ideal mechanical stress condition. The following table summarises the performance of various sandwich materials. Two buzzers were connected in parallel and a maximum power of 23 μW was obtained for a rubber between piezo buzzers.

Table: Variation of power generation with sandwich materials

Material	Buzzer		
	Average Voltage (V)	Average Current (μA)	Power (μW)
Air	3.54	6	21.24
Silk	1.21	5.07	6.12
Protective form	0.51	1.32	0.68
Rubber	3.26	7.09	23.24
Sponge	0.23	0.28	0.06
Rigifoam	0.61	3.35	2.03
Wax	2.20	5.88	12.96

Keywords: Energy generating, Piezo electric buzzer

Reference:

- [1] Mishra, R., Jain, S., & Durgaprasad, C. (2016), Analysis of piezoelectric buzzers as vibration energy harvesters. 3rd International Conference on Computing for Sustainable Global Development, 16426854