

Parametrization of Piezoelectric Vibration Energy Harvesters for Low Power Embedded Systems

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Abstract : Matching an embedded electronic application with a cantilever vibration energy harvester remains a difficult endeavour due to the large number of factors influencing the output power. In the presented work, complementary balanced energy harvester parametrization is used as a methodology for simplification of harvester integration in electronic applications. This is achieved by a dual approach consisting of an adaptation of the general parametrization methodology in conjunction with a straight forward harvester benchmarking strategy. For this purpose, the design and implementation of a suitable user friendly cantilever energy harvester benchmarking platform is discussed. Its effectiveness is demonstrated by applying the methodology to a commercially available Mide V21BL vibration energy harvester, with excitation amplitude and frequency as variables.

Keywords : vibration energy harvesting, piezoelectrics, harvester parametrization, complementary balanced energy harvesting

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