



Код: 10645

T. Sainthuille, C. Delebarre, S. Grondel, C. Paget

Vibrational Power Harvesting for Wireless PZT-based SHM Applications

Издательство DEStech Publications, Lancaster, 2010 год

6 стр; формат: 23,5 x 16 см; библиографический список: 6 единиц
ISBN: 978-1-60595-024-2

The interest for power harvesting solutions has dramatically increased over the last few years. Among the solutions, vibration energy harvesting has shown promising potential to be integrated into Structural Health Monitoring systems (SHM).

In this paper, the original idea consists of building a double simultaneous function system composed of piezoelectric transducers which are able to harvest energy from structural vibration and at the same time have SHM capabilities.

The experimental set-up is made of piezoelectric multi-element arrays bonded on an aluminium plate. The geometry of the elements has been chosen to allow damage detection and to ensure wideband energy conversion. The element response to different vibrations generated by a shaker has been measured. Then, a test at different frequencies in the harmonic regime has been conducted to show the ability of vibration power harvesting over a wideband frequency. The natural modes of vibration obtained by this experimentation are subsequently compared to the natural modes calculated by the Finite Element Method (FEM). The power, harvested from the vibrations and subsequently stored in a capacitor using a diode rectifier bridge, has been estimated quantitatively.

Ключевые слова:

Содержание.

Vibrational Power Harvesting for Wireless PZT-based SHM Applications