## Utilizing Magnetostrictive Materials in Energy Harvesting from Mechanical Vibrations

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In recent years, the issue of energy conservation has gained global attention and enthusiasm. As a result, various research activities have been directed to serve that issue on different scientific, industrial and economic fronts. Within those activities, several energy harvesting concepts from mechanical vibrations have been proposed. Basically, their working principle capitalized on the conversion of environmentally existing mechanical vibration energy into electrical energy. This conversion is made possible by exploiting the relatively large coupling coefficients between mechanical variables and electric or magnetic fields which are exhibited by several smart materials such as piezoelectric and magneto-elastic materials. While many studies covering most of the technical aspects related to piezoelectric materials have been reported in previous literature, research related to power harvesting from magnetostrictive media is still underway. Reasons behind that include the complex non-linear and hysteretic characteristics of magnetostrictive materials, their potential to sustain very high mechanical stresses and their expected very large harvested power density. The aim of this presentation is demonstrate the outcome of research efforts related to energy harvesting from magnetostrictive and magnetic shape memory materials in the last few years. Those efforts included the development and utilization of magneto-mechanical hysteresis models, development and construction of an energy harvesting experimental test setup and, obviously, harvested electric power. The presentation will also shed some light on potential applications, commercial devices and some other related aspects as well.