

In many applications, such as structural health monitoring and damage prognosis, it is desirable to have autonomous, self-contained sensor systems. Systems that depend on batteries have maintenance requirements (replacing batteries) and can fail at inconvenient times. If power can be supplied by ambient sources then the system has a potentially unlimited life span. As power requirements for electrical devices decrease, the possibility exists that localized power generation using ambient sources will be adequate to meet these power requirements. The process of acquiring ambient energy is called power or energy harvesting. Forms of energy that may potentially be harvested include thermal, vibration, acoustic, and solar. The purpose of this study is to determine if power harvesting from mechanical vibration using piezoelectric (PZT) materials can be enhanced using tuned auxiliary structures. These structures are to be designed to maximize the strain induced in the PZT material.