

Car energy harvesting

Sunday, 28 October 2007

We decided to test if we can perform useful sensing from vibrations in a passenger car.

Take a look at the results!

Energy harvesting in passenger vehicles

These tests show feasibility of using energy harvesting for powering various sensors in passenger cars. These tests utilize AmbioMote with a piezoelectric energy harvester. As results show, AmbioMote is capable of capturing microwatt energy created by vibrating environment of a passenger vehicle and using this energy for useful measurements.

The thumbnail shows a picture of the test car. Click it to see a larger image.

Energy harvesting from an idling engine

This video demonstrates operation of a wireless temperature/humidity sensor from vibration created by normally idling engine of a small passenger car. A piezoelectric strip is clamped to the generator bracket. Normal idling of the car engine creates enough power to perform temperature/humidity measurements by a MEMS sensor.

{flv}2007-10-car-idling{/flv}

Please be patient and allow the video to load. Alternatively you can download the video .

Energy harvesting from a car in motion

This video shows operation of a wireless sensor powered entirely by vibration on the dashboard of a moving vehicle. The video was shot while driving at 55mph on a smooth, freshly repaved road. The AmbioMote produced as many as 10 measurements per 30 seconds (a measurement every 3 seconds!).

A piezo strip is attached to the dashboard (left upper corner of the video) by a magnetic mount. AmbioMote is powered

by the vibrating piezoelectric strip and sends a temperature reading each time there is enough energy. A different, less energy consuming kind of sensor is utilize as compared to the idling test.

As in previos video each short line on the computer screen is a receiver ping ("I am alive!"). Each long line is a temperature measurement.

{flv}2007-10-car-in-motion{/flv}

Please be patient and allow the video to load. Alternatively you can download the video .