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Health Monitoring of Suspension Bridge Cables Literature

1. **Structural health monitoring of a cable-stayed bridge using smart sensor technology: deployment and evaluation**

<http://shm.cs.illinois.edu/Full%20Scale%20Papers/5.%20Jang%20et%20al.%202010%20Deployment%20and%20Evaluation.pdf>

* Particularly interested in energy savaging techniques used
* PMIC charge controller and LiPo
* Solar cells successfully maintain power for a year+
* Methodology for strapping nodes to cables for vibration measurement
* See 6.5 for energy harvesting results

1. **Nondestructive evaluation of ferromagnetic cables and ropes using magnetostrictively induced acoustic/ultrasonic waves and magnetostrictively detected acoustic emissions**

<http://www.google.com/patents/US5456113>

* Interesting research on Magnetostriction (look it up on Wikipedia)
* View patents at the bottom. What we want to do has been done, a lot.

1. **ACOUSTIC HEALTH MONITORING OF SUSPENSION BRIDGE MAIN CABLES- CASE STUDIES**

<http://www.puretechltd.com/pdf/technical_papers/2002/PTL_Technical_Paper_20080212160835.pdf>

* Piezoelectric transducers placed along cable
  + Snaps release energy as high frequency noise.
  + Delay between time of arrivals of the noise allows for localization
  + Precise timing is mandatory
* Experimental Modeling is necessary to determine frequency of wire break
* Filters must be applied to filter out everyday noise (cars, screaming bridge jumpers, the sorts)
* Accurate to 6 inches