VIRGINIA TECH
INTELLECTUAL
PROPERTIES

L-Beam Energy Harvester

Licensing Opportunity

Virginia Tech Intellectual Properties, Inc. is seeking companies interested in licensing a new piezoelectric energy harvester. Providing twice the electrical output of existing designs, this technology more effectively converts vibrations across a range of frequencies. The L-Beam Energy Harvester is ideal for charging batteries or capacitors or powering small electronic devices.

Applications

- Charging batteries or capacitors
  - Portable devices
- Powering small electronic devices
  - Wireless sensors
  - Implanted medical devices
  - Structural health monitoring

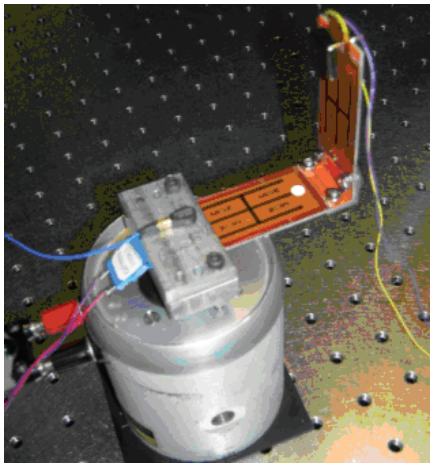
Advantages

- Energy output
  - Twice that of traditional cantilever design
- Flexibility
  - Broadband energy scavenging across vibrational frequencies
- Tunable and scalable
  - More design options for different vibrational environments
- Piezo-materials
  - Readily available piezoceramics

2200 Kraft Drive, Suite 1050 Blacksburg, VA 24060
Phone (540) 951-9374 Fax (540) 951-5292 Web www.vtip.org

Technology

The L-Beam Energy Harvester converts vibrational motion into an alternating current using readily available piezoceramics. With its tunable internal resonance, the L-Beam harvester can be designed to take advantage of modal energy exchange -- using vibrations at a stiffer mode to excite a more flexible mode. Along with other new advances, this novel approach enables the L-Beam technology to more effectively scavenge low-level energy, producing more than twice the voltage of traditional cantilever designs. Additionally, unlike cantilever designs, the first and second natural frequencies of an L-Beam design can be located close to each other. This ability to tune the design, coupled with design scalability, enable the L-Beam Energy Harvester to be used for broadband vibration scavenging, including random and varying frequencies.



L-beam energy harvester prototype

For more information about this product, or to discuss licensing terms, please contact John Geikler with Virginia Tech Intellectual Properties at 540-443-9228, or jgeikler@vtip.org.

Inventors

Alper Erturk is a graduate research assistant and Ph.D. candidate in the Center for Intelligent Material Systems and Structures (CIMSS) at Virginia Tech. Erturk earned an M.S. in mechanical engineering from Middle East Technical University in 2006.

Jamil M. Renno received his Ph.D. in mechanical engineering through CIMSS at Virginia Tech and will soon join the research faculty at the University of Newcastle in Callaghan, Australia.

Dr. Daniel Inman is the director of CIMSS, and the George R. Goodson Professor of Mechanical Engineering at Virginia Tech. Dr. Inman earned his Ph. D. in mechanical engineering from Michigan State University in 1980. Dr. Inman specializes in solving vibration and control problems using smart structures, energy harvesting, morphing aircraft structures, dynamics and control of membrane optics, and smart materials and structural health monitoring research.