

Continuum Control



Corporation

# Energy

Piezoelectric materials are a special class of materials that convert mechanical energy into electrical energy and vice versa. The recent advent of technology to cost-effectively produce fine piezoelectric fibers has provided the catalyst for a revolution in the way piezoelectric materials can be utilized in everyday products.

Continuum Control was created to develop and market products designed around our Piezoelectric Power System technology. Piezoelectric Power Systems are based on two patented technologies developed by the company's founders:

- **Self-Powered™ Electronics** — intelligently extract, store and re-apply the power provided by piezoelectric materials subjected to motion or vibration.

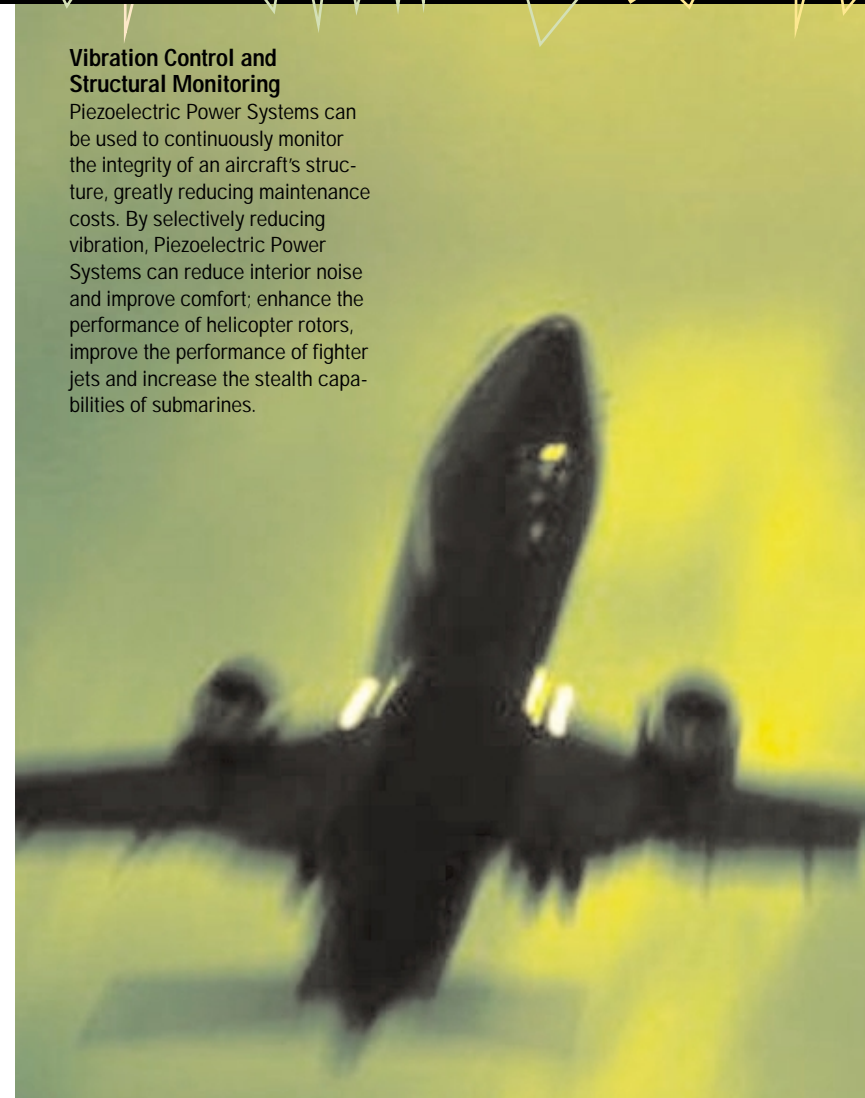
## Energy In Motion

- **PiezoFlex™ Composites** — a revolutionary piezoelectric composite material that is flexible, robust, and cost-effective

Continuum Control's products provide innovative solutions for generating electrical power from any type of motion, which can be used to power electronics or to actively control structural vibration. These solutions are custom designed for demanding OEM customers in a wide range of industries ranging from consumer electronics and sporting goods to automotive, rail, aerospace, and military applications.

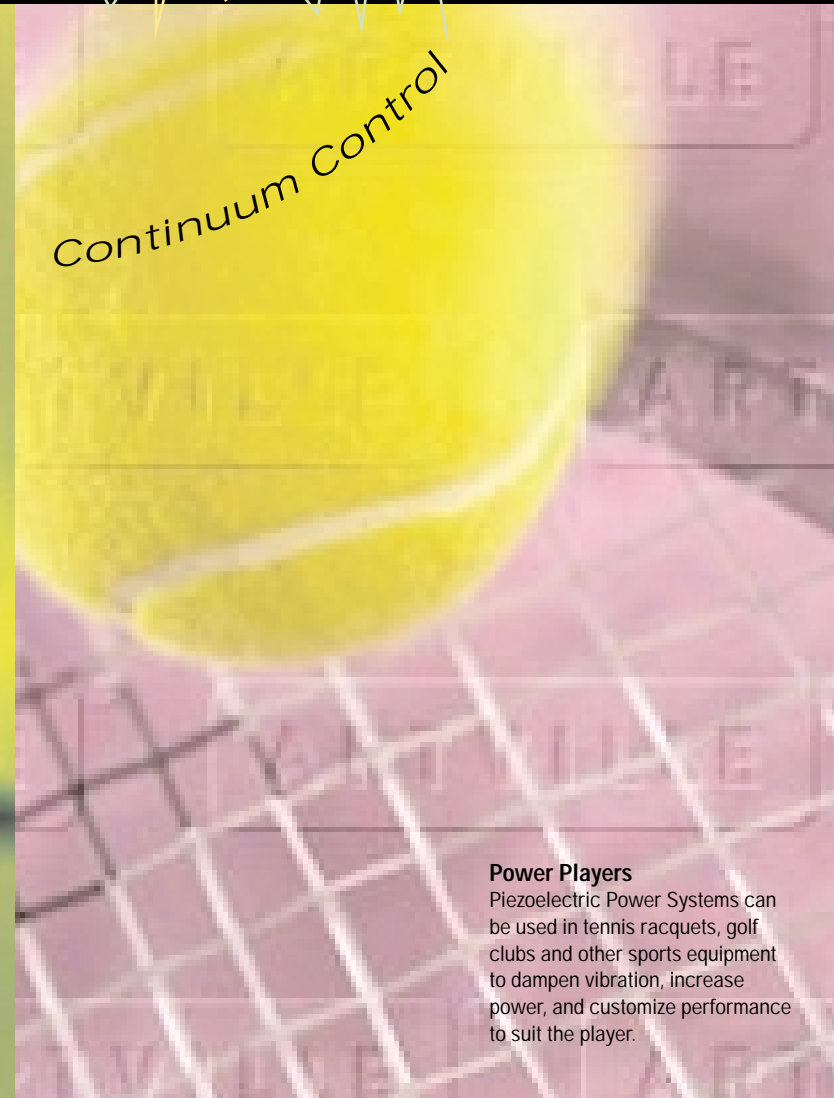


**Creative Energy**  
Self-Powered(tm) Electronics translate motion and vibration into usable electric power enabling a new generation of self-powered consumer product where consumers don't need to worry about batteries including "wind-up" flashlights and radios.



### Vibration Control and Structural Monitoring

Piezoelectric Power Systems can be used to continuously monitor the integrity of an aircraft's structure, greatly reducing maintenance costs. By selectively reducing vibration, Piezoelectric Power Systems can reduce interior noise and improve comfort; enhance the performance of helicopter rotors, improve the performance of fighter jets and increase the stealth capabilities of submarines.



### Continuum Control

### Power Players

Piezoelectric Power Systems can be used in tennis racquets, golf clubs and other sports equipment to dampen vibration, increase power, and customize performance to suit the player.

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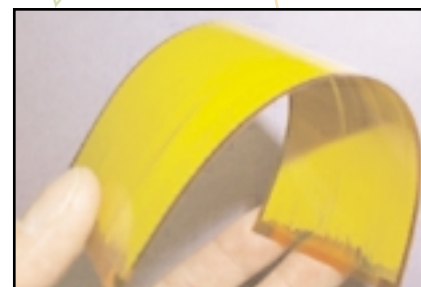
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## Piezoelectric Power Systems



*PiezoFlex is a composite (a material hybrid) that comprises 3 key elements: 1) piezoelectric fibers capable of the energy conversion function, surrounded by 2) a polymer matrix, and 3) electrical connections to deliver & carry-away electrical signals.*

PiezoFlex™ composites deliver all the strength, weight, and flexibility advantages of traditional composites. PiezoFlex™ is robust and durable with both long electrical and mechanical fatigue life. The piezoelectric composites are also cost-effective to produce due to Continuum's proprietary manufacturing processes. These composites can be used in a variety of applications including golf clubs or tennis racquets to sense a person's swing and compensate structurally; bridges and buildings that sense overloading during earthquakes and stiffen in response; and helicopter blades that adapt for different flight regimes to maximize fuel efficiency, flight speed, and lifting capability.



## Self-Powered™ Electronics

Self-Powered™ Electronics utilize a unique electronics design concept which intelligently extracts, stores and re-applies the power provided by piezoelectric materials when they are subjected to motion or vibration. By adding special logic to the latest generation of high efficiency power electronics, Continuum is able to capture up to ten times the level of power previously possible.

By providing power wherever there is a source of motion, vibration, or human input, Self-Powered™ Electronics has enabled an exciting new generation of instruments and devices.

### EXAMPLES INCLUDE:

- Wind-up power to replace batteries in cell phones, flashlights, radios and other consumer electronics
- Self-powered sensors on industrial machinery, in ships, and on aircraft
- Self-powered vibration or acoustic quieting in automobiles
- Self-powered performance enh. devices on sporting goods



## Energy In Motion

# Motion

## Continuum Control

Continuum Control was founded in July of 1998 to develop commercial applications for a new technology created by its founders at MIT. The company has developed products for a variety of customers in the sporting goods, automotive, aerospace, and military markets and has established ongoing developmental programs with customers in each of these markets.

Continuum Control and its research partners have attracted substantial research funding from various government agencies including the Defense Advanced Research Projects Administration (DARPA), and the company has forged strong relationships with academic institutions and research institutes including MIT, Northeastern University and Pennsylvania State University.

For further information on Continuum Control, its products and technologies contact:

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# Power



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