

New Technologies

Compact Nuclear Battery™

US-Semi is pioneering the development of compact nuclear battery technology for high energy density, long-life power sources. These power sources have significant military and non-military applications, for example, deep-space exploration and satellite longevity. Coupling the energy of a radiation event to the scale of the micro electromechanical systems (MEMS) device provides very efficient power generation.

The company is engaged in the development of power sources, both primary and secondary, for space needs. It is exploring technology to harness nuclear decay in MEMS technology to convert radioactive energy safely and efficiently to electrical power while avoiding lifetime-limiting damage to the power converter caused by highly energetic particles. This technology takes advantage of a unique two-step method of indirectly converting charged particle energy to narrow-band ultraviolet photons that will be used in conjunction with a unique micro bubble structure to limit the effects of radiation damage. High-energy conversion efficiencies in ranges from 20% to 40% may be realized depending upon specifics.

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