

Space Power Systems

Development of electrical power systems for space applications is of high interest to the Advanced Nuclear Concepts Group. With low level of financial support we continue to be involved with projects that couple our nuclear technology, reactors or energy conversion systems, to the needs of space exploration.



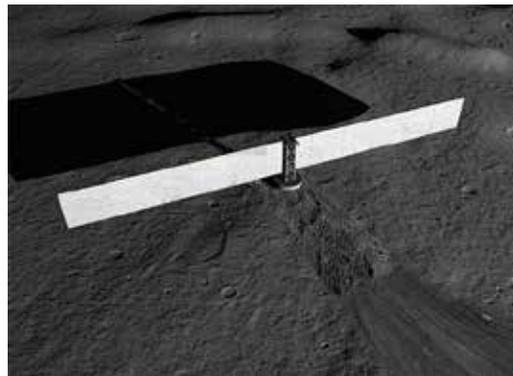
Moon Based Reactor

For many years we have supported the development of a nuclear powered moon base. While current concepts focus on Stirling engine power systems, the Fission Surface Power program lead to our initial discoveries of a closed Brayton cycle power system. For the current program, Sandia has developed a reactor simulator to drive Stirling engines under moon-like conditions at NASA.

In the past year, Sandia has teamed with Northrop Grumman Aerospace to develop a Solar Electric Propulsion (SEP) system for near earth operations functioning as a tug to move satellites. The SEP uses concentrated solar light to heat the fluid of a closed Brayton cycle generator for powering ion thrusters. The SEP can supply nearly 300 kW of power in orbit, far surpassing the capability of solar panels. Advanced concepts of this technology will explore the use of supercritical fluids to improve efficiency and reduce the size of the heat rejection radiator.

Vision

To enhance the nation's security and prosperity through sustainable, transformative approaches to our most challenging energy, climate, and infrastructure problems.

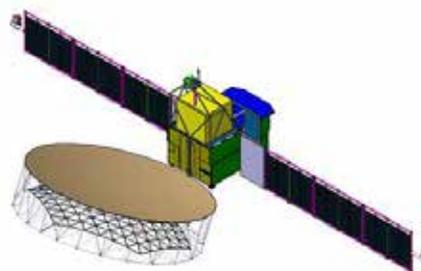


Fission Surface Power Reactor
(Reactor under the surface)
(Large white panels are heat rejection radiators)

For more information, contact

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Solar Electric Propulsion Tug