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THE ISOTOPE STIRLING POWER SYSTEM ENERGY MANAGEMENT

Abstract

The Stirling Radioisotope Generator (SRG) is a new radioisotope power system for deep space missions. Stirling cycle engines are used to convert the heat flux from the natural decay of radioisotope to electrical power. With the analysis of thermophysical properties of the isotope heat source and characteristics of Stirling cycle engines, the requirement of the heat source and the distribution of temperature of the SRG are obtained in different load states. Then the energy flow distribution and the control strategy of the SRG are discussed. Furthermore the integrated design program of the isotope heat source and the Stirling thermoelectric conversion apparatus is proposed.