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SCALABLE CONTROLLER CONCEPTS FOR HIGH POWER NUCLEAR STIRLING SYSTEMS

Abstract

The European Space Agency (ESA) is developing a radioisotope-fueled heat source using Americium, ^{241}Am , under contract with multiple ESA member partners. This heat source development is part of a larger development effort for a European-designed Radioisotope Power Generator. Lockheed Martin Space Systems Company, sponsored by the Department of Energy (DOE) with pass-through funding by the National Aeronautics and Space Administration (NASA), developed the Advanced Stirling Radioisotope Generator (ASRG) using two Plutonium fueled, ^{238}Pu , General Purpose Heat Sources (GPHS). This paper focuses on a study assessing the feasibility of integrating an Americium heat source into the existing ASRG design. The paper provides background information on the development of the ASRG, a description of the ASRG design, a description of possible ASRG design changes to accommodate an Americium heat source, and a prediction of the thermal and power performance of an Americium-fueled ASRG.

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