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A Design of a Modular Gphs-Stirling Power System for a Lunar Habitation Module

By Paul C. Schmitz

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 24 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. Lunar habitation modules need electricity and potentially heat to operate. Because of the low amounts of radiation emitted by General Purpose Heat Source (GPHS) modules, power plants incorporating these as heat sources could be placed in close proximity to habitation modules. A design concept is discussed for a high efficiency power plant based on a GPHS assembly integrated with a Stirling convertor. This system could provide both electrical power and heat, if required, for a lunar habitation module. The conceptual GPHS Stirling system is modular in nature and made up of a basic 5.5 KWe Stirling convertor GPHS module assembly, convertor controller PMAD electronics, waste heat radiators, and associated thermal insulation. For the specific lunar application under investigation eight modules are employed to deliver 40 KWe to the habitation module. This design looks at three levels of Stirling convertor technology and addresses the issues of integrating the Stirling convertors with the GPHS heat sources assembly using proven technology whenever possible. In addition, issues related to the high-temperature heat transport system, power management, convertor control, vibration isolation, and potential system packaging configurations to ensure...



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