

IAF SPACE EXPLORATION SYMPOSIUM (A3)
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THERMAL CONTROL SYSTEM ON LUNAR BASE

Abstract

The moon has always been a fantasy in space exploration. Due to the harsh conditions on the lunar surface, temperature control for humans and has been a major problem. In this paper, a concept is proposed used to regulate the lunar habitat interior temperatures with respect to time and to reduce the energy to do so. It is considered that the lunar bases already have internal heat loads, so no heating is required but the heat produced inside needs to be rejected out of the bases. This becomes difficult due to the variance in the external temperatures due to different locations, reaching 400K at the equator. A cooling system that uses radiators to reject heat waste into space and a photovoltaic array as power source is considered. For the energy storage systems, Li-Ion batteries are used which acts as an energy source system during the lunar night.