

TEC를 이용한 인공위성 열제어 시스템의 특성 고찰

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This study addresses the effectiveness of TEC(Thermoelectric cooler) application for spacecraft thermal control. The required radiator area and power consumption characteristics of active thermal control using TEC are compared with the passive control at BOL and EOL through unsteady thermal analyses by calculating external heat fluxes. When the component operating temperature is low enough in TEC active control, the required radiator area can be smaller than the passive thermal control. TEC also needs less power consumption than the passive control under the condition that the temperature of cooling parts is low enough and/or the design temperature margin of the components is narrow enough.