

SPACE POWER SYMPOSIUM (C3)  
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Author: Mr. Kunlin Cheng  
Harbin Institute of Technology, China

Dr. Duo Zhang  
Northwestern Polytechnical University, China

Prof.Dr. Jiang Qin  
Harbin Institute of Technology, China

Prof. Silong Zhang  
Harbin Institute of Technology, China

Prof. Wen Bao  
Harbin Institute of Technology, China

PERFORMANCE EVALUATION OF ELECTRICITY GENERATION SYSTEMS BASED ON  
SEMICONDUCTOR THERMOELECTRIC GENERATORS FOR HYPERSONIC VEHICLES

**Abstract**

The types and the characteristics of the waste heat on hypersonic vehicles and the application feasibility of thermoelectric generators (TEGs) for hypersonic aircrafts were discussed in this paper. Two thermoelectric generator models with isothermal heat source and variable temperature heat source were developed to predict the performance of the electricity generation systems on a hypersonic vehicle with different heat source. The thermoelectric efficiency variation with electric current, the temperature distribution of fuel and junctions, and the distribution of the thermoelectric figure of merit (ZT value) were described by diagrams. Besides, some improvements for a better performance were analyzed. The results indicate that the maximum values of thermoelectric efficiency are 5