



Power Optimizing of Alkali Metal Thermo Electric Convertor (AMTEC)

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Abstract

The static conversion systems for generating electricity are gaining importance in recent times because of newer applications of electricity like in spacecraft, hybrid-electric vehicles, military uses, domestic purposes etc. Of the many new static energy conversion systems that are being considered, one is the Alkali Metal Thermal Electric Converter (AMTEC). It is a thermally regenerative, electrochemical device for the direct conversion of heat to electrical power. There are two main components of AMTEC controlling its efficiency and power output. They are electrolyte and electrodes.

The electrode performance is related to the microscopic properties of the electrode materials, such as their grain growth. Grains of the electrode materials grow larger due to material diffusing between adjacent grains as the time of operation goes by. As a result, surface contact among the electrode grain is reduced.

With appropriate electrode material, the electrical potential can be utilized to drive an electrical current through a load more efficiently. In this work some electrode materials are examined, and results are reported.