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SYSTEM INVESTIGATION AND PARAMETRIC ANALYSIS OF A 110KN THRUST FOR NUCLEAR
THERMAL ENGINE(NTE)

Abstract

Nuclear Thermal Engine(NTE) has high specific impulse, and has been considered as a appropriate technology for Advanced Space Exploration. In order to evaluate Nuclear Thermal Engine parametrically , a numerical system based upon a ceramic-metallic (CERMET) nuclear reactor has been developed. Feasibility and characters of several system concepts have been discussed and compared, including closed expander cycle ,open expander cycle and hot bleed cycle. As a result, hot bleed cycle has been evaluated as the best cycle system . Parameters of turbopump and thrust chamber have been calculated and analyzed . Performance factors such as thrust, specific impulse, chamber pressure and thrust mass ratio have also been analyzed.