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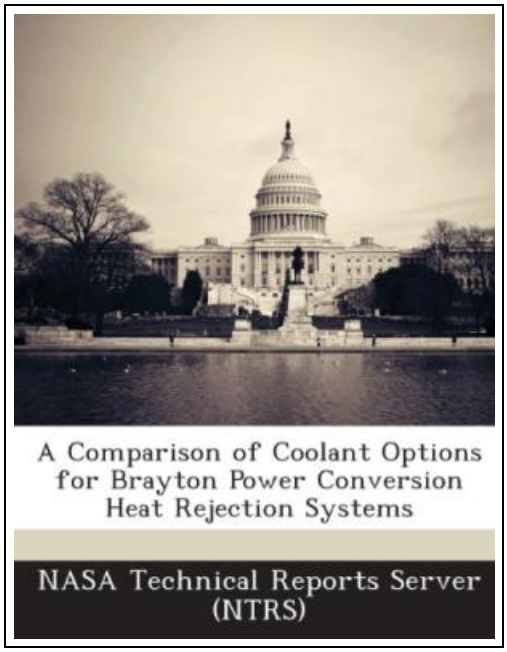

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BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 26 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.This paper describes potential heat rejection design concepts for Brayton power conversion systems. Brayton conversion systems are currently under study by NASA for Nuclear Electric Propulsion (NEP) and surface power applications. The Brayton Heat Rejection Subsystem (HRS) must dissipate waste heat generated by the power conversion system due to inefficiencies in the thermal-to-electric conversion process. Sodium potassium (NaK) and H2O are two coolant working fluids that have been investigated in the design of a pumped loop and heat pipe space HRS. In general NaK systems are high temperature (300 to 1000 K) low pressure systems, and H2O systems are low temperature (300 to 600 K) high pressure systems. NaK is an alkali metal with health and safety hazards that require special handling procedures. On the other hand, H2O is a common fluid, with no health hazards and no special handling procedures. This paper compares NaK and H20 for the HRS pumped loop coolant working fluid. A detailed Microsoft Excel (Microsoft Corporation, Redmond, WA) analytical model, HRSOpt, was developed to evaluate the various HRS design parameters. It is capable of analyzing NaK or H2O coolant, parallel or series flow configurations, and numerous combinations of other key parameters (heat pipe spacing, diameter and radial flux, radiator facesheet thickness, fluid duct system pressure drop, system rejected power, etc.) of the HRS. This paper compares NaK against water for the HRS coolant working fluid with respect to the relative mass, performance, design and implementation issues between the two fluids. This item ships from La Vergne,TN. Paperback.

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