Mars Exploration (3)
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SUPERCRITICAL NUCLEAR HYBRID CYCLE FOR MARTIAN POWER SYSTEMS

Abstract

As we plan to make Mars habitable , the first step for establishment of any kind of facilities over there is to create a power source capable of operating under Martian conditions. In order to tackle this problem we intend to design a power plant for Mars based on the concept of closed supercritical carbon dioxide Brayton cycle , as we know there is high concentration of CO2 present in the Martian atmosphere (nearly 95Carbon dioxide having low values of critical pressure makes it easy to compress it directly into supercritical state and to heat it up before expansion. Also the efficiency of cycles depends on the temperature difference between the source and sink . The density of sCO2 is high so it makes the entire turbomachinery system small thus making the plant easy to carry to Mars. We plan to design the power plant in accordance with the Martian atmosphere in this paper.