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THERMAL DISTILLATION SYSTEM FOR DEEP SPACE MISSIONS: RATIONALE FOR THE CHOICE

Abstract

The paper compares technologies being developed for water recovery from wastewater for deep space missions. The advantage of using centrifugal thermal distillation is demonstrated. The work presents the results of testing a multi-stage centrifugal distiller with the use of a thermoelectric heat pump to reduce power consumption. The total duration of the tests was more than 700 hours, the amount of processed liquid (NaCl and urine) was more than 2000 kg. The study of three distillers and two thermoelectric heat pumps and a comparison of their results showed their identity, which characterizes high quality workmanship of these devices. The obtained operating parameters can be used to optimize the design and operating modes of the system.