

Humidifier Development and Applicability to the Next Generation Portable Life Support System

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A development effort at the NASA Johnson Space Center investigated technologies to determine whether a humidifier would be required in the Portable Life Support System (PLSS) envisioned for future exploration missions. The humidifier has been included in the baseline PLSS schematic since performance testing of the Rapid Cycle Amine (RCA) indicates that the RCA over-dries the ventilation gas stream. Performance tests of a developmental humidifier unit and commercial off-the-shelf (COTS) units were conducted in December 2009. Following these tests, NASA revisited the need for a humidifier via system analysis. Results of this investigation indicate that it is feasible to meet humidity requirements without the humidifier if other changes are made to the PLSS ventilation loop and the Liquid Cooling and Ventilation Garment (LCVG).

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