

NASA SBIR/STTR Technologies

High Efficiency, High Output PMWC (HEHO-PMWC)



PI: Jeff Johnson / Orbital Technologies Corporation – Madison WI

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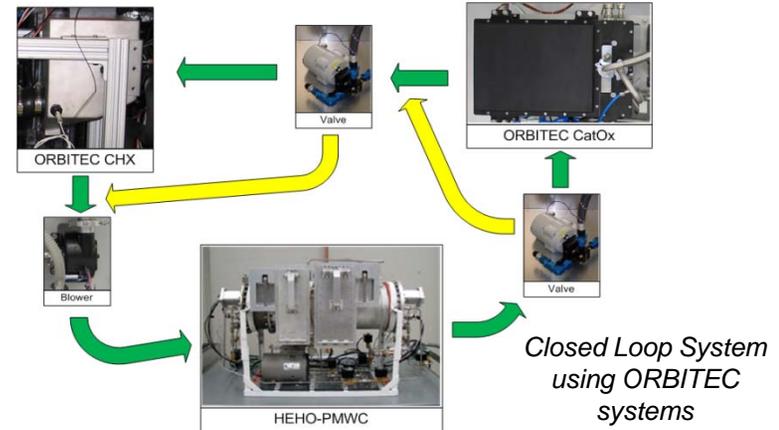
Identification and Significance of Innovation

The primary innovations of the HEHO-PMWC are:

1. heated forced air convection for drying pre-compaction
2. cooled forced air convection for cooling post-compaction,
3. placement of auxiliary subsystems/components to maximize thermal energy recycling,
4. design and material selection to minimize thermal energy losses, and
5. operational processes to maximize thermal energy recycling and minimize losses.

These innovations offer significant advantages over the existing PMWC in that they reduce thermal energy losses and increase processing throughput.

Expected TRL Range (1-9) at beginning and end of contract: 2/3



Technical Objectives and Work Plan

The Phase I effort will primarily consists of tests with the goal being to validate the thermal efficiency improvements of the HEHO-PMWC.

The following tasks will be conducted to achieve the technical objectives:

1. Demonstrate Efficiency and Throughput of HEHO-PMWC
 1. Define System Requirements
 2. Optimize Air Flow Geometry
 3. Optimize System Component Layout
 4. Evaluate Heating/Cooling Process
 5. Manufacture and Test Benchtop Simulator
2. Investigate HEHO-PMWC as a Hot-Air Dryer
3. Design Conceptual Phase II Full-Scale Demonstrator
4. Management and Reporting

NASA Applications

The HEHO-PMWC is a critical component for high volume reduction and water recovery for long duration manned space exploration trash management.

Non-NASA Applications

- The HEHO-PMWC will also play the same critical role for commercial aerospace companies with all the same benefits.

Contacts

Jeff Johnson, ECLSS Project Manager, johnsonj@orbitec.com

NON-PROPRIETARY DATA