

## NASA SBIR/STTR Technologies

### High Efficiency, High Output PMWC (HEHO-PMWC)

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Contract No: NNX10X47P



#### Identification and Significance of Innovation

The primary innovations of the HEHO-PMWC are:

1. Design and material selection minimize thermal energy losses and operational time between processed batches
2. Square chamber design creates more useful 16" square tile byproducts for possible radiation shielding
3. Innovative chamber actuating mechanism reduces volume
4. Chamber and chamber door design and use of surface treatments maximize accessibility and maintainability
5. Use of surface treatments and other design considerations allow the HEHO-PMWC to process brines

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

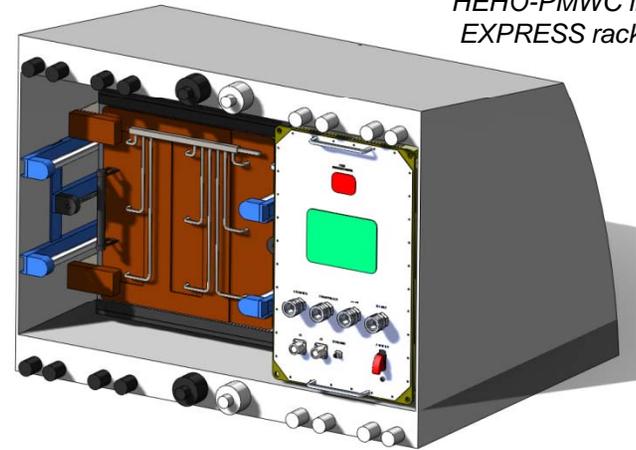
#### Technical Objectives and Work Plan

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 Brine Dryer
3. Design Conceptual Phase II Full-Scale Demonstrator
4. Management and Reporting

HEHO-PMWC in EXPRESS rack



#### 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. Additionally, the square tiles could be easily used for radiation protection inside inflatable habitats.

#### Contacts

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**NON-PROPRIETARY DATA**