

# NASA SBIR/STTR Technologies

H2.04-9273 - VTX HyHeat

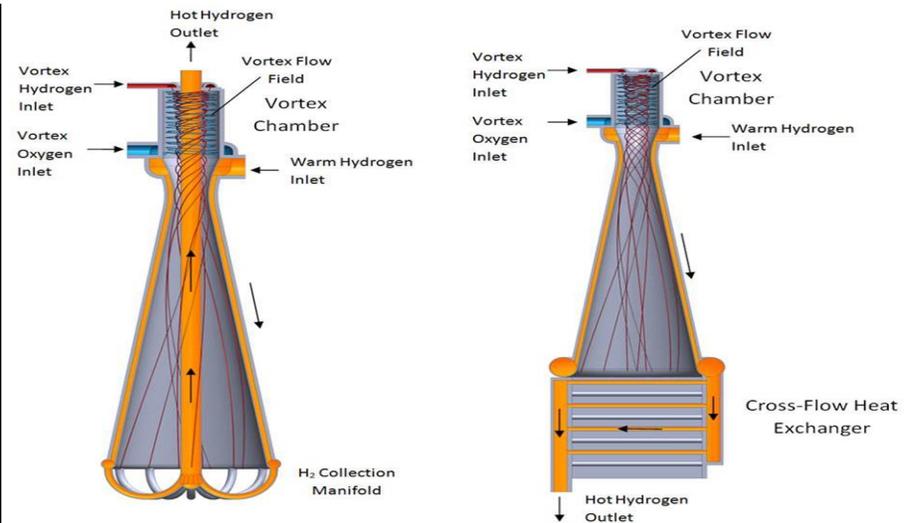


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## Identification and Significance of Innovation

NASA NTP development plans require facilities capable of the efficient non-nuclear generation of high temperature hydrogen flows. These are needed to enable safe, environmentally acceptable testing of components and engine systems. Long duration testing of up to 60 minutes is required. The proposed VTX HyHeat using ORBITEC's unique vortex engine as a heat source and a heat exchange system will provide this capability.



Estimated TRL at beginning and end of contract: ( Begin: 2 End: 6 )

## Technical Objectives and Work Plan

VTX HyHeat Technical objectives are: (1) Understand goals/objectives/requirements in context of NASA program plans and NASA/other applications; (2) Resolve any/all issues with respect to VTX and HyHeat options for physical and operational integration into a successful system; (3) Design, analyze, build subscale test/evaluation systems consistent with objectives 1 & 2; (4) Successfully test, demonstrate, and evaluate subscale systems that meet all Phase I requirements and provide a clear path to Phase 2/3.

The VTX HyHeat Phase I work plan consists of the following tasks: (1) Requirements definition; (2) Concept development system/technical analysis and design; (3) manufacture and assembly /integration of subscale test articles; (4) Testing, demonstration, and validation; (5) Phase 2/3 Project definition; (6) Project management and reporting. system/technical analysis and design; (3) Component manufacturing and assembly /integration; (4) Testing, demonstration, and validation; (5) Phase 2/3 Project definition; (6) Project management and reporting.

## NASA Applications

The success of NASA plans for NTP development for human missions to Mars is dependent upon the establishment of safe environmentally acceptable test facilities and operations. The test infrastructure must include the capability to produce extended duration flows of non-nuclear hot hydrogen to simulate NTP operation and collectin and recovery/containment of all exhaust products.. Our proposed project addresses this need.

## Non-NASA Applications

These applications include potential commercial ventures to Mars and other extraterrestrial bodies, potential DoD usage of NTP, and testing of high temperature materials/components for applications such as nuclear power plants, gas turbines

## Firm Contacts

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**NON-PROPRIETARY DATA**