NASA SBIR/STTR Technologies

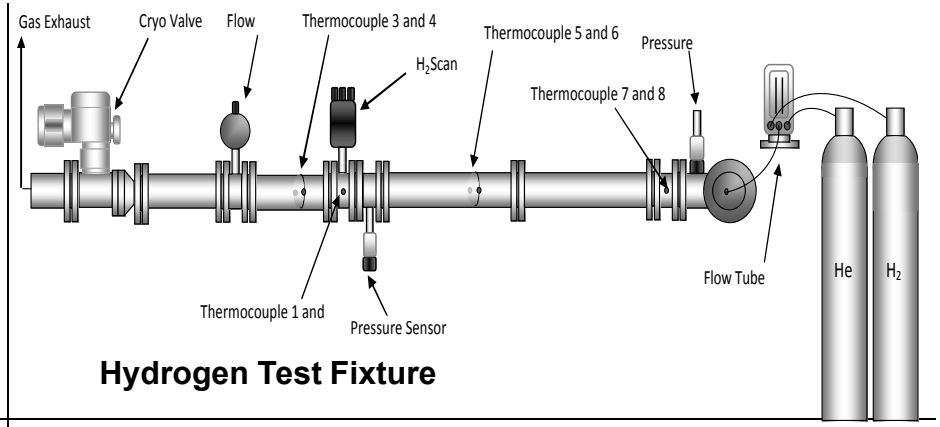
Proposal No. - T10.02-9952- Energy conservation and Sustainability, Technologies for Propellant Conservation

PI: William C. West
Radiance Technologies, Inc.
Hattiesburg, Ms 39402

Identification and Significance of Innovation

The Radiance/USM team will develop a H_2-He sensor configuration that will enable NASA to reduce He consumption. The sensor will be incorporated into an innovative standoff and capillary design that will allow the sensor to operate in a noninvasive fashion in the extreme cryogenic conditions experienced on an engine test stand

Expected TRL Range at the end of Ph I:TRL 4; PH II: TRL 6



Hydrogen Test Fixture

Technical Objectives

1. Identify sensors' limits of detection for H_2 in He.
2. Conduct and evaluate sensor conditioning, verification, and calibration procedures.
3. Develop accuracy of measurement techniques
4. Minimization response time & maximize accuracy
5. Identify the best sensor and installation option

Work Plan:

1. Reconfigure Setup to Accept Cryogenic Liquids
2. Determine Reliability in Cryogenic Conditions.
3. Run Pressure Tests at Low Temperatures.
4. Test Standoff and Capillary Designs.
5. Test Delay Valve to Satisfy Requirements.
6. Determine Optimum Configuration
7. Test for Accuracy & Repeatability.

NASA Applications:

He purge of H_2
Liquid/vapor detection scenarios
Thermodynamic condition monitoring
Mass gauging

NON- NASA Applications in addition to the above

Commercial liquid hydrogen rocket testing
Research applications involving the storage and flow of liquid hydrogen
Submarines using liquid hydrogen

Firm Contact

William C. West, Principal Investigator
601-310-9687
Email: bwest@radiancetech.com

NON-PROPRIETARY DATA