BRIEFING CHART

NASA SBIR/STTR Technologies
Very Low-cost, Rugged High Vacuum System for Mass Spectrometers
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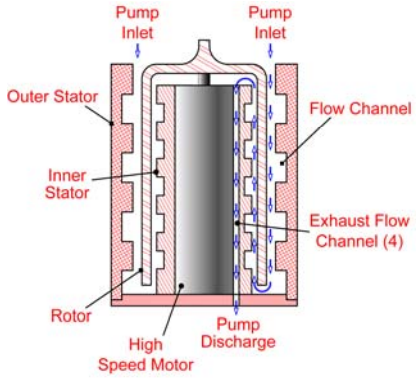
Identification and Significance of Innovation

- New, miniature mass spectrometers are being developed at NASA for use in planetary and atmospheric exploration.
- DHS and DoD use similar detectors for toxic industrial chemicals, biological warfare agents, and explosives.
- Low-cost, rugged vacuum systems are needed to support all of the above applications in space and on the ground.
- Creare proposes to design, build, test, and deliver an extremely low-cost and rugged high vacuum system whose performance is optimized for miniature mass spectrometers used in space and on Earth



Schematic Illustration of an Extremely Low-Cost and Rugged Molecular Drag Pump for Mass Spectrometer Applications in Space and on Earth

Phase II Technical Objectives

- Develop long-life, rugged, high-speed motor.
- Design turbomolecular, molecular drag, and hybrid pumps.
- Demonstrate performance of pump designs.
- Verify desired lifetime of pump/motor under realistic environmental conditions.

Phase II Work Plan

Task 1—Optimize High-Speed Motor
Task 2—Develop High Vacuum Pumps
Task 3—Demonstrate Pump Life Time
Task 4—Test Pump Performance
Task 5—Manage and Report

NASA Applications

- Planetary exploration initiatives.
- Atmospheric measurement instrumentation.
- Health and safety near launch facilities.

Non-NASA Applications

- Portable/remote mass spectrometers used to detect chemical and biological weapons, toxic industrial chemicals, and explosives.
- Military and homeland security instrumentation.

Contacts

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