

# NASA SBIR/STTR Technologies

Wireless, Low Mass, High Sensitivity Sensing Sheet for  
Structural Sensing and Long Term Analysis

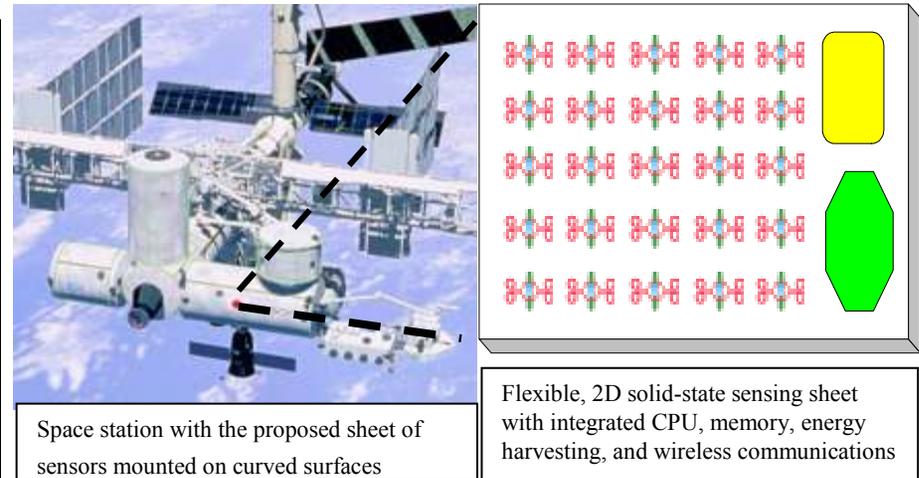


Radiation Monitoring Devices Inc.– 44 Hunt St., Watertown, MA 02472

Proposal No: X5.04-8950

## Identification and Significance of Innovation

RMD, in collaboration with Wyle Laboratories, proposes a revolutionary structural sensing and NDE imaging and analysis technology based on a flexible sensing sheet containing a two-dimensional array of microscopic, solid-state eddy current sensors. The modular sensing sheet could be added to the spacecraft either while in space or prior to launch. The sensing sheet will be thin (approximately 100 um thick and) and highly flexible so that it can be mounted to curved surfaces. The arrays can be affixed underneath thermal insulation, paint or other coatings, and be left in place for the duration of a mission. If there is a suspected problem area during a mission, a sensing sheet could be mounted to the surface requiring inspection inside and outside of a spacecraft. **Estimated: TRL 2 - TRL 4**



## Technical Objectives and Work Plan

**Model and simulate a 2D sensor module**

**Fabricate or procure test samples**

**Fabricate prototype flexible sensor arrays**

**Develop a laboratory test and evaluation system**

**Test and compare the sensing sheet with a commercial ECT single channel system**

## NASA and Non-NASA Applications

The technology will enable NASA to perform structural inspection of minute defects and aging effects in advanced metal alloys that that cannot be inspected with existing NDE technology. The proposed NDE technology will be useful for inspecting flight surfaces, fuel tanks, engine casings, castings, hydraulic lines and other components. The sensing arrays will be modular, low cost and perform without significant use of command system power or computers. Potential inspection applications include: Pipelines, heat exchangers, aerospace and aviation components, primary metals and foundries, automotive and transportation, chemical and petrochemical industries and power generation.

## Firm Contacts

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**NON-PROPRIETARY DATA**