

# Technology Opportunity

## Electronic Systems/Components

## Multisensor Array

The National Aeronautics and Space Administration (NASA) seeks to license its Multisensor Array technology. Developed at the John F. Kennedy Space Center, Florida, this array reduces the need for and costs of sensor calibration and periodic maintenance while significantly extending the life of the transducer when compared to a single-sensor system. The technology utilizes a unique algorithm to determine the health of a transducer employing several nearly identical sensing elements in a cluster.



### Potential Commercial Uses

The Multisensor Array technology is particularly suited to Microelectromechanical Systems (MEMS) applications where accuracy, reliability, and low transducer failure rates are essential.

Applications of this technology include:

- Medical products (especially chronic implantable sensors).
- Monitoring of semiconductor processes.
- Mass-flow sensors.
- Optical cross-connect switches.
- Pressure and temperature sensors.

### Benefits

- Can generally be applied to any sensor array or cluster.
- Reduces calibration and periodic maintenance costs.
- Allows higher confidence in sensor measurements based on statistical average of multiple sensors.
- Extends life of the array compared to a single-sensor system (for a user-defined confidence level).
- Codes easily and simply onto a microprocessor.
- Improves fault tolerance.
- Lowers failure rates.
- Has low measurement drift.





## The Technology

The Multisensor Array was designed to help reduce the costs and time associated with removal, calibration, and reinstallation of numerous transducers on Space Shuttle launch pads. The sensor array is composed of several identical sensor elements arranged in close physical proximity, all exposed to the same physical phenomena. An algorithm compares measurements of all elements in the sensor cluster, determines which are reliable (based on both current and past reliability), and delivers one output value that is an average of all the elements, each weighted by its reliability. MEMS sensors are particularly suited to this application, as potentially hundreds of them could be placed in a very small area, thereby providing numerous measurements at essentially one point.

Simulations have demonstrated that these clusters can monitor their own health and estimate their own remaining lifetimes. Additionally, these clusters have lifetimes up to three times that of a single element, with measurements that are lower in error than those of a single-sensing element.

## Options for Commercialization

NASA seeks qualified companies to commercialize the Multisensor Array technology. This and other technologies are made available by the KSC Technology Commercialization Office through a variety of licensing and partnering agreements. These include patent and copyright licenses, cooperative agreements, and reimbursable and nonreimbursable Space Act Agreements.

## Contact

If your company is interested in the Multisensor Array technology or if you desire additional information, please reference Case Number KSC-12221 and contact:

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## Commercialization Checklist

- ✓ Patent pending
  - U.S. Patent
  - Copyrighted
- ✓ Available for licensing
  - Available for no-cost transfer
  - Seeking industry partner for further codevelopment

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