



# PSI Heritage

Physical Sciences Inc. was founded in 1973. Its heritage is the Avco Everett Research Laboratory, now a division of Textron Corp. Today, PSI is a 100% employee-owned company with over 180 employees that has diversified from an R&D organization to a broadly based technology development and commercialization organization.

## Goal

PSI bridges the gap between applied research and systems integration in the development and deployment of technology for our government and commercial customers.

## Core Competencies

PSI has a highly interdisciplinary staff with advanced degrees in chemistry, biology, physics, applied physics, electrical engineering, aeronautical engineering, mechanical engineering, and materials science. We are structured to enable cross-disciplinary collaboration between our scientists and engineers and to manufacture solutions to our customers' technical problems. Specific core competencies include: passive remote sensing, active remote sensing, ranging, and CBRNE detection technologies.

## Leadership Statement

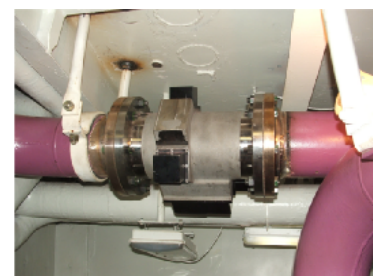
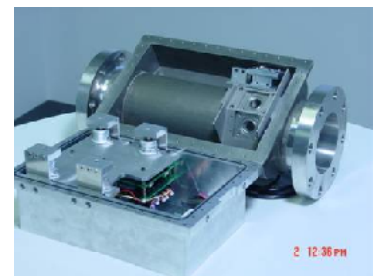
PSI has an international reputation for technical excellence and innovation. We have successfully developed and transitioned advanced technologies to support the missions of the Department of Defense, NASA, and many commercial partners. We are dedicated to the application of scientific and engineering innovation to solve technological problems. We perform product development to manufacturing prototype and ultimately transition it to the military and commercial market sectors through manufacturing or licensing.

## Products

The natural evolution of Physical Sciences' R&D effort encourages the transition of the technology to support the missions of the Department of Defense, NASA, and many commercial partners. Following are examples of some recent PSI developed technologies now undergoing insertion into DoD missions and commercial applications.

### Fuel Contamination Monitor

The In-Line Fuel Monitor provides real-time measurement of water and particulate contamination levels in fuel distribution systems aboard Navy ships. Qualified for both jet fuel (JP-5) and marine diesel (F-76), the internal laser-based sensing system responds in seconds to changes in the fuel contamination levels, and provides fuel quality reports over the ship's network to operator control workstations. This innovation effectively reduces work load by up to 3200 hours per month, translating to an annual savings of nearly \$1 million per carrier. PSI has supplied approximately 100 Fuel Monitor systems (National Stock Number), for installation on aircraft carriers (both CVN-71 class and CVN-78 class), DDG-1000, and the Littoral Combat Ship.

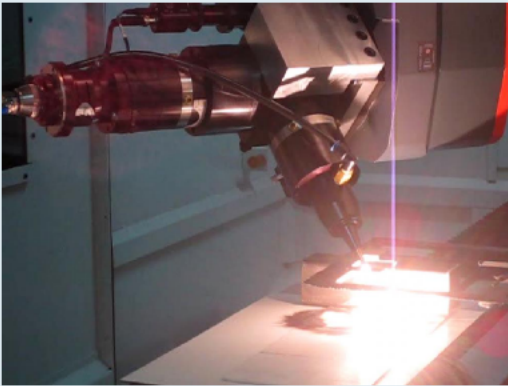


PSI In-Line Fuel Monitor installed on the USS Theodore Roosevelt (CVN-71)



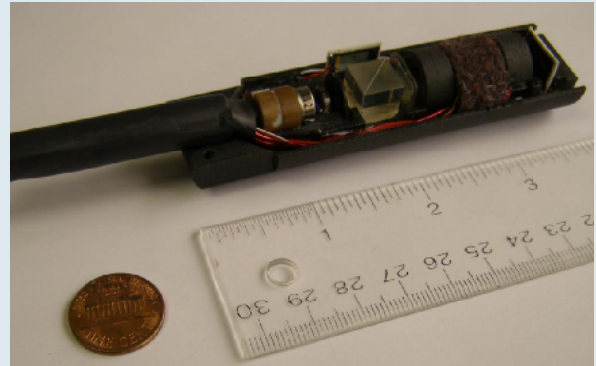
## Seawater Extinction Monitor

PSI is currently developing a compact, handheld optical attenuation meter for shipboard deployment and operation. This sensor will provide data to support deployment decisions for the AN/AES-1 Airborne Laser Mine Detection System (ALMDS). It will also support development of a worldwide database of oceanographic properties. The work is sponsored by NAVSEA/PEO LCS Code PMS-495.



## Laser Machining Tool

PSI has developed a laser machining tool to replace diamond tools for finishing high temperature composite structures on the Joint Strike Fighter. PSI delivered the tool to the Prime Contractor. The tool is estimated to yield savings of \$22M/year in tooling costs.



## Magnetometer

PSI has developed a compact, light-weight, low-power, sub-nanoTesla-sensitivity optical magnetometer for improved object detection from airborne platforms.



## High Temperature Toughened Ceramic Matrix Composites

PSI has developed high temperature, toughened ceramic matrix composites for advanced propulsion applications in combustion flow paths and vehicle structure, control surfaces and leading edges.



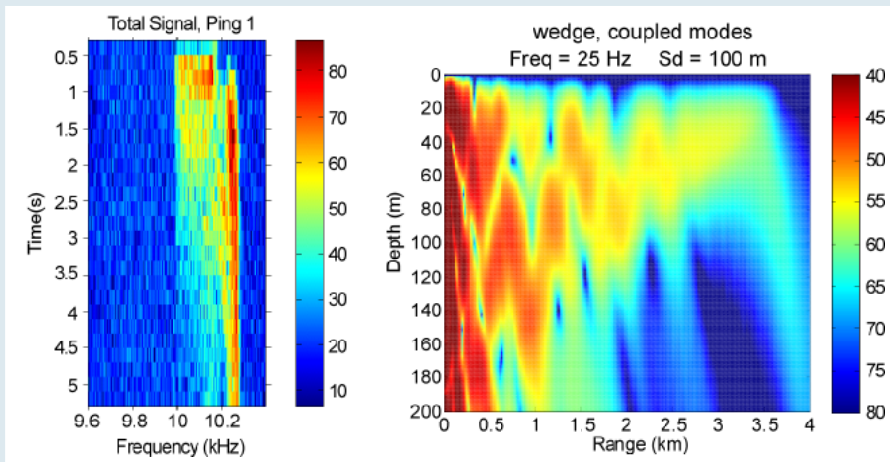
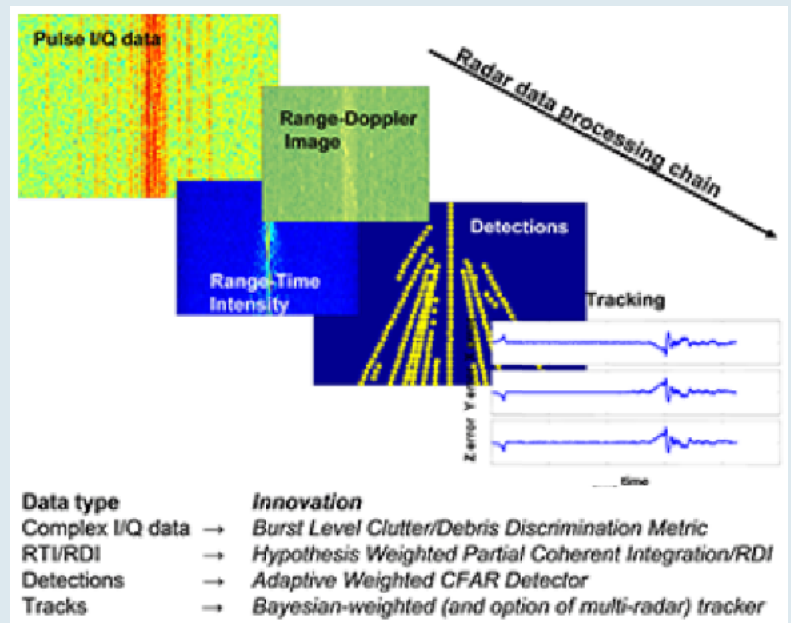
## Surface Contamination Monitor

PSI has developed a hand-held sensor to detect contamination species on critical surfaces, and to characterize curing parameters.

# Technologies

## Radar Signal Processing

For over a decade, PSI has been deeply involved in signal processing and RF/IR sensor data analysis work for the Aegis Ballistic Missile Defense program (Aegis BMD) including evaluation of raw data collected during flight tests, and direct support of the Aegis Weapon System 4.0.1 and 5.1 baselines. PSI has developed a capability to simulate post-intercept radar scenes with thousands of debris objects resulting from runs of high-fidelity physics codes. Together with a detailed model of the Aegis BSP signal processing chain, these tools have enabled testing of the current 4.0.1 and 5.1 RF Kill assessment functionality by large scale radar scene synthesis.



## Sonar Signal Processing

PSI has a strong portfolio of sonar signal processing analysis models and simulations and has been involved in advanced waveform and system design to enhance sonar performance against background noise, clutter, and reverberation. For over a decade, PSI has been developing advanced sonar signal processor architectures and algorithms for systems the MK54 Torpedo and Next Generation Countermeasures. PSI has the capability to model end-to end system performance in a variety of simulated environments. These tools have been used in support of numerous programs and studies.

## Contact

B. David Green, President and CEO

Physical Sciences Inc., 20 New England Business Center, Andover, MA 01810-1077

Phone: (978) 689-0003, Fax: (978) 689-3232, [www.psicorp.com](http://www.psicorp.com)