

Air Force

SBIR

Impact



Portable MultiGas Analyzer

Company:

Advanced Fuel Research, Inc.

Location:

East Hartford, CT

Employees:

14

CEO:

James R. Markham

Project Officers:

Captain Gina Graziano and Bruce J. Nielsen
AFRL Air Expeditionary Forces Technologies Division, Tyndall AFB, FL

Key Collaborators:

Paul Jalbert, Vincent Zaccardi and Donald Gardner, Jacobs/Sverdrup, Arnold Engineering Development Center Group, Arnold AFB, TN



The new MultiGas Analyzer (MGA), in a convenient shipping case, next to a traditional gas analysis system. The MGA measures more gases for a fraction of the traditional capital and maintenance costs.

Air Force Requirements:

Many Air Force programs require measurements of gas compositions and gas specie concentrations. However, to satisfy characterization and monitoring needs for hazardous and toxic chemicals, the majority of these programs would benefit from an advancement in measurement technology. Other branches of the DoD, and NASA, DoE and a large portion of commercial industry have similar characterization and monitoring needs, and all are calling for technology breakthroughs that result in "better, faster, and cost effective" products to fill these needs. Typically, what is called for is a rugged, reliable, on-location multi-component gas analyzing instrument that exhibits a fast response combined with the sensitivity to detect down to trace concentrations of the compound(s) of interest.

SBIR Technology:

The Air Force Small Business Innovation Research (SBIR) opportunity provided to Advanced Fuel Research, Inc. (AFR) stimulated technological innovation. Research and development on innovative optical designs, hardware designs, and software designs resulted in a package of new technology that was demonstrated to provide

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benefits to the Air Force. By way of field demonstrations, the innovations were proven. The Air Force accepted delivery of new technology at the conclusion of Phase II, put it into immediate service, and continues to reap the benefits of the new capabilities provided by this SBIR project.

A particular focus of this effort became to improve exhaust gas characterization and monitoring capabilities during Air Force development and testing of gas turbine (jet) engines. Significant SBIR collaboration took place between AFR and the Arnold Engineering Development Center (AEDC) at Arnold Air Force Base, TN, the Air Force's premier flight simulation test facility. AEDC's engine test facilities are used routinely for testing combustor and full propulsion systems including turbojet, turbofan, and ramjet air breathing engines. Gas phase emissions testing before flight is a key responsibility of AEDC. AFR advanced the AEDC/Air Force measurement capabilities, and the new technology is being pursued to become a new aerospace recommended practice to government and industry for the analysis and evaluation of gaseous emissions from aircraft engines. In support of this, the DoD appropriations bill for FY2002 included a Phase III earmark for the delivery of additional multigas analyzers to the Air Force.

Company Impact:

AFR sold the new technology to On-Line Technologies, Inc. (an SBIR generated product manufacturing/sales spin-off of AFR). On-Line Technologies incorporated the new technology into a key product line. The successful sales growth was a factor when the spin-off company was purchased by the large company MKS Instruments. The On-Line Products Group of MKS now benefits from a worldwide sales, service and distribution force. For exemplary achievement in commercializing technology developed in the SBIR program, AFR received the U.S. Small Business Administration's prestigious Tibbetts Award in year 2000.

Company Quotes:

"This project was a pleasure for AFR, not only for the successes in technology advancements and commercialization, but also for the opportunity to meet and work with Air Force experts at Tyndall Air Force Base and Arnold Air Force Base. The Air Force SBIR program has strengthened AFR's business."

James R. Markham
CEO
Advanced Fuel Research, Inc.

"It is exciting to work with small businesses that think outside-the-box, without the constraints that may plague big companies. These companies often deliver technical innovation that improves a process and reduces cost for an Air Force customer much faster than technology development through other RD&A programs."

Bruce Nielsen
AFRL Air Expeditionary Forces Technologies Division
SBIR Project Officer

SBIR

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