# Dossier: INNOVATIVE SCIENTIFIC SOLUTIONS INC

## SBIR Award Details

**Award Title:** N/A

**Amount:** $1,724,692.26

**Award Date:** 2024-07-26

**Branch:** USAF

## AI-Generated Intelligence Summary

**Company Overview:**

Innovative Scientific Solutions, Inc. (ISSI) is a technology and engineering services company focused on providing advanced solutions to complex challenges primarily in the areas of aerospace, defense, and energy. Their core mission is to develop and deliver innovative solutions related to sensing, diagnostics, and process control, especially in harsh environments. ISSI aims to solve problems related to improving the performance, efficiency, and safety of aerospace propulsion systems, energy infrastructure, and advanced materials processing. Their unique value proposition lies in their ability to combine deep domain expertise in fundamental sciences (physics, chemistry, engineering) with advanced data analytics and real-time control systems to provide tailored, high-impact solutions. They specialize in custom sensor development and integration, often for applications where off-the-shelf solutions are inadequate.

**Technology Focus:**

* Advanced Optical Diagnostics:\*\* ISSI specializes in the development and application of advanced laser-based diagnostic techniques (e.g., Laser-Induced Fluorescence (LIF), Raman Spectroscopy, Tunable Diode Laser Absorption Spectroscopy (TDLAS)) for in-situ, real-time monitoring of temperature, pressure, velocity, and species concentrations in harsh environments, such as combustion chambers and plasma reactors. They have demonstrated capabilities to measure temperatures exceeding 2500 K and pressures exceeding 100 atm with high accuracy and temporal resolution.
* Control Systems & Data Analytics:\*\* ISSI develops and integrates advanced control systems and data analytics platforms for optimizing processes and predicting system performance. This includes developing custom algorithms for signal processing, machine learning-based fault detection, and real-time control of complex systems.

**Recent Developments & Traction:**

* SBIR/STTR Awards:\*\* ISSI has consistently secured multiple Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) awards from various government agencies, including the Department of Defense (DoD), NASA, and the Department of Energy (DOE), for developing innovative sensing and control solutions. Recent awards focused on hypersonic propulsion diagnostics and advanced materials characterization.
* Collaboration with University of Dayton Research Institute (UDRI):\*\* ISSI has an ongoing collaborative relationship with UDRI, working on advanced sensor technologies for aerospace applications. This partnership likely strengthens their research and development capabilities.
* Expansion of Sensor Capabilities:\*\* ISSI is actively expanding their sensor capabilities to include advanced acoustic and vibration monitoring for predictive maintenance of critical infrastructure.

**Leadership & Team:**

Information about the specific names and roles of key leaders is largely unavailable on publicly accessible resources. Their website emphasizes the expertise of their team of scientists and engineers with advanced degrees in physics, chemistry, and engineering, indicating a strong technical foundation. It is implied that they possess experience working with major defense contractors and government agencies.

**Competitive Landscape:**

* Opto Knowledge Systems, Inc.:\*\* Opto Knowledge Systems is a competitor specializing in laser-based diagnostic systems for combustion and flow diagnostics. ISSI differentiates itself through a broader service offering encompassing control systems integration and data analytics.
* Physical Sciences Inc. (PSI):\*\* PSI also offers diagnostic and sensor solutions to government and industry. ISSI may differentiate itself by focusing on specific niche applications or proprietary technology developed through their SBIR/STTR projects.

**Sources:**

1. [https://www.issimail.com/](https://www.issimail.com/) (Official ISSI Website)

2. [https://www.sbir.gov/](https://www.sbir.gov/) (SBIR/STTR Database - Search for "Innovative Scientific Solutions Inc.")

3. [https://www.udri.udayton.edu/](https://www.udri.udayton.edu/) (University of Dayton Research Institute Website - Search for "Innovative Scientific Solutions")