# Dossier: FGC Plasma Solutions, Inc.

## SBIR Award Details

**Award Title:** N/A

**Amount:** $74,340.00

**Award Date:** 2023-12-08

**Branch:** USAF

## AI-Generated Intelligence Summary

**Company Overview:**

FGC Plasma Solutions, Inc. is a technology company specializing in the development and application of advanced plasma-assisted combustion technologies for aerospace, defense, and energy sectors. Their primary business focuses on improving combustion efficiency, stability, and emissions reduction in internal combustion engines, gas turbines, and other combustion systems. FGC Plasma Solutions aims to solve the critical problems of unstable combustion, high fuel consumption, and pollutant emissions that limit the performance and environmental impact of existing combustion technologies. Their unique value proposition lies in their patented plasma-assisted fuel ignition and flame stabilization techniques, which offer significant improvements in fuel efficiency, operability limits, and emission reduction compared to conventional combustion technologies, potentially enabling smaller, lighter, and more efficient engines with reduced environmental footprint.

**Technology Focus:**

* Plasma Assisted Fuel Ignition & Flameholding:\*\* Utilizes high-frequency plasma discharges to create controlled ignition kernels and stabilize flames, enabling reliable combustion of lean fuel mixtures and at high altitudes where oxygen levels are lower. Specific claims include extending lean blowout limits by up to 50% and reducing CO and NOx emissions.
* Pulsed Plasma Jet Ignition:\*\* Employs pulsed plasma jets to inject reactive species and heat into the combustion chamber, promoting faster and more complete combustion. Demonstrated improved cold start capabilities and altitude relight performance in engine testbeds.

**Recent Developments & Traction:**

* SBIR/STTR Awards:\*\* Awarded multiple Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) grants from the Department of Defense (DoD) and NASA to develop plasma-assisted combustion technologies for various aerospace and defense applications.
* Hypersonic Propulsion Development:\*\* Actively involved in research and development of plasma-assisted combustion for hypersonic propulsion systems, demonstrating improved flame stability and fuel efficiency at high speeds.
* NASA Partnership:\*\* In 2021, NASA reported on a successful collaboration with FGC Plasma Solutions utilizing plasma-assisted combustion to improve flame stability in jet engines using sustainable aviation fuels (SAF).

**Leadership & Team:**

* Dr. Alex Fridman:\*\* CEO. Leading expert in plasma physics and engineering with extensive research experience in plasma-assisted combustion. Professor at Drexel University with a focus on plasma applications.
* Gary Fridman:\*\* President. Previous experience in venture capital and business development.

**Competitive Landscape:**

* Plasma Processes, Inc.:\*\* While a broader plasma tech company, they also work with plasma-assisted combustion. FGC Plasma Solutions differentiates itself by focusing specifically on fuel ignition and flame stabilization for aerospace and defense applications, a more niche market.
* Conventional Combustion Technology Providers:\*\* Companies like GE Aviation and Pratt & Whitney are indirect competitors, but FGC offers an additive technology, which could enable the use of their technology with legacy hardware.

**Sources:**

* [https://www.fgcplasma.com/](https://www.fgcplasma.com/)
* [https://sbir.nasa.gov/node/75141](https://sbir.nasa.gov/node/75141)
* [https://www.drexel.edu/engineering/directory/people/fridman-alexander/](https://www.drexel.edu/engineering/directory/people/fridman-alexander/)
* [https://www.youtube.com/watch?v=K59j7w0mB18](https://www.youtube.com/watch?v=K59j7w0mB18)