# Dossier: PRECISION COMBUSTION, INC.

## SBIR Award Details

**Award Title:** N/A

**Amount:** $139,885.00

**Award Date:** 2023-12-04

**Branch:** NAVY

## AI-Generated Intelligence Summary

**Company Overview:**

Precision Combustion, Inc. (PCI) is a North Haven, Connecticut-based company specializing in developing and manufacturing catalytic combustion and chemical reactor technologies for clean energy, emissions control, and advanced power generation applications, with a significant focus on the defense and aerospace sectors. The company's core mission centers around providing innovative solutions for reducing pollutants, increasing fuel efficiency, and enabling compact, high-power density energy systems. PCI addresses critical challenges related to emissions reduction from aircraft engines, auxiliary power units, and other combustion systems used in military and commercial applications. Their unique value proposition lies in their Microlith® catalytic technology, which enables compact, efficient, and low-emissions combustion processes, differentiating them from conventional combustion technologies that often struggle to meet increasingly stringent environmental regulations and performance demands.

**Technology Focus:**

* Microlith® Catalytic Combustion Technology:\*\* PCI's core technology, Microlith®, employs a unique catalytic structure that allows for flameless, ultra-low emissions combustion of a wide range of fuels. This technology enables significant reductions in NOx, CO, and unburned hydrocarbons, exceeding stringent emission standards.
* Compact Reformers and Reactors:\*\* PCI develops compact fuel reformers and reactors based on their Microlith® technology for applications such as hydrogen production, fuel processing, and chemical synthesis. These systems are designed for high efficiency and reduced size and weight, making them suitable for mobile and distributed power generation applications.

**Recent Developments & Traction:**

* DoD Contracts for Aircraft Engine Emissions Reduction:\*\* PCI has received multiple Small Business Innovation Research (SBIR) and other contracts from the Department of Defense (DoD) to develop and demonstrate Microlith® technology for reducing emissions from aircraft engines, particularly for auxiliary power units (APUs). (Information extrapolated from various press releases/articles dating back several years and ongoing).
* Development of Compact Catalytic Combustors for UAVs:\*\* PCI has been actively involved in developing advanced catalytic combustors for unmanned aerial vehicles (UAVs), focusing on improving fuel efficiency and reducing noise and emissions. Specific projects focused on enabling longer flight times and reducing the environmental impact of UAV operations.
* Partnerships with Aerospace OEMs:\*\* While specific partnerships are often confidential, PCI is known to work with major aerospace original equipment manufacturers (OEMs) to integrate their Microlith® technology into new engine and power system designs. This is inferred from their participation in industry conferences and publications focusing on aerospace technology.

**Leadership & Team:**

* Robert A. Farrauto, Ph.D., Chairman:\*\* Dr. Farrauto is an expert in catalytic chemistry and materials science. (Information from PCI corporate website and industry publications).

**Competitive Landscape:**

* Reaction Engines:\*\* Reaction Engines, known for its SABRE engine technology, also develops advanced combustion systems. PCI differentiates itself through its focus on catalytic combustion and its Microlith® technology, offering a unique solution for ultra-low emissions and compact systems.
* Various other combustor manufacturers:\*\* Numerous companies produce combustion systems, but PCI's key differentiator is their Microlith® catalytic combustion technology which enables extremely low emissions without requiring additional aftertreatment systems. This technology distinguishes them from conventional combustion technologies that rely on flame combustion and subsequent emissions control measures.

**Sources:**

1. [https://www.precision-combustion.com/](https://www.precision-combustion.com/) - Official website

2. [https://www.sbir.gov/](https://www.sbir.gov/) - SBIR.gov (Search for Precision Combustion Inc. projects to find DoD grants)

3. [https://ntrs.nasa.gov/](https://ntrs.nasa.gov/) - NASA Technical Reports Server (search for publications mentioning "Precision Combustion Microlith")