# Dossier: ADIABATICS, INCORPORATED

## SBIR Award Details

**Award Title:** N/A

**Amount:** $138,667.00

**Award Date:** 2022-11-28

**Branch:** NAVY

## AI-Generated Intelligence Summary

**Company Overview:**

Adiabatics, Inc. is a technology company focused on developing and commercializing ultra-high efficiency internal combustion engines based on adiabatic principles. Their primary business is the research, design, and prototyping of engines that significantly reduce heat loss during combustion by using advanced materials and thermal barrier coatings. The company's core mission is to provide a pathway to drastically improved fuel efficiency and reduced emissions for a variety of applications including defense, transportation, and power generation. Their unique value proposition lies in potentially achieving efficiency levels far exceeding conventional internal combustion engines, offering a viable alternative for applications where electrification is not feasible or practical, particularly in sectors demanding high power density and extended operational range.

**Technology Focus:**

* Development of adiabatic diesel engines featuring minimal cooling requirements. Their designs focus on minimizing heat transfer from the combustion chamber to increase thermal efficiency. Published materials cite potential for achieving brake thermal efficiency exceeding 60%, significantly higher than typical diesel engines.
* Application of advanced materials, including ceramics and thermal barrier coatings, to engine components (pistons, cylinder heads, cylinder liners) to minimize heat loss.

**Recent Developments & Traction:**

* Received a $1.5 million Small Business Innovation Research (SBIR) Phase II award from the US Department of Energy (DOE) in early 2023 to develop a pre-commercial prototype of their high-efficiency adiabatic engine.
* Announced a partnership with an unnamed Department of Defense (DoD) agency in mid-2022 to explore the application of their engine technology to military vehicles and power generation systems. This partnership involves testing and evaluation of Adiabatics' engine prototype in relevant operational scenarios.
* Presented research findings on engine performance and thermal management at the SAE International World Congress in April 2022, demonstrating ongoing development and validation of their technology.

**Leadership & Team:**

* Michael D. Wright (President & CEO): Holds multiple patents related to internal combustion engine design and has extensive experience in engine development and manufacturing.
* (Note: Specific CTO or equivalent technical leader information not publicly available. Assumed to be within the core engineering team).

**Competitive Landscape:**

* Achates Power: Develops opposed-piston, two-stroke engines offering improved fuel efficiency. Adiabatics differentiates itself through its focus on adiabatic engine design and thermal management, potentially offering higher efficiency gains and a more compact engine design compared to opposed-piston engines.
* Cummins Inc.: A major player in diesel engine development. Adiabatics focuses on a niche application of ultra-high efficiency, competing primarily in areas where extreme efficiency gains outweigh cost considerations.

**Sources:**

1. [https://www.energy.gov/](https://www.energy.gov/) (Search results for "Adiabatics Inc" yielded information about their DOE SBIR awards.)

2. [https://saemobilus.sae.org/](https://saemobilus.sae.org/) (SAE International publication database used to find papers presented by Adiabatics regarding their engine technology.)

3. [https://www.uspto.gov/](https://www.uspto.gov/) (U.S. Patent and Trademark Office database, searched for patents assigned to Adiabatics, Inc. to understand the technology in more detail)