# Dossier: Concepts NREC, LLC

## SBIR Award Details

**Award Title:** N/A

**Amount:** $1,244,301.00

**Award Date:** 2024-06-05

**Branch:** USAF

## AI-Generated Intelligence Summary

**Company Overview:**

Concepts NREC, LLC is a leading provider of turbomachinery design, engineering, manufacturing, testing, and software solutions. Its primary business is to develop and deliver innovative, customized solutions for complex rotating machinery challenges in various industries, including aerospace, defense, energy, and industrial manufacturing. The company's core mission is to enable its clients to achieve superior performance, efficiency, and reliability in their turbomachinery applications. They aim to solve problems related to aerodynamic and hydrodynamic design, stress analysis, vibration control, materials science, and advanced manufacturing techniques, often tailored to extreme environments and demanding performance requirements. Their unique value proposition lies in their end-to-end capabilities, encompassing conceptual design, advanced analysis, prototyping, manufacturing, and validation testing, all supported by their proprietary software suites, including the Agile Engineering Design System®. This vertically integrated approach allows them to offer optimized, customized solutions with significantly reduced development cycles and improved performance compared to relying on disparate vendors or off-the-shelf components.

**Technology Focus:**

* Turbomachinery Design Software:\*\* Concepts NREC offers a comprehensive suite of software (Agile Engineering Design System®) for the design, analysis, and optimization of turbomachinery components, including compressors, turbines, pumps, and expanders. This includes modules for aerodynamic design (AxCent®, Vista TF), stress analysis (Pushbutton FEA®), and computational fluid dynamics (CFD).
* Advanced Manufacturing & Testing:\*\* They provide manufacturing services, including precision machining, additive manufacturing (3D printing) of metal components (specifically, investment casting patterns) and testing facilities capable of performance mapping and validation of turbomachinery designs. These facilities allow for testing in controlled environments, simulating real-world operating conditions to ensure performance and durability.

**Recent Developments & Traction:**

* US Navy CRADA:\*\* In December 2022, Concepts NREC announced a Cooperative Research and Development Agreement (CRADA) with the U.S. Navy's Naval Surface Warfare Center Philadelphia Division (NSWCPD). The CRADA aims to enhance the performance and resilience of marine turbomachinery for naval applications, specifically addressing challenges associated with cavitation and erosion.
* DOE SBIR Award:\*\* In 2023, Concepts NREC was awarded a Small Business Innovation Research (SBIR) grant from the Department of Energy for advancements in turbomachinery for renewable energy applications, focusing on novel designs to improve efficiency. (Note: Specific amount unavailable from accessible sources).
* Additive Manufacturing Expansion:\*\* Concepts NREC continues to enhance its additive manufacturing capabilities, specializing in creating investment casting patterns for complex turbomachinery components, reducing lead times and improving design flexibility.

**Leadership & Team:**

* Peter G. Koch:\*\* President. Experience in leading engineering and manufacturing organizations, including roles focused on product development and market expansion.
* (Unable to find specific CEO/CTO from accessible sources. Leadership details are limited.)\*\*

**Competitive Landscape:**

* Ansys:\*\* While Ansys provides simulation software, Concepts NREC differentiates itself through its vertically integrated approach, offering not only software but also design, manufacturing, and testing services tailored specifically to turbomachinery.
* Elliott Group:\*\* Elliott Group provides turbomachinery products and services. Concepts NREC differentiates itself by focusing on highly customized and innovative solutions, often addressing niche applications and offering a full spectrum from design to testing.

**Sources:**

1. [https://www.conceptsnrec.com/](https://www.conceptsnrec.com/)

2. [https://www.conceptsnrec.com/news/conceptsnrec-collaborates-with-us-navy-on-marine-turbomachinery](https://www.conceptsnrec.com/news/conceptsnrec-collaborates-with-us-navy-on-marine-turbomachinery)

3. [https://www.sbir.gov/](https://www.sbir.gov/) (Used for general SBIR information, although specific award details not directly linked.)