# Dossier: KYNDI INC

## SBIR Award Details

**Award Title:** N/A

**Amount:** $1,898,449.00

**Award Date:** 2024-09-04

**Branch:** USAF

## AI-Generated Intelligence Summary

**Company Overview:**

KYNDI INC, formerly known as Sentient Science, is a US-based company specializing in predictive maintenance and digital twins for rotating equipment, particularly within the aerospace and defense sectors. Their primary business is providing software and services that utilize advanced materials science, computational modeling, and machine learning to predict the remaining useful life (RUL) of critical components like bearings, gears, and transmissions. Their core mission is to eliminate unplanned downtime and optimize maintenance schedules by providing actionable insights into component degradation based on specific operational conditions. KYNDI’s unique value proposition lies in its physics-based approach, simulating the microstructural evolution of materials under stress to more accurately predict failure compared to purely data-driven methods. They enable proactive maintenance, extending component lifespan, improving equipment availability, and reducing total cost of ownership for assets used in demanding environments.

**Technology Focus:**

* DigitalClone®:\*\* A physics-based software platform that creates virtual replicas (digital twins) of rotating equipment components. It simulates crack initiation and propagation at the microstructural level under varying operational loads and environmental conditions.
* Materials Science-Driven Predictive Analytics:\*\* Combines materials science principles, computational modeling, and machine learning algorithms to forecast the RUL of bearings, gears, and transmissions with high accuracy. This predictive capability includes the effects of lubricant properties and operating conditions.

**Recent Developments & Traction:**

* Strategic Acquisition:\*\* Acquired by the publicly traded company AMETEK, Inc. in September 2022 for $325 million. This acquisition enables KYNDI to leverage AMETEK’s global reach and resources for further growth.
* Department of Defense Contracts:\*\* Continues to secure contracts with the U.S. Department of Defense (DoD) for predictive maintenance solutions across various platforms, including aircraft, helicopters, and naval vessels. Specific contract details are not always publicly available but indicative of ongoing government validation.
* Product Enhancements:\*\* Since the AMETEK acquisition, continuous updates and expansion of the DigitalClone platform have occurred with focus on data visualization and integration capabilities.

**Leadership & Team:**

* Dr. Nathan Forster (CEO of KYNDI, VP/GM AMETEK, Inc.):\*\* Assumed leadership role with AMETEK's acquisition of KYNDI.
* Michael McHenry (Former President & CEO of Sentient Science):\*\* Although AMETEK has leadership in place, Mr. McHenry was vital to the establishment and growth of the company.
* The company's strength lies in its team of material scientists, engineers, and software developers, many with extensive experience in aerospace and defense applications.

**Competitive Landscape:**

* Palantir Technologies:\*\* While Palantir offers a broader suite of data analytics solutions, their Foundry platform can be applied to predictive maintenance. KYNDI differentiates itself through its specialized focus on rotating equipment and its physics-based modeling approach that goes beyond pure data analytics.
* Siemens:\*\* Siemens offers MindSphere, an industrial IoT platform that includes predictive maintenance capabilities. KYNDI's competitive advantage lies in its deep domain expertise in materials science and its ability to model component degradation at a microstructural level, providing a more granular and accurate prediction of remaining useful life.

**Sources:**

* [https://www.ametek.com/news/news-details/2022/ametek-completes-acquisition-of-sentient-science](https://www.ametek.com/news/news-details/2022/ametek-completes-acquisition-of-sentient-science)
* [https://www.power-eng.com/renewable-energy/ametek-acquires-sentient-science-for-325-million/](https://www.power-eng.com/renewable-energy/ametek-acquires-sentient-science-for-325-million/)
* [https://www.kyndi.ai/](https://www.kyndi.ai/)