

Topic: N162-097

CAMX Power LLC

Non-Contact Torque Sensor for Unmodified Composite Shafts and Non-Ferrous Metal Shafts

CAMX Power Optical Torque Sensor is a non-contact sensor that measures the torque, speed and position of a variety of unmodified rotating shafts. The torque sensor is in development through a Navy SBIR contract in support of the Navy F/A-18 Hornet/Super Hornet program but has broad applications across the DoD and commercial systems with rotating shafts. These sensors enable predictive maintenance and optimization to reduced operating cost, increased performance and improved safety and reliability. CAMX Power, with our sister company TIAX, seek to partner with a major Defense, Aerospace, Transportation, Energy or Manufacturing Equipment company to demonstrate this capability in an operational environment.

Technology Category Alignment:

Advanced Electronics

Air Platforms

Energy & Power Technologies

Maintainability/Sustainability

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SYSCOM: NAVAIR

Contract: N68335-18-C-0272

 Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N68335-18-C-0272

Department of the Navy SBIR/STTR Transition Program

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NAVAIR 2018-694

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WHO

SYSCOM: NAVAIR

Sponsoring Program: PMA-265

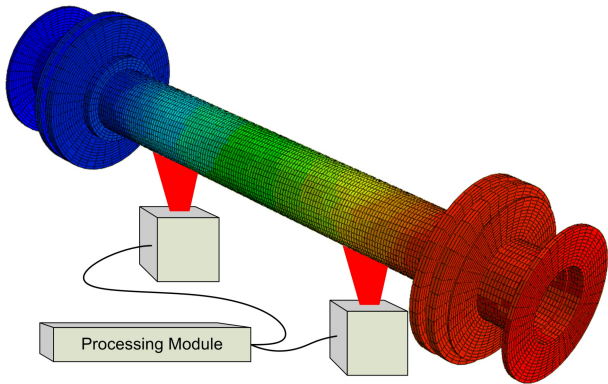
Transition Target: F/A-18
Hornet/Super Hornet

TPOC:
(301)757-2504

Other transition opportunities: While the proposed program targets utility in the F/A-18, CAMX Power expects the flexible and easily adaptable nature of the Non-Contact Torque Sensor technology to provide value in wide ranging rotating shaft applications.

Part of our transition strategy will be to look for applications with lower transition risk to prove out the technology in an operational setting.

Potential applications include ground-based and shipborne turbomachinery, in addition to general-purpose rotating machinery testing.



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WHAT

Operational Need and Improvement: An easily integrated, non-contact torque monitoring capability would allow precise monitoring of torque on rotating shafts in equipment that is ubiquitous across the Navy. Data from these sensors across a range of systems that could number in tens of thousands would enable predictive maintenance and optimization of rotating shaft equipment.

Specifications Required:

- Accommodates shafts between 2 and 5 inches in diameter, rotating at up to 18,000 RPM
- Achieves accuracy of 2% full scale, data rates of 5 kHz
- Operates at temperatures -25C to +80C

Technology Developed: The Non-Contact Torque Sensor measures the torque, speed and position of rotating shafts, enabling predictive maintenance and optimization to reduce operating cost, increase performance and improve safety and reliability.

Warfighter Value: The Non-Contact Torque Sensor would enable predictive maintenance and optimization of rotating shaft equipment resulting in cost savings in predictive maintenance, increased efficiency resulting in fuel savings, and improved safety and reliability by monitoring out-of-tolerance performance and taking mitigation steps to avoid potentially catastrophic failures.

WHEN

Contract Number: N68335-18-C-0272 **Ending on:** April 11, 2020

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Integrated benchtop demonstration of concept	N/A	Demonstrate feasibility of concept	4	January 2018
High fidelity breadboard system tested on high speed spin rig at CAMX Power	Low	Demonstrate functionality of concept	5	April 2019
Final form factor prototype tested on drive shaft test stand at Navy	Med	Demonstrate functionality of concept	6	April 2020

HOW

Projected Business Model: License technology to industrial sensor and/or rotating shaft machinery systems manufacturers.

Company Objectives: CAMX Power is interested in licensing this technology to a sensor manufacturer for joint marketing to manufacturers of rotating shaft equipment. We would also welcome the opportunity to work with an aircraft original equipment manufacturer to incorporate the technology into new or existing aircraft designs.

Potential Commercial Applications:

- Commercial ground-based, shipborne and airborne turbomachinery
- General purpose industrial and laboratory torque measurement