Department of the Navy SBIR/STTR Transition Program

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Topic # N092-118
Fiber Optic Connector Inspection Test Set
PROMET International Inc. dba Promet Optics

WHO

SYSCOM: NAVAIR

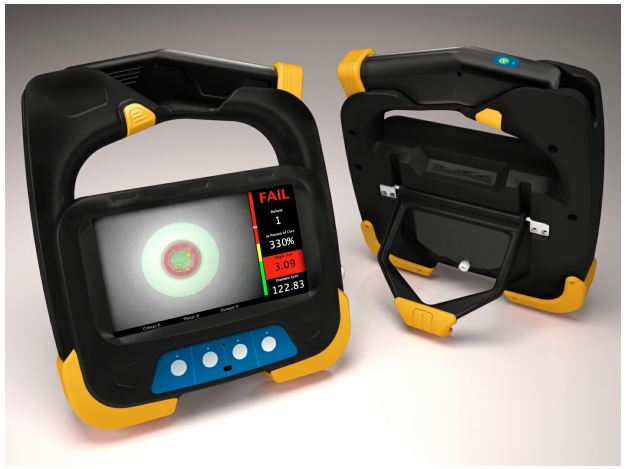
Sponsoring Program: JSF

Transition Target: Potential applications within PEO-LCS and other programs with extensive fiber deployment

TPOC:
(301)342-9115

Other transition opportunities: PMA 260, JSF, PEO-Submarines, PEO-Ships, PEO-Aircraft Carriers

Notes: Existing product line FiBO® systems are currently being used in critical applications by customers such as Lockheed Martin, NAVSEA, NAVAIR, General Dynamics Electric Boat, Boeing Rotocraft, Raytheon, Northrop Grumman and NASA.



WHAT

Operational Need and Improvement: Fiber optic connector inspection and cleaning procedures have proven to be problematic to implement and have caused undue stress on fleet maintenance staff. Current inspection procedures sometimes involve undue removal, test, and re-installation of weapons replaceable and aircraft subsystems.

Specifications Required: Proposed innovations should incorporate artificial intelligence and image processing. Developed solutions will need to meet the performance requirements of MIL-STD-28800F for environmental ruggedness and should give a simple "GO / NO-GO" decision indication on fiber optic terminus cleanliness and health. Fiber optic terminus health should be categorized by existing Naval Aviation fiber optic terminus endface malfunction coding for cleanliness and damage. The inspection device shall provide a reading within 20 seconds and the terminus health shall be categorized via a memory function.

Technology Developed: 3D Fiber Probe system incorporates a novel optical phase detecting (i.e., interferometric) technology into a very compact and robust imaging probe, designed to enable simultaneous defect and 3D surface geometry evaluation. The compact form factor of the Optical Probe is physically compatible with existing and proposed MIL standard connector designs. A portable data processing unit (DPU) receives and evaluates the optical data from the probe and displays clear "GO / NO-GO" results for the termini being tested.

Warfighter Value: A simple, compact and sophisticated "GO / NO-GO" inspection indicator device for use by maintenance technicians will help to increase the accuracy and reliability of fiber optic terminus endface inspection and reduce stress on maintainer by eliminating subjective visual evaluation and save time required for undue removal of subsystems for testing.

WHEN

Contract Number: N68335-11-C-0252 **Ending on:** September 15, 2016

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Alpha Prototype - Termini inspection demonstration	Med	Go/No Go evaluation capability	TRL 4	November 2012
Re-design optical integrated probe	Low	Eliminate design flaws from Alpha prototype	TRL 5	October 2014
Improve design for Beta Prototype	Low	Complete manufacturable Beta design	TRL 5	April 2016
Beta Prototype - Field Demonstration	Med	Field deployable functionality	TRL 6	October 2016

HOW

Projected Business Model: PROMET also has extensive experience with fiber optic connector inspection systems gained through ten years development of the FiBO® line of interferometric products. Designed and manufactured by PROMET, these systems are sold through direct and distribution channels to customers around the world. PROMET has a growing, worldwide network of over 25 distributors and strategic partners with direct ties to commercial and commercial aviation and telecommunication markets that have an immediate need for the proposed product

Company Objectives: PROMET has established capabilities to produce production quantities of commercial optical systems. Considering the small size of the proposed system, no significant facility upgrade would be necessary for increased volumes. Strategic partnerships will need to be developed with established electronics manufacturers to ensure quality and low cost of DPU.

Potential Commercial Applications: The 3D Fiber Probe will offer significant technical capabilities to the aviation maintenance community, as well as other tactical platforms across the military. The commercial data and telecommunications market is a perfect and very significant benefactor of the 3D Interferometer Probe. As NAVAIR's Common Aviation Support Equipment Program Office (PMA 260) manages the procurement, development and fielding of Common Aviation Support Equipment and Automatic Test Equipment it may have interest in a simple, compact and sophisticated "GO / NO GO" inspection indicator device.

Contact: Austin Van Sickle, Engineering Sales Manager
austin@prometoptics.com 6516004451