NAVY Transition Assistance Program

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N06-021 - Direct Measurements Inc.

Innovative Approaches to Serialize Aircraft Dynamic Components

NEED & CUSTOMER REQUIREMENT

Need: Austere budgets and operational demands dictate reduced costs to maintain readiness of aircraft. 90% of the Total Life Cycle (TLC) cost occurs after aircraft delivery. Achieving and sustaining readiness presents a major challenge to the entire Naval Aviation Team. Better tools to accurately assess structural health and recommended appropriate maintenance actions at the proper time are essential. Unique serialization of parts is critical to maintenance.

Value to the Warfighter: The DMI technology is designed to be an integral part of the NAVAIR Structural Health Monitoring System (SHUMS)program to ensure structural integrity and mission readiness of Naval Aircraft.

Operational Gap: The existing three-dimensional methods of serialization for dynamic components, e.g. stamping, engraving, and mechanically fastened data plates, result in degradation of the component through the introduction of stress risers. Other existing approaches using two-dimensional methods such as tagging exhibit limited durability as a direct result of the severe naval environment in which they operate, or lead to issues with moisture collection that results in corrosion. Current methods do not have duality of function with health monitoring

Customer Specifications: Tools compatible with NALCOMIS are needed to accurately assess structural health and recommend appropriate maintenance actions and to serialize Navy/Marine Corps aircraft components capable of operating in the naval, sand, rain and sea-salt environment.

Technology Description: DMI technology is an optical sensing technology utilizing software and gages which are serialized from 0 to 4 billion. The gages monitor accumulated damage in operating systems, measure strain and validate cold working.

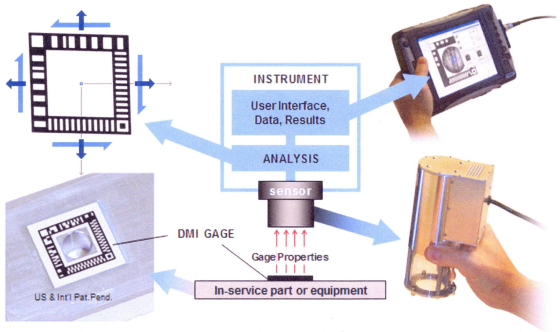
SPONSORSHIP of original SBIR/STTR Topic

SYSCOM: NAVAIR

Transition Target: H-60

Original Sponsoring Program: H1 Upgrades

TPOC Phone Number:
301 757 7632



TECHNOLOGY DEVELOPMENT MILESTONES (SBIR/STTR)

Milestone	TRL	Risk	Measure of Success	TRL Date
Investigate Laser Part Marking	8	Moderate	Developed data base and marking techniques	Jan 08
Serialization Marking, Fatigue Testing Guidance & Protective Coatings for Marks	8	Low	Demonstrated use of coatings and unique id principles by applying to aluminum surface	Jan 08
0-4 Billion Unique ID Square and Circular Mark with Glue-on gage and read gage	8	Low	Demonstrated by gluing mark on aluminum surface subjected to load and measuring strain	Jan 09
Cold Work Validation & Crack Detection with DMI Technology & ID Marking	8	Low	Conducted successful cold working validation tests using outside cold work vendor	1 Feb 10

Open contract: N68335-08-C-0033 ending 27 JAN 2010

TECHNOLOGY TRANSITION OPPORTUNITIES (PHASE III)

Other Potential Applications:
Due to the uniqueness of the DMI technology to both serialize components and assist in structural health monitoring on a variety of materials, including composites, the DMI system is applicable to aircraft, ships (surface and subsurface)and UAV platforms.
Cold working validation in the manufacturing and repair process where fastener holes are involved. Crack initiation and damage initiation detection and crack growth monitoring through stain measurement. Crack initiation detection in the barrels of fastener holes containing fasteners. Serialization of items and crack initiation measurement gages with unique ID numbers from 0 to 4 billion. These capabilities apply to any Navy platform as part of HUMS.

Business Model:
Direct Measurements will subcontract manufacturing and license technology in addition to doing some self marketing

Objective:
DMI is seeking potential partners in the acquistion and prime community to further demonstrate the technology and launch the DMI technology for commercial success.

Company: Direct Measurements Inc. **Contact:** Dr. Gregory Hovis **Email:** ghovis@directmeasure.com **Phone:** (706) 210-1698