

NAVY Transition Assistance Program

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N06-T011 - Thermal Wave Imaging, Inc.

Comprehensive Inspection of Turbine Hot Section Blades and Vanes Using Active Thermography

NEED & CUSTOMER REQUIREMENT

Need: At present, Quality Assurance of aircraft turbine blades requires a sequence of time consuming inspections, each requiring separate instrumentation and training. Some key inspections (e.g. cooling hole blockage) are qualitative and performed manually. A faster, more effective QA scheme is required.

Value to the Warfighter: Gas turbine programs would benefit from the reduction of inspection costs and unscheduled removals. Military users will also save maintenance costs by not scrapping costly hot section parts that are actually flight worthy and acceptable for additional use.

Operational Gap: Existing NDE/NDI methods for turbine hot sections are labor intensive, complex, expensive, and provide limited resolution, preventing detailed flaw detection, characterization, and evaluation. As a result, the capability to increase hot section component life is jeopardized.

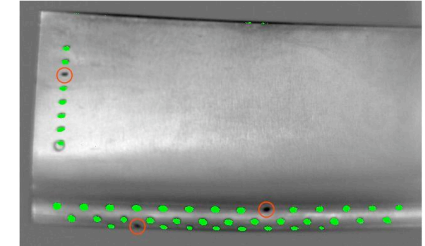
Customer Specifications: Design and demonstrate a full-scale prototype inspection system for an existing turbine hot section component or production line.

Technology Description: The entire suite of turbine blade/vane inspections will be performed with a single technology - thermography. A thermographic blade inspection station, based on combination of excitation techniques and novel signal processing algorithms, will allow complete inspection of each blade in a few minutes. The system is modular, so that the user need only install the relevant modules.

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SYSCOM: NAVAIR

TPOC Phone Number:
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Automated Thermographic Blockage Detection

TECHNOLOGY DEVELOPMENT MILESTONES (SBIR/STTR)

Milestone	TRL	Risk	Measure of Success	TRL Date
Determine precise limits of spatial and thickness measurement	3	Moderate	2% of total thickness	10/09
Develop robust thermographic inspection methods for blockage detection	5	Moderate	installation at OEM site	12/09
Develop robust crack detection	5	High	perform at least 2 independent tests	12/09
Design and fabricate a laboratory demonstration system	6	Moderate	perform at least 2 independent tests	05/10

Open contract: N68335-08-C-0274 ending 06/11/2010

TECHNOLOGY TRANSITION OPPORTUNITIES (PHASE III)

Other Potential Applications:

Commercial aircraft engine turbine blades that have identical testing and evaluation requirements.

Business Model:

Thermal Wave will manufacture and sell the inspection station.

Objective:

To achieve buy-in from the Navy, other services and primes, the company seeks partnership opportunities with primes to provide market awareness of the NDE/NDI technology to other counterparts (Army and Air Force) as well as the Navy.