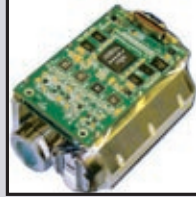


AN/ZSQ-2



Compact 3rd Gen IR Integrated Dewar Cooler Assemblies

OBJECTIVE / SOLUTION

Improve the affordability and producibility of the compact 3rd Gen Infrared Integrated Dewar Cooler Assembly (3rd Gen IR IDCA) with an overall cost reduction goal of 28%. The 3rd Gen IR IDCA provides dual f/#, multispectral (MW/LW) sensor capability designed to meet performance and packaging requirements for future air and ground platforms. The multiple f/# capability is achieved with a critical new component of 3rd Gen IR technology called the Variable Aperture Mechanism (VAM). The 3rd Gen IR IDCA ManTech program is targeting cost reduction of components such as the VAM and assembly process improvements to achieve the cost reduction goals

ACHIEVEMENTS

Significant advances have been made toward achieving program goals for a reduced cost, high reliability VAM. FY06-07 efforts established VAM torque requirements, developed improved blade manufacturing techniques, and demonstrated the baseline number of piezoelectric motors could be reduced by half. Progress continued in FY08 with a focus on VAM manufacturing including development of on-shore motor sources, automated warm test stations, and a Design For Manufacturing and Assembly (DFMA) event to identify cost-reduction opportunities for the 3rd Gen Dewar. In 2009, a 3rd Gen IR IDCA ManTech Industry Day was held to brief program progress to industry to facilitate technology trans-



Ground Combat Vehicle (GCV) – M1 Abrams Main Battle Tank

Third Generation Infrared Integrated Dewar Cooler Assembly (3rd Gen IR IDCA) Manufacturing

Enables the insertion of affordable compact 3rd Gen IR IDCA components into high performance sensors, including AN/ZSQ-2, Stryker, Heavy Brigade Combat Team (HBCT), and Long Range Advanced Scout Surveillance System (LRAS3) Next Generation.

fer. Sheet processing studies for VAM blade manufacturing were completed along with specialized cold shield and VAM assembly tooling to reduce cycle time and touch labor hours. A 3rd Gen cryocooler initiative was completed that addressed methods to reduce cost through yield and reliability improvements, including regenerator tooling and assessments of first pass yield / process optimization. Testing of both the VAM and 3rd Gen Dewar is ongoing, including Reliability Growth Testing (RGT) of the 3rd Gen Dewar to identify areas of opportunity for reliability improvements.

BENEFITS

The ability to obtain affordable 3rd Gen IR IDCA to enable high performance sensor operation for air and ground platforms.

STATUS

Multiple contractors are developing VAM and 3rd Gen IR IDCA component and assembly improvements to reduce manufacturing costs. In 2009, Dewar-level manufacturing and assembly optimization is a focus in addition to ongoing VAM testing:

- Upper vacuum housing optimization to improve motor mounting and wiring assembly
- Dewar alignment bracket material optimization and part count reduction
- Improved Dewar-level alignment tooling
- Reliability Growth Testing of 3rd Gen IDCA ongoing through 2009
- Development and testing of cold in-process VAM test stations
- Follow-on development to optimize on-shore motor manufacturing for VAM application

WEAPON SYSTEMS / SECONDARY ITEMS IMPACTED

- AN/ZSQ-2 USSOCOM
- Mast-Mounted Stryker
- Ground Combat Vehicle (GCV)
- Common Sensor Payload Aviation
- Long Range Advanced Scout Surveillance System (LRAS3) Next Generation

POTENTIAL COST AVOIDANCE

- Return on Investment of 9.7:1 with a cost benefit of \$108.8M