



Defense-Wide Manufacturing Science & Technology (DMS&T) Program



Electro-Optical Targeting System Producibility for F-35 (IBIF)

PROBLEM / OBJECTIVE

Current manufacturing processes of the Joint Strike Fighter (JSF) F-35 Electro-Optical Targeting System (EOTS), consisting primarily of the component processes of the Focal Plane Array (FPA) and the Integrated Dewar-Cooler (IDC), require automation to reduce costs and manufacturing readiness improvements in order to meet JSF Program objectives.

The purpose of this effort is to define, design, and qualify automated and semi-automated FPA and IDC manufacturing processes, tools, and equipment. This will enable the reduction of touch labor requirements, improve yields and producibility, and enhance reliability to meet JSF EOTS program production rate and cost targets.

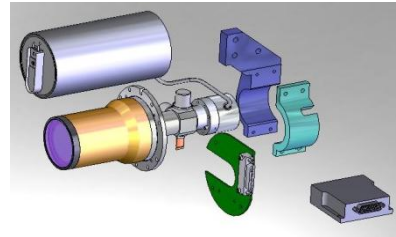
APPROACH / BENEFITS

Approach

Penn State Electro-Optics Center (the Navy ManTech COE for Electro-Optics) and Santa Barbara Focalplane (a Lockheed Martin Missiles and Fire Control business) are working with the Air Force Research Laboratory, Materials and Manufacturing Directorate, Manufacturing and Industrial Technologies Division (AFRL/RXM), the OSD Defense-Wide Manufacturing Science and Technology Program (DMS&T), and the JSF Joint Program Office to improve the manufacturing readiness and reduce costs of these infrared FPAs and associated IDC technology.

Multiple initiatives to achieve yield improvements and cost reduction targets are underway. This project consists of the rolling implementation of 23 manufacturing improvements impacting the FPA, IDC, and FPA Motherboard production processes. Areas of focus include:

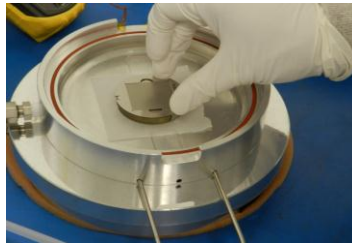
- Detector pixel formation
- FPA hybridization
- FPA passivation
- Improvement of the final bake/integration process
- Automation of the IDC Cold Stack process and evaluation
- Streamlining of the test processes
- Automation of the FPA/Motherboard processes



INTEGRATED DEWAR COOLER



COLD SHIELD COATINGS



FOCAL PLANE ARRAY HYBRIDIZATION



Expected Benefits and Warfighter Impact

- Improved producibility and reliability to meet JSF EOTS program production rates and cost targets
 - Reduced cost per unit savings of up to 15%
 - Total savings to the Government from this project: up to \$100M (with approximately 56% from FPA and 44% from IDC)
- Savings acquisition affordability: a total ManTech program Return on Investment of up to 22X
- Nine of the 23 manufacturing improvements will have been implemented by Dec 2013, including FPA hybridization, streamlined test processes, detector pixel formation, and FPA passivation

POINT OF CONTACT

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