



NAVAL RESEARCH ENTERPRISE

FIRST TO FIELD

F-35 Electro-Optical Targeting System

Producibility Improvements Save More Than \$202M



Four phases of Navy ManTech projects are significantly improving the affordability of F-35 infrared components.

WHAT IS IT?

The Office of Naval Research ManTech Program's Electro-Optic Center conducted projects, executed under four phases, that are significantly improving the affordability of the F-35 Electro-Optical Targeting System (EOTS). EOTS is a high-performance, lightweight, multi-functional system for precision air-to-air and air-to-surface targeting. The system provides high-resolution imagery, automatic tracking, infrared search-and-track, laser designation with range finding, and laser spot tracking at greatly increased standoff ranges. Funded by the Air Force, Navy, and Defense-Wide Manufacturing Science & Technology Program, the EOTS efforts have optimized manufacturing processes for F-35 infrared components, including the integrated Dewar cooler (IDC) and the focal-plane array (FPA).

HOW DOES IT WORK?

Phase 1 automated the mid-wave infrared IDC assembly and implemented manufacturing processes, tools, and equipment to reduce touch labor, increase yields, and improve the reliability of the production line.
Phase 2 improved the FPA quick test and the Dewar final vacuum bake, which reduced handling, scrap, labor, and span time.
Phase 3 is automating the Dewar cold stack and die cleaning and inspection processes, which will reduce cost, cycle time, and scrap by improving the producibility, throughput, and yield.
Phase 4 is transitioning the mid-wave infrared IDC to a high operating temperature advanced detector, which will increase capacity and reduce FPA processing hours and span time and increase the reliability and maintainability of IDC assembly.

WARFIGHTER BENEFITS

Phase 1 The project increased the Manufacturing Readiness Level from 4 to 8 while reducing the cost per IDC by 19%, saving over \$117M. The return on investment (ROI) is over 25X for the F-35 Program.
Phase 2 A 4-percent reduction in cost per unit and affordability savings of over \$18M have been realized to date.
Phase 3 The effort will reduce the cost per unit by \$1,800 for total estimated savings of \$5.4M and an ROI of more than 7X when implemented in 2020.
Phase 4 The project is expected to save over \$62M for the F-35 Program when implemented in 2021.

Total Estimated Savings of More Than \$202M

INTERESTING FACT

The F-35 EOTS Producibility Phase 1 project was awarded the 2015 Defense Manufacturing Technology Achievement Award.