Technology Service Corporation
an employee-owned company

Infrared/Ultraviolet Simulators and Related Systems

Infrared and ultraviolet (IR/UV) missile warning sensors and directional IR countermeasures (DIRCM) are being deployed on United States and allied aircraft to protect against surface-to-air and air-to-air missile threats. Hostile fire indication (HFI) is being integrated into the missile warning requirement, and separate hostile fire detection systems are under development. Systematic test and evaluation (T&E) of these electronic warfare systems is required at all levels, including hardware-in-the-loop (HITL), installed system test facility (ISTF), and open-air range (OAR). High-fidelity simulations that reproduce the spectral, temporal, and spatial characteristics of threat signatures are critical to accomplishing the T&E requirement. Infrared monitoring systems for evaluating DIRCM are also required.

Technology Service Corporation (TSC) has developed and demonstrated IR/UV missile signature simulators, DIRCM monitors, HFI threat simulators, and related components for HITL, ISTF, and OAR applications.

- TSC developed a **Target Board Evaluator** (TBE) system for the Air Combat Environment Test and Evaluation Facility (ACETEF), Naval Air Warfare Center, Patuxent River, to be used for T&E of DIRCM systems. A cruciform array of eight multi-channel lead-selenide detectors monitors DIRCM performance in mid-IR bands I, II, and IV. A quantum cascade laser (QCL) emits from the central position of the cruciform to simulate missile threat signatures to the DIRCM IR tracker.
- The **IR/UV Source Stimulator** (IRUSS) system developed for the Benefield Anechoic Facility (ISTF) at Edwards AFB consists of computer-controlled IR and UV point sources that simulate the spectral, temporal, and spatial characteristics of surface-to-air and air-to-air threat missiles. Spatial simulation is accomplished by coupling the output of an IR/UV source via fiber optic cable to a computer-controlled motion rail system.
- The **IR Simulator and Target Array** (ISTAR) system was developed for the Electronic Combat Range (OAR) at the Naval Air Warfare Center, China Lake. The IR Simulator consists of ten trailer-based liquid-propane flame sources that are configured to simulate surface-to-air missile signatures. Target or detector arrays perform declaration and monitoring of the DIRCM beam.
- TSC has developed a **Hostile Fire Indicator Threat Simulator** (HFITS) for simulating ground-fire muzzle flashes to HFI systems under test.
- TSC has developed a computer-controlled **Multi-Color Filter System** for the IR Simulation (HITL) at the Air Force Electronic Warfare Evaluation Simulator facility in Fort Worth, Texas. The system is used to dynamically shape the spectral output of xenon lamps used to simulate infrared.

INFRARED SOURCE TRAILER

ABOUT TSC

TSC has over 20 years of hands-on experience in developing IR/UV simulator and detector array systems for HITL, ISTF and OAR applications. Our IR/UV simulator and detector array technology and experience can be applied to any number of operational test requirements involving IR and UV sensor systems.

CONTACT INFORMATION

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