

ELECTRONIC COUNTERMEASURE TRAINING TOOL

Bringing Electronic Warfare Training To Life

The Electronic Countermeasure (ECM) training tool will be a key component of next-generation immersive joint warfare training leveraging the metaverse and augmented-virtual reality while being anchored in physics-true modelling and simulation technology.

The missile-aircraft engagement scenario is ever-evolving and complex. There is a continuous need to learn and understand the best ways to protect valuable assets and crew against this fast-changing threat. The Optronic Sensor Systems (OSS) group from the CSIR has developed an Infrared (IR) ECM training tool for this purpose. The tool allows the student to interact with different scenarios and learn what works and what does not. Typically, military personnel discuss effective ways that an approaching threat can be defeated, and this is done over chalkboard discussions. The ECM training tool brings the discussion to life by painting a picture of what can be expected in the field. It can be used by military and non-military students who want to understand countermeasure effectiveness.

The ECM training scenarios cover various:

- Aircraft;
- Missile threats (ManPads and Air-to-Air);
- Flight conditions;
- Flare types;
- Flare sizes;
- Flare sequences; and
- Manoeuvring techniques.



The ECM training tool allows the user to step through the engagement scenario and observe from different angles. This helps the user gain better insight into EW systems. The ECM training tool is based on an IR world that is radiometrically true, and the scenarios are representative of what you would expect in the real world. The scenarios are built in the CSIR engineering tool, Optronic System Simulator, which is a physics-true engine that has been validated through many trials.

Key learnings from the ECM training tool include:

- Vulnerability of different aircrafts;
- Effect of different manoeuvres;
- Behaviour of different threats;
- Effect of atmospheric conditions;
- Missile view of the world;
- Effectiveness of dispensing from the left or the right or both pods;
- Effectiveness of different flare sequences;
- Effectiveness of diverse flare types; and
- Vulnerability at several altitudes.

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