

ELECTRONIC COUNTERMEASURE (ECM) TRAINING TOOL

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) Electronic Countermeasure (ECM) training tool for this purpose. The ECM trainer allows the student to interact with different scenarios and learn what works and what doesn't. 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. This tool brings excitement as it makes the scenario more real. The tool can be used by military and non-military students who want to better understand the effectiveness of different countermeasures.

The ECM training scenarios cover various:

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

The ECM trainer allows the user to step through the engagement scenario and observe the scenario from different angles. This allows the user to gain insights into the missile behaviour and the effect of varying parameters. The strength of the ECM trainer



is the wealth of knowledge that has gone into the development of the radiometrically true IR world that generates the scenarios. The scenarios are built in the CSIR engineering tool, OSSIM, which consists of a physics true engine that computes the engagement in a representative way.

Key learnings from the ECM trainer 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;
- Vulnerability at several altitudes.

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