

FACT SHEET 2

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GIRAFFE AGILE MULTIPLE BEAM (AMB) RADAR



1. The Giraffe Agile Multiple Beam (AMB) Radar is a compact, highly mobile radar designed for low level air surveillance. It is operated by 160 SQN. It enhances the RSAF's ability to see further and with better clarity.

- a. Extended Range/Height coverage. Its predecessor, the Basic Giraffe (BG), had range and height coverages of 40km and 7km respectively. The Giraffe AMB Radar has extended range and height coverages of 60km and 20km respectively.

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b. Superior Detection Capabilities. The BG provided only 2D (direction & range) target data. The Giraffe AMB Radar provides 3D (direction, range & altitude) target data. Its superior detection capabilities also enable it to detect small, low flying and/or slow moving air targets (e.g. hovering helicopters) which were more difficult to detect by the older sensors.

c. Faster Deployment. The Giraffe AMB Radar can be fully deployed by 2 operators and be ready for operations within 10 minutes.

2. Technical Specifications.

- a. Accurate 3D pulsed Doppler radar with multiple track capability.
- b. Operating on C-band frequency.
- c. Range coverage of up to 60km.
- d. Height coverage of up to 20km.
- e. Built-in simulator for operator training.

ENHANCED REMOTE WEAPON DISPLAY (ERWD)



ERWD MMI

1. The Enhanced Remote Weapon Display (ERWD) is a portable, PC-based “rugged-ised” laptop that integrates the sensors, C2 and weapon systems. The ERWD is embedded with the air defence weapon systems such as the Mechanised Iгла, Rapier, RBS 70, Mistral and 35mm Guns so as to provide the operators with enhanced air picture awareness and communications with the C2 centre.

a. Enhanced Air Picture Coverage. Its predecessor, the Remote Weapon Display (RWD), displayed a 20km air picture received from a single sensor. The ERWD provides a 40km integrated air picture which clearly displays the identity, location and movement of all air targets.

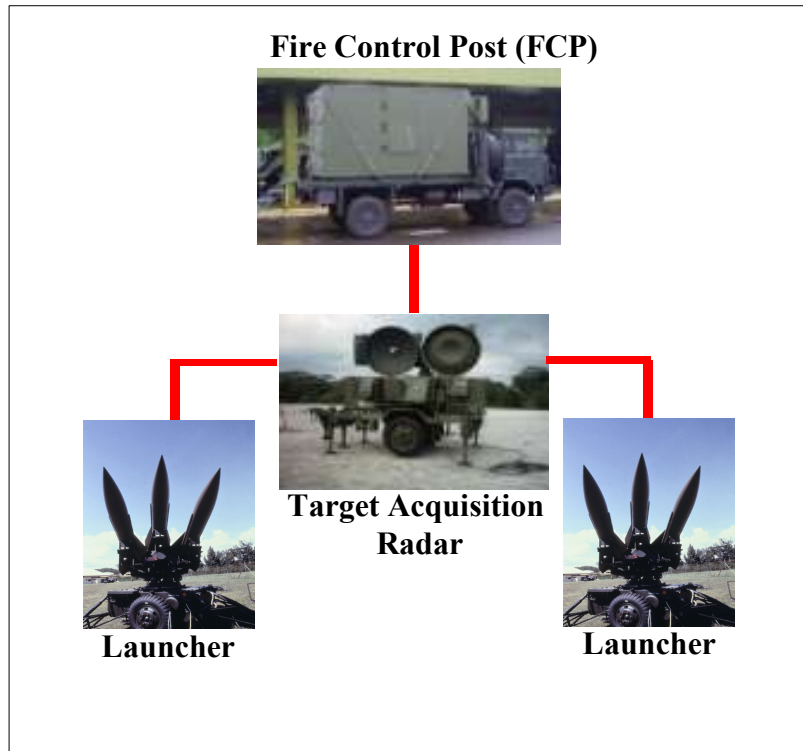
b. Enhanced Communications Capabilities. Weapon system operators using the old RWD received instructions through voice communications. The ERWD can receive instructions instantaneously via voice and/or digital means in the form of “instant messages”. Effectively, this additional capability enhances the operator's responsiveness.

c. Enhanced Man-Machine Interface. The RWD had a monochrome display. The ERWD provides a user-friendly coloured display interface which makes it easier for weapons system operators to understand the air picture with better clarity. In addition, it is PC-based and hence our tech-savvy people can easily operate the ERWD with minimal training.

2. Technical Specifications.

- a. Power Supply: AC (110 or 230 Volt) or DC (20 to 30 Volt)
- b. Operating Temperature: 0 to 50 Degree Celsius
- c. Storage Temperature: -20 to 60 Degree Celsius
- d. Vibration & Shock Proof
- e. Dust & Water Resistant
- f. Salt Fog Resistant

UPGRADED I-HAWK SURFACE-TO-AIR MISSILE SYSTEM



Upgraded I-HAWK Weapon System

1. The Upgraded I-HAWK system provides low to medium level air defence as part of the Networked Air Defence system. It is operated by 163 SQN and enhances the RSAF's ability to engage threats more responsively and precisely.

a. Enhanced Reliability. Its predecessor, the I-HAWK system, was analogue-based. The Upgraded I-HAWK system has been digitised using advanced computers and modern man-machine interface, thus enhancing the overall capability and reliability of the weapon system.

b. Enhanced Survivability. Previously, the I-HAWK system required its own surveillance radar but the Upgraded I-HAWK system no longer requires its own surveillance radar as it gets an integrated air picture directly from the C2 centre. Hence, it is less susceptible to electronic counter-measures. In addition, the components of the Upgraded I-HAWK system can be spread out over a larger distance than before, making it more difficult to be detected from the air and enhancing survivability against enemy attacks.

c. Enhanced Awareness. The I-HAWK system used to receive 2D (direction & range) target data within a 40km range. The Upgraded I-HAWK system receives directly from the C2 centre a 3D (bearing, range & altitude) integrated air picture.

d. Enhanced Firepower & Precision. Previously, the I-HAWK system could only engage one air threat at a time. The Upgraded I-HAWK system comprises an upgraded target acquisition radar which is now able to engage multiple air threats simultaneously. In addition, the engagements are more

responsive and precise due to the 3D target data which it receives from the C2 centre.

2. Technical Specifications.

- a. Technical Name: Product Improvement Plan (PIP) Phase III Remote Engagement Section (RES) Fire Unit
- b. Range: 40km
- c. Height: 18km
- d. Max speed of missile: Mach 2.7
- e. Single Shot Kill Probability: 85%
- f. Guidance: Semi-Active Homing



Upgraded I-HAWK Launcher

MECHANISED IGLA



1. The Mechanised IglA is a Short Range Air Defence (SHORAD) System that provides low level air defence to the Army and its critical assets. It is operated by the Divisional Air Defence Group. The Mechanised IglA has two variants - the Weapon Fire Unit (WFU) which is equipped with an IglA Missile Launcher and the Integrated Fire Unit (IFU), which has an additional radar. It enhances the RSAF's ability to engage threats more responsively and precisely.

a. Enhanced Mobility and Responsiveness. The IglA used to be carried by soldiers. The Mechanised IglA has the IglA system mounted on the M113, enhancing mobility, protection and responsiveness.

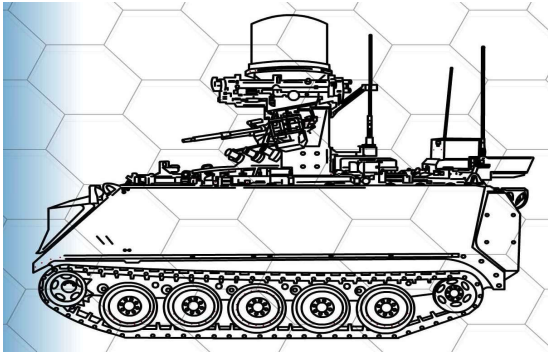
b. Enhanced Lethality. The Mechanised IglA has 4 ready-to-fire IglA missiles that can be fired off in quick succession without reloading. The high-speed missiles are effective against low-flying fighters and helicopters.

c. Precise Target Cueing. Previously, the IglA operator had to acquire the air threat visually. The Mechanised IglA now has an advanced radar that cues the weapon system towards the air threats precisely. A basic platoon comprises 1 IFU and 2 WFU. The IFU, with its integrated targeting radar, is able to cue itself and the 2 WFU to engage the targets precisely.

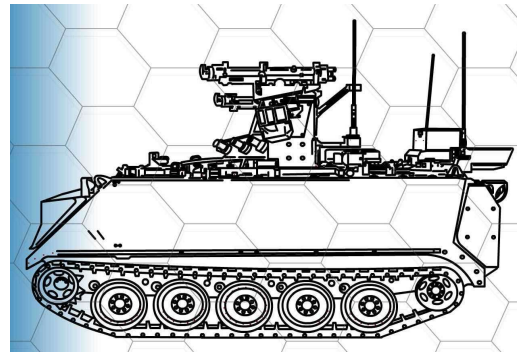
d. Continuous Operations. The Mechanised IglA is equipped with a Day and Night Sight System (DNSS) for continuous operations. In addition, it is equipped with a machine gun for self defence against any ground attacks.

2. Technical Specifications.

Max Effective Range	:	5km
Max Missile Speed	:	570m/s
Single-Shot-Kill-Probability(SSKP)	:	85%
Radar Detection Range	:	14km (Fixed Wing Aircrafts) 8km (Rotary Wing Aircrafts)



IFU



WFU

SUMMARY OF CAPABILITY ENHANCEMENTS

System	Old	New
Sensors	Basic Giraffe (BG) Radar • 2D target data • 40km range coverage • 7km height coverage	Giraffe Agile Multiple Beam (AMB) Radar • 3D target data • 60km range coverage • 20km height coverage • Improved detection of small targets
C2 Systems	Remote Weapon Display (RWD) • 20 km range • Localised air pic from single sensor • Monochrome display	Enhanced Remote Weapon Display (ERWD) • 40 km range • Integrated air pic from multiple sensors • Coloured display
Weapon Systems	I-HAWK • 2D Localised Air Picture • Single target engagement • Voice comms	Upgraded I-HAWK • 3D Integrated Air Picture • Multiple target engagement • Digital and Voice comms
	Igla • Carried by soldiers • Single missile engagement • Visual cueing to target	Mechanised Igla • Mounted on armoured vehicle • Multiple missile engagement capability • Radar cueing to target

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