

Russia 'given Israel's top interceptor missile'



A Stunner missile blasts off. Photo: Ministry of Defense

Missile technology could be used to defeat Raytheon's state-of-the-art defense systems

Russia has obtained Israel's most advanced interceptor missile, which could be reverse engineered to crack the latest Israeli and US air defence systems, according to news reports.

China's SINA news agency reported that an Israeli Stunner interceptor missile was captured by the Syrians and handed over to the Russians after Israel fired two Stunners at potentially threatening missiles.

"It's certainly a concern. If I was at Rafael, I'd be nervous right now," Ian Williams, deputy director of the Missile Defense Project at the Center for Strategic International Studies, told Business Insider. "If I was Israel, my big concern is that if Russia can get the intelligence to defeat the interceptor to Iran," Williams added.

If the SINA story is true, this is a big loss for Israel and the United States. US defense giant Raytheon is incorporating an adaption of the Stunner missile into its Patriot air defense system with Poland projected as the first customer. Israel is adopting the same technology into a version (Python 6) of its Python air to air missile, giving it the possibility to go after high-value targets with a sophisticated beyond visual range new generation missile.

Both Raytheon and Rafael will need to make technological changes so that Russia won't be able to create ways to defeat the system. Whether the Russians can copy it depends a lot on whether Russia has the technological capability to do the cloning. It is likely some elements, including the 3D AESA millimeter-wave radar, will be a very big obstacle for them to overcome.

The Stunner missile is the interceptor part of the Israeli air defense system known as David's Sling, which is designed to intercept enemy aircraft, drones, cruise missiles, tactical ballistic missiles and medium to long-range rockets. Most of the Stunner's design was done by Raytheon, with help from Rafael Advanced Defense Systems in Israel.

The Stunner is aimed at defeating all short-range missiles, which represents 92% of all missiles in global inventories. Given the recent successful cruise missile and drone attacks in Saudi Arabia, the importance of Stunner and David's Sling should not be underestimated.

Missile launch

On July 23, 2018, Israel's army (IDF) detected the launch of two Russian-made OTR Tochka (SS-21) missiles from Syrian territory. The IDF's computers projected the Russian missiles, that have a 1,000-pound warhead (482 kg) were heading into Israeli territory from Syria.

Two things happened: civilian defense sirens warned citizens in northern Israel to take cover (Israel has shelters throughout the country) and the IDF activated its new David's Sling system firing two missiles at the Tochka rockets.

A few seconds after the Stunner missile launch, Israel's radars determined that the Tochka rocket trajectory meant the missiles would not enter Israeli territory. A destruct command was sent to the Stunner missiles. One exploded over Israeli territory but the IDF does not know what happened to the second missile. Once the destruct command was sent, the IDF no longer tracked the missile.

The missile that disappeared did not self destruct, according to reports from the SINA news agency. The agency said an intact Stunner missile was recovered by the Syrians and handed over to the Russians.

The Stunner missile itself is very sophisticated. It is a new generation of missiles that uses "hit-to-kill" technology instead of explosive warheads. It works by directly striking an enemy warplane or missile at very high speed.

Hit-to-kill

A key advantage of the hit-to-kill approach is that there is little collateral damage and the level of kill assurance is either 100% or zero. Hit-to-kill missiles are

ostensibly more efficient since if they hit their targets the threat is eliminated. Conventional missiles use explosive warheads that detonate in proximity to a threat, which may or may not destroy the target. For that reason, two missiles are usually launched at an incoming target to raise the kill percentage to the 90 percentile range.

But there is also a problem with hit-to-kill weapons. If they miss their targets, they fall to earth.

If the hit-to-kill missile is used in the exo-atmosphere, it is likely to burn up on reentry. But if its trajectory is within the atmosphere, the Stunner or other hit-to-kill system could survive impact. The best modern missiles are built to withstand heavy G-forces, heat and extreme vibration, so the electronics are well protected, raising the odds of recoverability.

There are also limitations to the destruct mechanism since it depends on a successful command being sent from a ground station before the missile hits its target. There does not appear to be a mechanism for vehicle destruction based on vehicle speed and/or altitude if it misses the target or is lost for other reasons.

Israeli capabilities

In 2018 Israel was involved in a number of significant challenges coming from Syria, mostly directly from Iranian forces based there. The Iranians, probably with Russian connivance, were interested in testing Israeli capabilities and response times to a variety of threats.

On February 10, 2018, the Iranians launched a Saegheh drone into northern Israel. The Saegheh (Thunderbolt) is the Iranian copy of the American RQ-170, a stealth drone built by Lockheed Martin. (An RQ-170 was captured by the Iranians on December 4, 2011, and reverse engineered.) When the Saegheh was shot down by an Israeli AH-64 Apache helicopter over the city of Beit Shean, the Iranians found out that Israeli air defenses clearly saw their “stealth” drone copy and destroyed it.

On the same day, an Israeli F-16I jet was hit by a Syrian S-200 (SA-5) interceptor missile over Israeli territory and destroyed. Apparently the pilot had shut down the jet’s radar warning systems once they were “safely” over Israeli territory (having returned from earlier operations in Syria).

In September 2018 a Syrian S-200 SAM shot down a Russian IL-20M airborne command post as it was on final approach to Russia's Khmeimin airbase in Syria. The Russians blamed Israel, saying the Israeli Air Force flew in the radar "shadow" of the IL-20M to avoid Syrian air defenses. Some months before, starting on May 10, 2018, Israel's air force had run "Operation House of Cards" against Russian-made but Syrian operated air defense systems including the Pantsir S-1 (which the Russians had just finished upgrading), the S-75 Dvina (based on the SA-2) and the S-200 system.

The Stunner missile is very sophisticated and has state of the art technology in it. This includes an active, electronically scanned (AESA) 3D Millimeter-wave radar, dual electro-optical sensors to aid target identification and location, an imaging infrared seeker to guide the missile, three data links back to its command and control center and automatic and manual targeting capability including the ability to adjust its flight path to deal with an attacking system that changes course. This package and the logic software supporting it certainly is of prime interest to Russian experts.

Source:

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