

Wars” called for things such as satellites in space that used x-ray lasers directing super-charged energy beams to knock down incoming nuclear missiles out of the sky. It was pure fantasy.

Today, though, Rafael has turned fantasy into reality.

The Israeli-based weapons developer has created a first-of-its-kind laser beam system. They call it Iron Beam. The similarity to the name Iron Dome is not coincidental. Whereas Iron Dome is designed to intercept and destroy high flying larger rockets, Iron Beam is designed to target short-range rockets, mortar bombs, and drones that fly on too small a trajectory for Iron Dome to intercept effectively. Rather than employing a projectile to destroy incoming threats, the new Iron Beam system uses a high-energy laser (HEL) to “superheat” incoming warheads and blow them up in mid-flight.

Lasers have great potential as weapons. Laser beams travel at the speed of light, so no rocket will ever outrun them. They are also remarkably cheap to generate. An Iron Beam battery can be mounted on a single truck operating with another truck carrying the radar equipment, and a laser blast costs several hundred dollars compared with Iron Dome anti-rockets that cost tens of thousands of dollars each. And as long as there is electrical power, a laser cannon will never run out of ammunition.

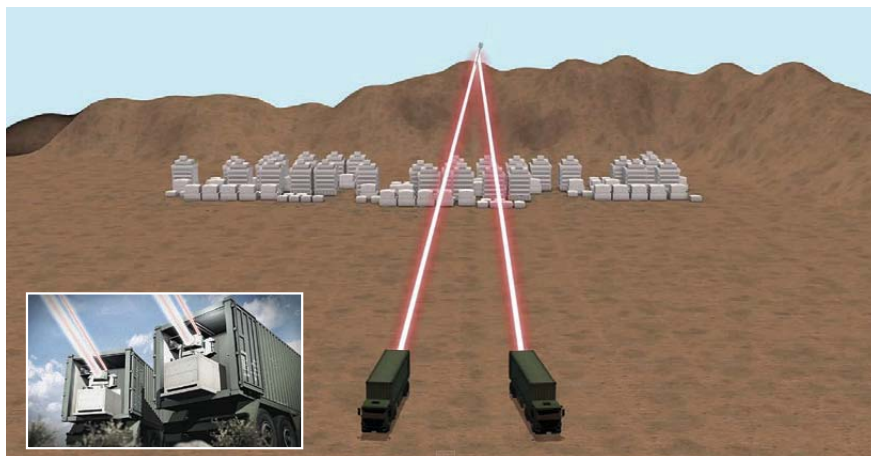
Lasers are also versatile. They do not have to blow up a target to neutralize it. They can be set to burn through the threat’s surface to destroy critical components or sub-systems beneath the skin, frying electronics, sensors and navigation systems. The detection to destruction cycle takes only a few seconds.

Iron Beam is not seen as a replacement for Iron Dome. Lasers have difficulty operating in rain and fog, and their beams travel in a straight line, so they cannot be fired over a hill. But they can serve as supplementary defense systems.

Although it has not yet been employed in the field, Iron Beam has been tested successfully. Funded mainly by the Israeli Ministry of Defense, American funding has also been involved, according to newspaper accounts.

Rafael is initially developing Iron Beam with a view to field-deploying the system with Israeli forces. However, the company is also hoping to be able to export the system in the future, and believes it could be of significant value to a number of nations. The US Navy announced recently that a laser system will be installed this year on a transport vessel, the *USS Ponce*, for testing.

In the past, advocates of laser weapons tended to promise too much, too soon. Now, however, it seems like an idea whose time has arrived. Welcome to the future. ■



Depiction of how the Iron Beam can defeat a faraway enemy using multiple high-energy laser beams in tandem.

Detecting Terror Tunnels

A “whole city” of terror tunnels runs throughout Gaza and even into Israeli territory, prompting Israel to launch a ground invasion. If only Israel had the technology to detect terror tunnels beforehand... That time may not be so far away.



It was 12:30 AM, *Motzaei Shabbos*, and all was quiet at the small IDF security post next to the Gaza border fence, near Kibbutz Kerem Shalom. Four soldiers sat inside a tank behind the fence, adjacent to a

watch tower where two other soldiers were on duty.

Then, with no warning, a huge explosion rocked the Israeli Merkava tank. Automatic gunfire rang out, mingling with the sounds