

History of the Holographic Sight

A series of discoveries and inventions from the 1950s to the 1990s led to the genesis of today's holographic sight technology. Here's how it happened.

Scientists Invent Synthetic Radar

In the late 1950s, researchers at the Environmental Research Institute of Michigan (ERIM) invented synthetic radar (SAR).

How SAR Works

- An observation plane flies by the target scene
- The plane directs a reference wave at the target scene
- The plane synthetically builds a large radar aperture to increase image resolution
- Equipment records the reflected microwave

SAR vastly improved imaging radar, because it can detect targets in dark or cloudy conditions.

Researchers Discover the Link Between SAR and Holography

ERIM researchers then realized that the physics principles of SAR were identical to the holography method published by Dennis Gabor in the 1950s. Gabor later received the 1971 Nobel Prize in Physics for that work.

How Holography Works

Holography is an optical process. It is the reconstruction of the wavefront created by a three-dimensional object. The wavefront is reconstructed by recording the patterns of how the object interferes with light.

Laser Invention Makes Holography Theory a Reality

In the early 1960s, the helium-neon gas laser was invented. It was the coherent, stable light source needed to put hologram theory into practice.

Two researchers, Emmett N. Leith and Juris Upatnieks, used the laser and the principles of SAR technology to reconstruct a waveform of a three-dimensional object, creating a hologram.

The Idea of Holographic Sights is Developed

Researchers working in the late 1970s under contracts with the U.S. Air Force and U.S. Army developed the concept of holographic sights for use on helicopter gunships and anti-aircraft batteries.

At that time, though, the prototypes were too bulky to use on small arms platforms. And component costs were too high for production to be feasible.

Holographic Heads Up Displays Are Deployed

In the early 1980s, the holographic heads-up display (HUD) for advanced fighter aircraft was perfected and successfully deployed.

These HUDs were very high-quality reflection holograms. Fighter pilots used them effectively for target acquisition, gauge reading and weapon system verification.

New Production Technology Emerges

In the 1990s, there was a change in the availability and cost of high-tech production methods and materials:

- Production technology was created to manufacture low-cost, compact, solid-state visible laser diodes, like those in laser pointers and optical readers
- As a result of sustained large volumes of production, component costs plummeted

With these changes, the time was right to assess feasibility of commercially producing a compact holographic gun sight.

EOTech is Formed, Commercially Launches Holographic Sights

In 1995, ERIM created a subsidiary, EOTech, Inc., to assess the commercial potential of holographic sighting technology.

EOTech successfully miniaturized the system into a compact, rugged package for use on small arms. In January 1996, EOTech introduced the first-generation holographic sight to the commercial market. And in January 2000, the company released the second-generation HoloSight to the consumer market.