

Seeing in the

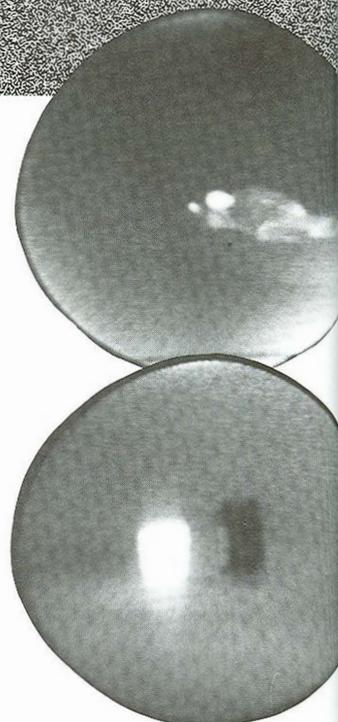


◀ IN THE FIELD

Fr. Bill Quick (R.4) uses a thermal imaging camera to locate the seat of the fire in a vacant warehouse, box 7108 in Queens. Photo by Fr. John Strandberg

▶ GHOSTLIKE IMAGES

Two views through the thermal imaging camera and a regular camera: a body in a dark room; and the difference between a hot cup of coffee (which appears white) and a cold can of soda (black). Photos by Fr. Marianne McCormack



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earching for firefighters whose air supply was running out after they became disoriented in the basement of a commercial building. . . . Pinpointing overhead motors as the source of smoke in another commercial building, heavily occupied. . . . Locating a victim who had jumped from a window into the rear yard during a large residential fire at night.

A thermal imaging camera has helped FDNY members perform each of these tasks and many more.

The camera contains an infrared sensor which detects heat differentials of $\frac{3}{10}$ of a degree Centigrade and displays them on a 3-by-5-inch cathode-ray tube inside the handheld instrument. (It can also be hooked up to a television monitor.) Weighing less than 9 pounds, the camera runs on 10 rechargeable or disposable AA batteries for about two hours of continuous use.

What the camera "sees" depends on the

Size and distance

size of the subject and the distance. It can sense a living person 200 feet or more away. It can't "see" through barriers, such as concrete, brick, water, or drywall. However, if the barriers themselves are heated, the camera will pick that up. In other words, it will probably detect a fire behind a wall, but not a body behind a wall.

Falklands War

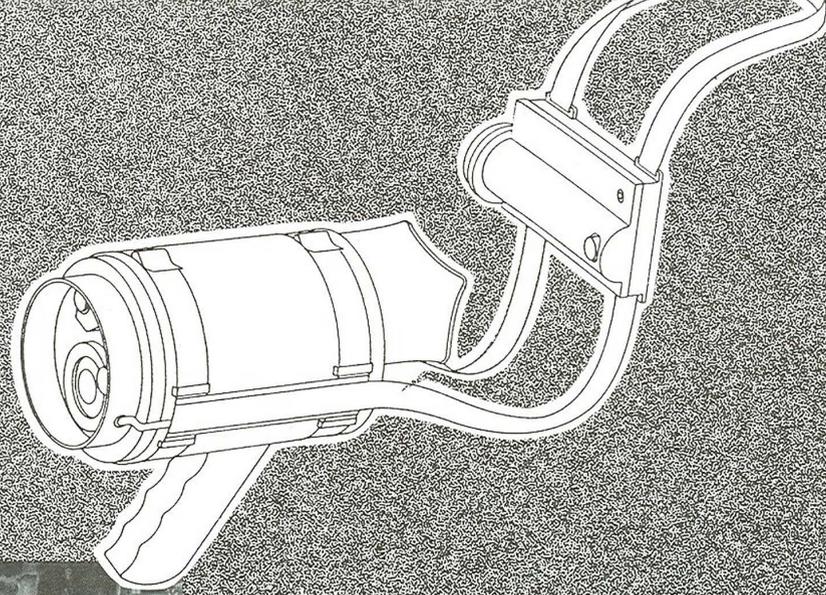
The thermal imaging camera's availability is a direct result of the Falklands War between Britain and Argentina in 1982. The equipment's manufacturer, English Electric Valve Co. Ltd. (EEV) of Chelmsford, England, had already developed the technology. Then, after the *H.M.S. Sheffield* burned and sank during the war, the British government gave EEV a grant to develop the camera further and bring it to market.

Navy use

Today, the camera is widely used by British fire brigades (the equivalent of our fire companies). And the U.S. Navy, like the British Navy, has a thermal imaging camera aboard every ship. The FDNY was one of the first U.S. fire departments to

Infrared sensor

Dark



Haz Mat 1

use the camera, buying one in late 1986 for use by Hazardous Materials Co. 1. Since then, each of the rescue companies has also been equipped with a thermal imaging camera.

Fire and nonfire applications

Although its early application was strictly firefighting, thermal imaging cameras are now being used by phone and electrical utilities, atomic power plants, breweries, and food processing plants, according to EEV's Sam Friedman.

Collapse

The FDNY, too, has found uses at non-fire as well as fire incidents:

- During a major collapse of a building in Brooklyn in August 1991, the camera was used to search for victims.

- It's been used at haz-mat incidents to detect liquid levels.

- At a phone company fire, it discovered hidden fire in the cable tracks. That detection helped the FDNY minimize damage.

Seat of fire

- In a large warehouse, where the sprinklers were unable to reach the fire, members had a hard time reaching the seat of the fire because of the smoke. The thermal

Ballasts

imaging camera located the fire in a short time, lessening the damage to the building and minimizing the risk to firefighters.

- Among the many fluorescent lighting ballasts present in a large department store, the camera located the one that was overheated.

Duct fires

- In restaurants, the camera has quickly located hidden pockets of fire and fire in ventilating ducts.

- During subway and railroad terminal fires, the camera has been used to search for trapped passengers as well as homeless people living in subterranean tunnels.

Scuba

- Rescue companies have used the camera to monitor scuba teams operating offshore. The camera would also be able to detect unconscious victims floating on debris in water.

Steam

- The camera has helped locate a broken steam pipe in a retirement home and hot electric lines running from a building to the street.

Interpretation

Specific objects can show up quite clearly on the camera's display. But when heat or cold affects a general area, the image might be misinterpreted—leading members, for example, to believe there's fire where there's not. To avoid such confusion, training for the Department's thermal "photographers" has aimed at learning what different objects look like. In firehouse basements, the companies equipped with the camera have looked at the differences between hot and cold water lines, and seen how a fluorescent light appears through the camera. Along those lines, it can be argued that one rescue company was training when, while making the meal, its members checked the roast beef with the camera.

Training

The thermal imaging camera complements all the other equipment we carry in our daily operations. As time goes on, we'll find it used at a growing variety of operations, especially where we need to search pipes, voids, or large open areas. ☺