

# Beaming in on a problem

## Infrared Concepts uses aerial imaging to detect leaks in rooftops.

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The combination of flat roofs, punishing sunlight and heavy summer rains takes a serious toll on Florida's large commercial and institutional buildings. Leaks are inevitable, and the damage they produce can go undetected until a structure collapses.

Many building owners wait until leaks appear before taking remedial action. It's a practice that a Maitland company is trying to bury.

**Infrared Concepts Corp.** uses the same infrared technology that the military employs in heat-seeking missiles to find cracks in the roofs of large buildings. The company uses infrared imaging to detect leaks, allowing building owners to make repairs before extensive harm occurs.

"Roofs have a chronic problem with leaking," Infrared Concepts President Valerie Patterson said. "Roofs may not sound too exciting on the surface, but a city or county with a million square feet of roofing easily has a \$10 million asset to protect."

The Army Corps of Engineers first started using infrared technology to search for leaks in the roofs of Army barracks after World War II. But Stan McDougall, director of Infrared Concepts' aerial operations, said the technique wasn't particularly accurate, and it didn't begin to find a wide audience until recently.

Infrared Concepts, using a patented process, has significantly improved the images and made them easier to read. McDougall, a former marketing executive with Bell & Howell and Canon, is trying to sell government

agencies and companies with large buildings on the technology.

The company has surveyed buildings throughout Florida. Its long list of clients includes Fort Lauderdale-Hollywood International Airport, Miami-Dade Community College and the University of Miami. County school systems and state universities are among the biggest clients.

McDougall said Infrared recently completed a study of 30 Broward County schools and found that only a third of the roofs scheduled for replacement under the district's maintenance plan actually needed repairs.

"The money saved can be used on more serious problems," McDougall said. "In this case, about \$2 million in repair costs can be reallocated."

McDougall said that many building owners replace roofs before it's necessary.

"This is like an annual cancer screen," McDougall said. "It catches small problems before they become big problems, prolonging the life of a roof."

Infrared Concepts uses helicopters to study roof surfaces. Thermograms are taken at night when the distinctions between hot and cold spots are most easily registered. The company studies the images using proprietary software to identify areas that might be leaking, then imposes the scan on top of a day-

time photograph of the roof so that it can illustrate its findings to clients. Areas with potential leaks are shown in red.

Company President Patterson said images of a million square feet of roofing can be gathered in one or two days and analyzed within 60 hours.

"We have used the system for three years to identify hot spots, and the results have been about 95 percent accurate in locating problem areas," said George "Buddy" Watkins, maintenance director at Florida State University in Tallahassee. "We have 50 or 60 buildings with flat roofs that we've studied. Before we used infrared, we used to walk around roofs, squishing and searching, after the roof leaked on a person underneath."

George Carlson, a facilities manager with Orange County government, said flat roofs are the bane of building management officials throughout the country. In Florida, intense sunlight and heat can damage surfaces and cause premature leaks.

"A lot of people get frustrated replacing roofs in advance of their expected lives," Carlson said. "Infrared imaging gives you a starting point in an inspection, and it gets the price down in a range where you can do a large number of buildings at one time."

Carlson said the imaging system allows building officials to

decide which roofs to replace first.

"We still end up spending a lot of money on re-roofing, but it delays the replacement in a lot of cases," Carlson said.

*Christopher Boyd writes for the Orlando Sentinel, a Tribune Co. newspaper.*

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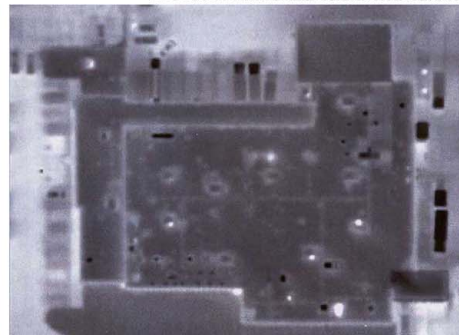
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## INFRARED CONCEPTS Infrared Concepts uses an airborne infrared scanner to search for roof leaks on large structures using these steps:

PHOTOS OF HARTSFIELD ATLANTA INTERNATIONAL AIRPORT BUILDING PROVIDED BY INFRARED CONCEPTS CORP.



1) A daytime flyover in a helicopter to take a picture of the roof.



2) A nighttime flight to take a thermogram, or infrared picture, of the structure.  
3) Examination of the thermogram at high magnification using the company's patented software to look for possible leaks.



4) Superimposing the computer image on the daytime photograph, using red ink to show possible leaks.

SOURCE: Infrared Concepts Corp.