

# Using Infrared Technology – for Optimal Property Management

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Paul Daniele and Christopher Daniele

Under a diligent property manager's care, the value and appearance of real estate should not only be maintained, but also increase in value over time. Property managers oversee the performance of residential or income-producing commercial properties, and work to keep the buildings and land structurally and environmentally sound. Building maintenance and operations can be a challenging responsibility when attempting to locate the source of a problem. Infrared (IR) technology, however, can provide the answers to many building maintenance concerns, while saving property managers time and money, and keeping tenants satisfied.



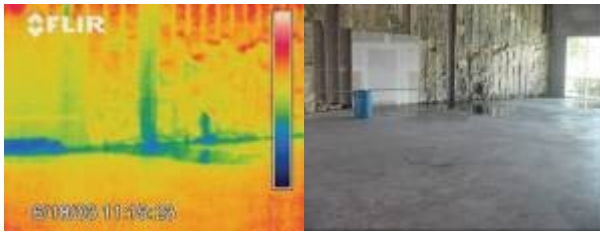
The thermogram of this vinyl-sided 3-floor apartment house clearly shows the path of a serious leak from a washing machine on the third floor, which is completely hidden within the wall. The thermographer used FLIR's Image Builder software to automatically "stitch" the three individual thermographs into one fully thermographic collage.

Infrared thermographic inspection techniques are an accurate and non-invasive way to monitor and diagnose the condition of buildings. Infrared cameras quickly locate problems while their non-contact precision temperature measurement and analysis capabilities instantly deliver the answers you need to understand what repair action to take, and when. In other words, using an infrared camera allows you to "see" through walls, pipes, etc. as if having x-ray vision, because it measures the temperature of an object and displays a thermal image. FLIR Systems is the global leader in infrared cameras, providing an exceptional tool to investigate building maintenance issues - as infrared is able to pinpoint the root causes.



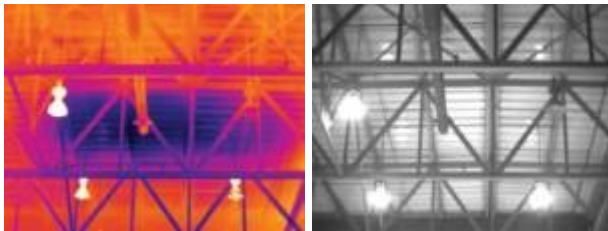
The B2 Building Diagnostics Infrared Camera from FLIR Systems

There are many applications within the building diagnostics industry where infrared cameras are used including restoration, inspection, and energy auditing. To a property manager or an insurance company involved in a property damage settlement, clear images of normally invisible diagnostic evidence can be invaluable for planning the restoration effort and rationalizing settlements. For example, after a fire, an infrared camera can quickly locate remnant hot spots, and provide valuable data for insurance companies Cause and Origin investigations. The thermal images can also reveal if a fire has been completely extinguished and that no further hot spots exist that might reignite. For catastrophic storm water intrusion and plumbing failures, infrared cameras are able to trace the influx of moisture to find the origin of the incursion with little or no disassembly of the premises and minimal disturbance of inhabitants. During restoration, infrared thermography can be used to evaluate the progress of the drying out process. Having authoritative thermographic records can reduce or even eliminate the need for insurance companies to make on-site inspections, along with protecting against future frivolous claims.



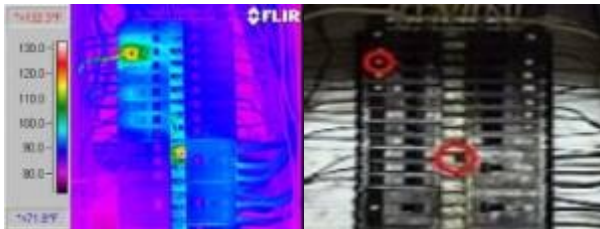
The thermogram on the left shows water and moisture remaining from sprinklers that were activated during a fire that was knocked down about 11 hours earlier. Note how the IR thermography clearly identifies the wet areas in the insulation and building structure and on the floor by their relatively cooler temperatures.

Infrared can also help win the battle against moisture and mold in building materials that can destroy structural integrity and cause serious health concerns. Infrared cameras distinguish between wet and dry materials by revealing the thermal characteristic of wet materials to store heat very well, and warm up or cool down more slowly than dry materials. Mold has become a growing concern for property managers due to the increasing number of claims stating that mold is a severe health hazard, causing respiratory problems. The first step in mold remediation is to accurately locate and remove all sources of moisture. Infrared cameras can instantly image entire rooms, inspecting places that can't be physically reached with moisture meters, reveal wet conditions behind surfaces such as wallpaper which doesn't readily water stain, track leaks to their source, monitor the drying process and confirm when a structure is in fact dry.



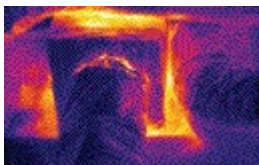
Interior infrared survey conducted during daytime hours reveals central area of roof saturated with moisture and in need of immediate repair.

When a problem calls for a building inspection to take place, an infrared camera is the most accurate tool to address the issue at hand. Infrared thermography can be used for inspection of electrical fuses and circuit breaker boxes, checking them for loose or corroded connections. Any time a circuit is running abnormally hot; it is using extra electricity and therefore costing more money. Plus, an overloaded or malfunctioning circuit is a potential fire hazard. By determining the exact location of a hot spot in electrical wiring, immediate corrective action can be undertaken, thereby saving money and preventing a fire.



Note how thermography easily finds the problems in this circuit breaker panel.

Infrared is also an important tool for inspecting HVAC (heating, ventilating, and air conditioning) systems. By identifying differences in air temperatures, infrared can pinpoint areas of unwanted pressurization or depressurization within a building, as well as find problems with HVAC components. For example, infrared can detect possible areas of heating and cooling inefficiency through leaks in the ducts that run through walls and attics.



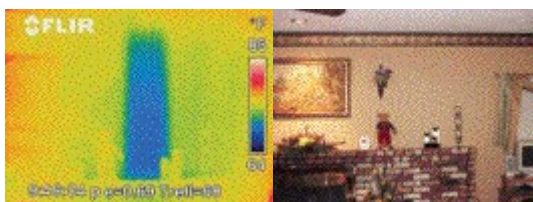
Loose HVAC Junction Box as revealed by infrared camera

When performing a pest inspection, thermal imaging provides the means to detect damage caused by termites and wood burrowing ants, since the damaged wood has a change in density and does not retain heat as well. An infrared camera can also locate rodents that may be nesting in walls of a home or building since it detects their body heat, along with the damage they may have caused.



Termite Nest located via thermal imagery

Thermography is the best tool for energy auditing to improve a building or home's thermal efficiency. Older structures are especially vulnerable to heat and cooling loss through walls, ceilings, attics and roofs that lack proper insulation. One of the most common problems is blown insulation that does not fill the entire cavity, or strips of insulation that were not seated properly between two studs. IR imagery clearly reveals any heat or cooling loss issues – so corrective action may be taken.



*The occupant complained about a cold spot in this living room in a home that was insulated by a blow-in process from outside. The thermogram at right clearly identifies the source of the cold air as an un-insulated stud bay. By insulating the empty bay, the occupant can save significant costs in heating energy.*

Other areas to examine for energy loss include windows, which is a widespread problem for even newer buildings and homes. As a structure settles, stress on the windows and doorframes can cause warping, which in turn causes the seals to leak. These small leaks can multiply, causing a heating or cooling system to run continuously. Infrared imaging can immediately identify these energy leaks so the problem area can be sealed, saving energy and money.



Thermal image of double pane window versus single pane windows – clearly showing the difference in energy efficiency.

Infrared inspection quickly identifies problem areas of buildings and homes that can't be seen by the naked eye, and eliminates more costly inspection techniques that require destructive investigation. An infrared camera enables reports of inspection results to be generated in seconds, so that the repairs can begin with maximum speed and assurance. By initiating an ongoing proactive IR maintenance program, property managers save time and money in their restoration, inspection and energy auditing efforts – with the added benefit of satisfied unit owners.