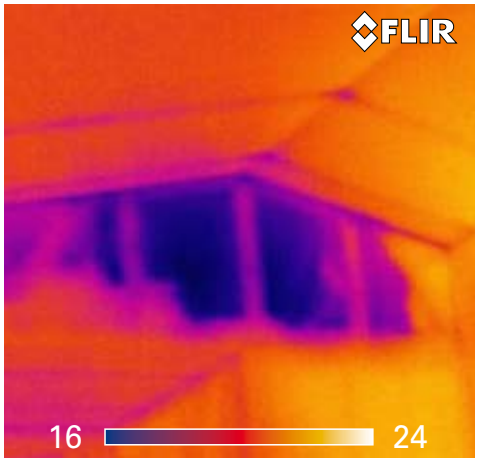
Control of energy efficiency and waste in building

An infrared camera will quickly and effectively detect areas of missing, moisture-laden or otherwise damaged insulation in walls, ceilings, floors, crawlspaces, attics or around doors, windows, electrical outlets and other access places where it would normally not be detected. This is particularly important for buildings with poor ratings in an energy declaration, where improvements can be focused on the most relevant areas. Contrary to other traditional methods an infrared camera produces images of the problem areas – thus revealing exactly where the problem areas are and which actions need to be taken. An ordinary air tightness test reveals how airtight the building envelope is – an infrared image shows where the problem is.

The new FLIR Reporter Building software works together with an infrared camera to visualize and quantify building related problems. With new unique features and new special building report templates it enables quantifying and estimation of cost of energy loss.

Missing insulation



Missing insulation causes severe energy loss.

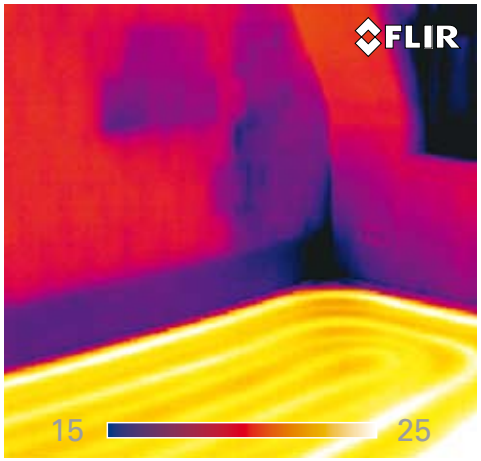
Missing insulation

The infrared Picture-in-Picture image shows a point of missing insulation.

Locate and evaluate water damage and moisture intrusion

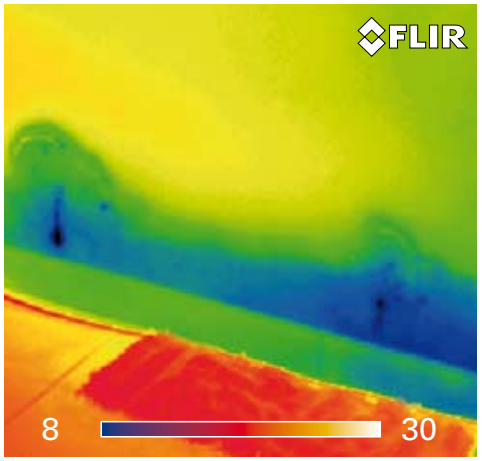
An infrared camera is an ideal tool for a building moisture survey as it detects moisture by imaging the different temperatures of wet versus dry building materials. This enables infrared to see and locate moisture problems before other standard moisture detection equipment. Another useful advantage is that with infrared you can inspect places that physically can not be entered. Infrared cameras instantly capture and record high-resolution infrared images of the water damage. Once the cause of a moisture issue is repaired, infrared can be used to monitor the drying process, showing when the moisture is completely gone. Infrared technology takes the guesswork away, by locating problem areas with speed and extreme accuracy, and finds issues hidden within walls and ceilings.

Water damage



A hidden pressure line leak can be easily spotted with a thermal camera, even from a distance.

Moisture problem



Wet wall intrusion, impossible to see with the human eye, but clearly visible in infrared.

Stop guessing - start saving

New FLIR Reporter Building software

At FLIR we develop the report and analyses software ourselves as we know a professional report is a critical part of the job delivery. As requirements differ with various applications - all our software is tailored to the needs of specific user groups. We are now launching a dedicated building software: the FLIR Reporter Building software.

The new FLIR Reporter Building software works together with an infrared camera to visualize and quantify building related problems like air infiltration, insulation defects, thermal bridges and moisture problems in a professional report. With new unique features it also enables quantifying and estimation of the cost of energy loss.

Highlights of the software are a Grid/area quantifying function, a Panorama/image stitching tool, an energy cost estimation calculator and customized templates for building related reports.

The Panorama functionality allows stitching several images together into one big image**. This is particularly useful when you do not have a wide angle lens available when doing your inspections.

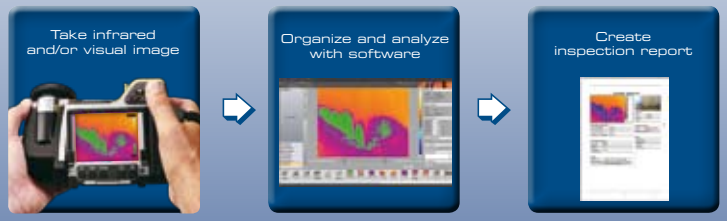
The image grid tool is used to quantify the size of areas and to gather measurement data within the highlighted area.

The software includes several report templates to ease the report creation.
Examples of unique templates are:

- Energy Cost report including thermal index, R/U-value and total heat transfer
- Humidity Inspection for calculation of dew points
- Air Tightness report for visualisation of air infiltration.

The FLIR Reporter Building software works as a plug-in to the existing general FLIR Reporter 8.3 software and can be purchased separately or together as a package.

Easy report creation



** Function only supported by FLIR T-Series or P-Series infrared cameras

FLIR Systems AB
World Wide Thermography Center
Rinkebyvägen 19 - PO Box 3
SE-182 11 Danderyd
Sweden
Tel.: +46 (0)8 753 25 00
Fax: +46 (0)8 755 07 52
e-mail: sales@flir.se

FLIR Systems France
France
Tel.: +33 (0)1 41 33 97 97
e-mail: info@flir.fr

FLIR Systems GmbH
Germany
Tel.: +49 (0)69 95 00 900
e-mail: info@flir.de

FLIR Systems Ltd.
United Kingdom
Tel.: +44 (0)1732 220 011
e-mail: sales@flir.uk.com

FLIR Systems S.r.l.
Italy
Tel.: +39 02 99 45 10 01
e-mail: info@flir.it

FLIR Systems AB
Belgium
Tel.: +32 (0)3 287 87 10
e-mail: info@flir.be

www.flir.com

PLUS X AWARD®
achieved for:
Innovation
Ease of Use
Ecology

The Plus X Award honours manufacturers for the quality advantage of their products. This adds to the recognition culture benefiting innovative companies that today are already thinking about tomorrow. The Plus X Award distinguishes products that are viable for the future. And it does so in categories that are of interest to many consumers: Innovation, design, ease-of-use, ergonomics and ecology.
www.plusxaward.com

FLIR®

1558670(en-SV)_A

Stop guessing - Start seeing

Infrared technology for building applications

A complete camera range for all users and budgets

Infrared thermography, the perfect tool for building diagnostics

Since the 1970s we have become increasingly conscious that energy resources are precious and limited.

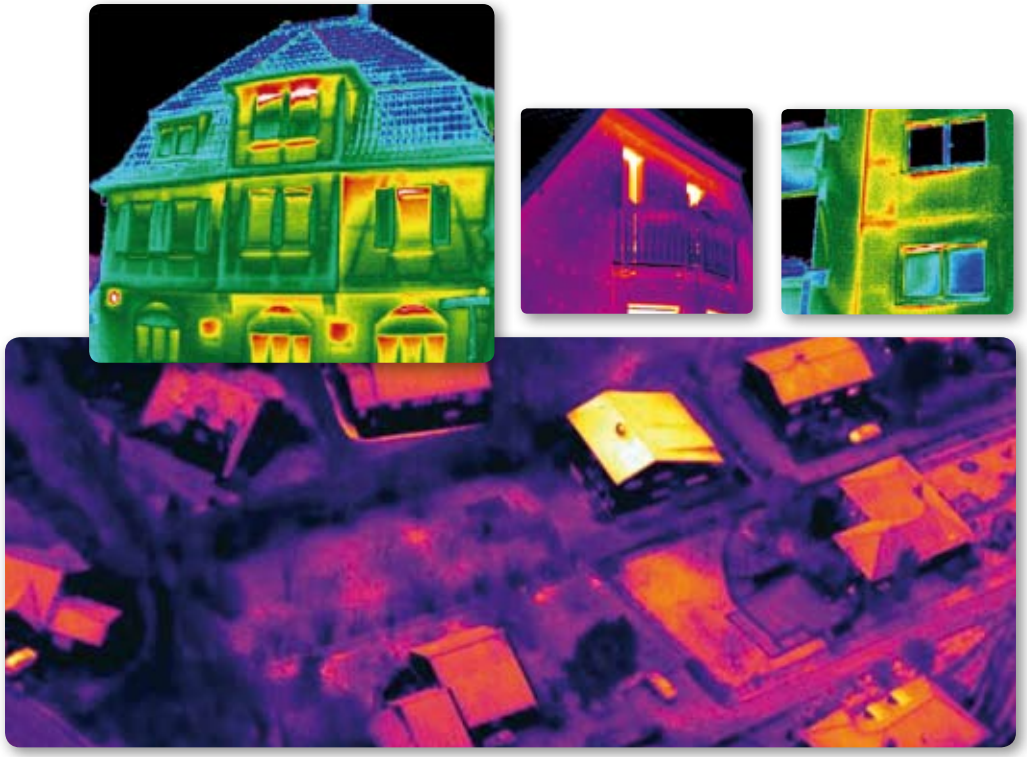
The building sector accounts for 40% of the EU's energy requirements and offers the largest single potential for energy efficiency. Due to the huge potential the European commission has formed a directive for energy performance regulation of buildings – on which many national laws already are based.

By the end of this year, thousands of European businesses, will be affected when the Energy Performance Certificates (EPCs) will become mandatory within the EU for new buildings and large building refurbishments.

This, together with recent economic stimulus packages in many countries, is likely to drive the demand for Air tightness testing and other methods for investigating energy efficiency. The use of infrared, alone or in combination with other methods, speeds up the work considerably as infrared pinpoints exactly where to focus energy savings efforts - without any destructive testing.

In a longer perspective we are likely to see harsher EU directives for energy savings in building exemplified by present discussions about Passive House technology to become standard in the EU. This will have a great impact on many professionals working in the building sector.

The easiest and quickest method of detecting energy waste in buildings is infrared thermography. An infrared camera shows exactly where the energy waste problems are and helps focus the inspectors attention allowing them to properly diagnose these areas of loss.



Why use infrared thermography in the building industry?

Quickly Diagnose Building Conditions:
Buildings can quickly and thoroughly be scanned using a FLIR infrared camera, identifying problem areas that can not be seen by the naked eye. This ensures the integrity of both structural and environmental systems for building inspection, repair verification and insurance related purposes.

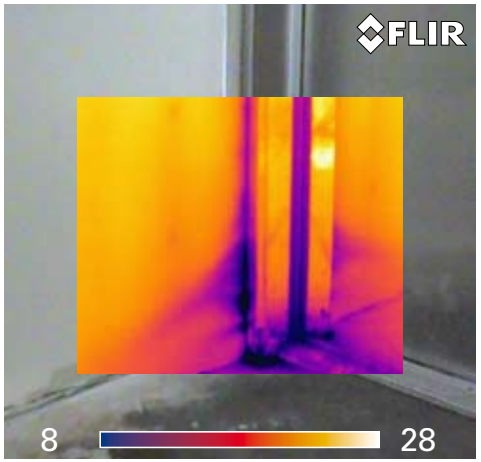
Easy Noninvasive/Nondestructive Testing:
Infrared can facilitate repairs quickly, easily and safely and much more cost effective than other conventional methods. An infrared camera minimizes the need for building disassembly – saves time and labour by minimizing down time, repair time, labour costs and disturbance of habitants, as well as verification of a job well done.

- Check energy efficiency
- Quickly locate missing insulation and areas of energy loss
- Verify proper systems operation

Detection and visualization of air infiltration and exfiltration

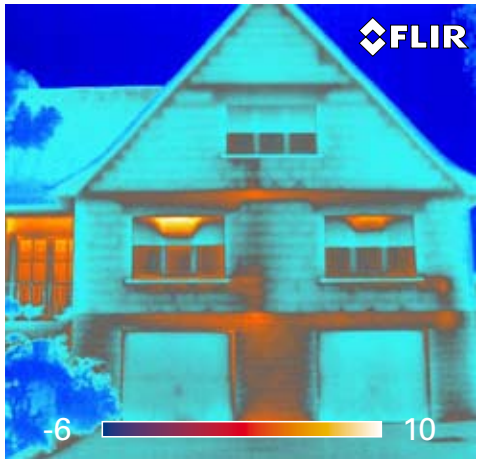
Excessive air leakage can account for up to half of the energy consumed to condition buildings. Adequate air exchange is essential for the occupants' health and safety, but most buildings have a far higher rate of air exchange than is necessary. The main reason is often poor design and/or construction which allows air leakage from the inside to the outside of the building. The leakage pathway is often complex and, without thermal imaging, extremely difficult to visualize. With the help of infrared the contractors can quickly identify and repair problem areas for an immediate stop of energy loss.

Air infiltration



Air infiltration of cold air shown using the Picture-in-Picture function.

Air exfiltration



Air exfiltration of warm air leaking from the inside.

Leak detection in roof systems

Roof leaks can cause costly damage to a building's structure and severe discomfort to its inhabitants. Infrared inspections quickly identify missing or moisture soaked insulation under a flat roof membrane where the insulation needs replacement. This permits partial repair of failed areas rather than the much more costly replacement of the entire roof. Infrared inspection of flat roofs, especially built-up roofs has been proven for a number of years. The technique allows for the detection of moisture trapped in a roof system, a problem that over time leads to the premature degradation of the roof and its framing systems.

Moisture intrusion

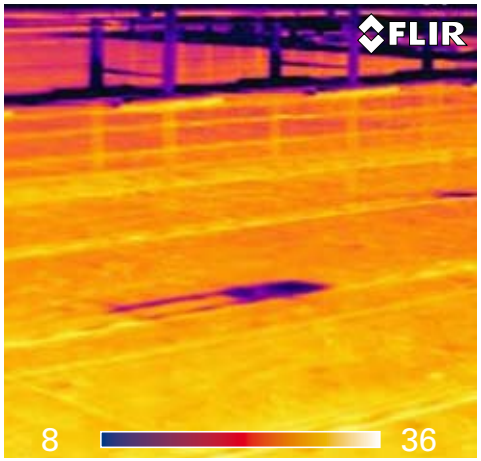
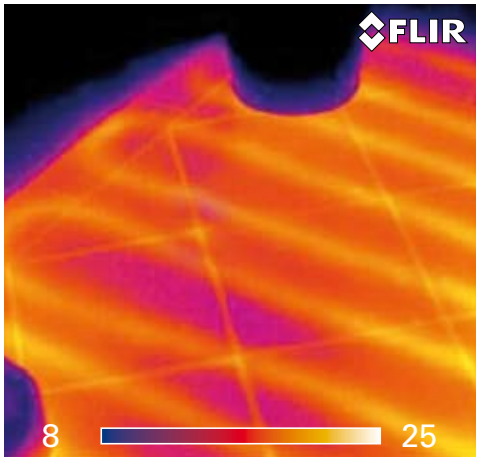


Image of the roof of a refrigerated building, showing moisture intrusion into a hole of the roof.

Inspection of heating, ventilation and air-conditioning systems

Loose, poor-fitting or disconnected heating, ventilation and cooling (HVAC) system ducting can lead to moisture issues and poor building airflow, as well as wasted energy and money! Early detection and correction of these issues via infrared images should be a high priority and will save money and discomfort to both the owner and occupants.

Localizing and visualizing floor heating

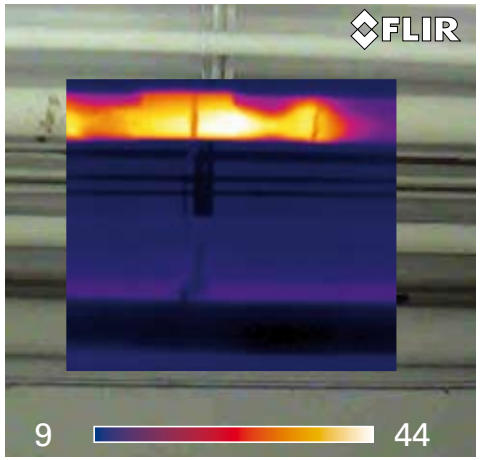


The floor heating system is clearly visible during an infrared inspection.

Inspection of plumbing systems

Blockages in pipes can be quickly located and addressed via infrared – enabling immediate response when required. The use of this nondestructive technology provides for pro-active action to be taken - before the problem gets worse. Water leaks from pipes, whether in a floor, wall, ceiling or under a concrete slab, can also be located using an infrared camera.

Easily find problem areas



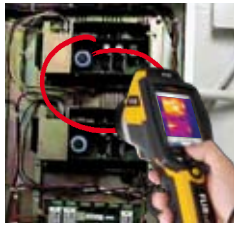
The infrared picture identifies the exact place of a problem in a water line.

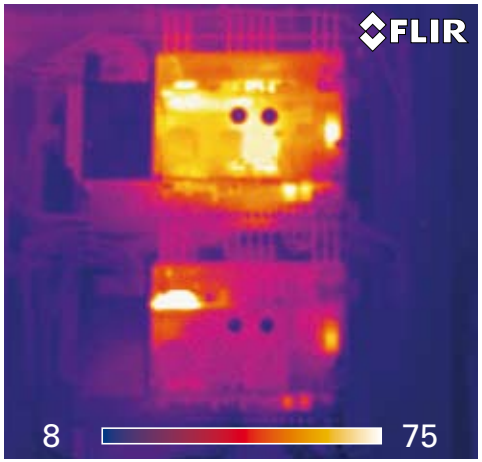
Inspection of electrical systems

Issues with electrical connections, wiring or other system components are clearly highlighted as "hot spots" with infrared images - making them easy to locate and repair as part of an ongoing restoration project or building addition.

Infrared cameras are very effective at quickly and accurately detecting overloaded circuits, faulty wiring and loose electrical connections.

Detect overheated connections



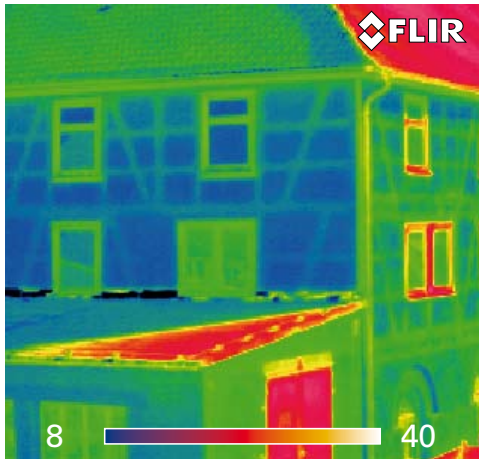


Inspection of this fuse box reveals an overheated conecctions.

Inspection and visualization of building constructions

Infrared is being used with great success to see the underlying building construction. One common application is to verify bond beams and placement of reinforcing in concrete masonry unit walls, as well as structural elements of pre-cast, tip-up walls. Because the inspection is conducted during construction, deficiencies can be corrected prior to occupation with relatively minor inconvenience. Due to high energy costs as well as health concerns regarding mold growth in cold wall cavities, verification of placement of insulation in masonry unit walls is now much more important than in the past.

See underlying constructions



Infrared instantly reveals the underlying construction and sometimes construction faults.