



Infrared image shows insulation quality of low energy house

FLIR B-Series infrared camera optimizes passive housing construction

As energy prices soar, the market for low-energy house building is becoming promising all over Europe. Infrared cameras are used to check the building substance and air circulation during and after the construction phase.

The main principle of low-energy houses is to avoid heat loss and to optimize all sources of heat production. Passive houses go a step further: they are extremely well insulated, do not have heat bridges, use heat exchangers, sun radiation and more sources to save the heat of the air-outflow by transmitting its energy to the fresh air inflow. They follow among others, some comfort (ISO 7730) and air quality (DIN 1946) standards. These houses need up to 90% less heating energy than a conventional residential building. The passive house is likely to become a European Union-wide building standard as of 2012.

Checking the construction process

Passive houses have to be planned and constructed with care. "The building process has to be monitored very closely" says Markus Meyer, owner of AIROPTIMA, a building consulting company specialized in HVAC issues for residential buildings and in particular eco houses. "An infrared camera combined with the blower door procedure is a perfect instrument to detect temperature differences in a non-contact and non-destructive way". These temperature differences are prime indicators of building construction faults, warm bridges or air leaks. Meyer inspects passive houses after building stages are finished and after full completion of the house:

"a strong moment for infrared technology, as I require the presence of all craftsmen during this inspection".

B-series camera

Meyer uses a FLIR B360 infrared camera which has specific measurement features for building applications. He often uses the camera's humidity and insulation alarm functions as well as its Picture-in-Picture functionality. His reports for building owners, architects or energy consultants are made with the ThermaCAM Reporter software and contain advice on which appliances to use in order to optimize the house's heating and ventilation.

Booming sectors

In addition to the exploding amount of passive houses in Europe, Meyer sees growing potential in the energy rehabilitation of existing buildings. Against the background of rising energy prices, which means high heating, ventilation and air conditioning costs, the building substance will be increasingly valued by its degree of energy consumption. "An analysis will always start with a thermographic inspection to detect heat losses near roofs, windows, and key physical building elements. This information combined with relevant calculations is the best basis to plan and monitor building energy optimization works."

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Air leaks in door with considerable temperature difference



Air leak during blower door inspection, Picture in picture image