

## BDA Infrared Thermography



**Heat loss occurs in all buildings. An infrared camera can be used to visualise this heat loss, which is invisible to the eye.**

### How does it work in practice?

In practice it often turns out that flat roofs and facades are not always built with sufficient care. The detailing sometimes appears to be more difficult to implement than is indicated on the drawing. Discrepancies regarding material properties, for example of the insulation material (shrinkage), may also cause problems.

### Operation of test equipment and specifications

One of the applications of infrared thermography is to assess the installation of insulation and the presence of thermal bridges and air leaks. If parts of the insulation are not properly attached or show defects, this results in an increased temperature on the outer surface of the roof or facade. Using infrared thermography, a contactless image can be created of these temperature differences on outer surfaces, and therefore of possible defects. It is also possible to create a contactless image from the inside. Thermal bridges or air leaks will then result in locally lower temperatures on the inner surface of the roof or facade.

Every object or item with a temperature above absolute zero ( $-273^{\circ}\text{C}$ ) emits thermal radiation (electromagnetic radiation) to its surroundings. A specially developed infrared camera is used to measure this invisible thermal radiation and convert it into a visible thermographic (thermal) image. The amount of radiation emitted depends on the temperature and the radiating capacity of the object in question. The higher the temperature of the object, the more thermal radiation is being emitted. For humans this radiation cannot be felt unless the temperature is very high or very low (for instance a radiator or an ice cube).

An infrared camera can already detect very low radiation levels. The temperature differences are visualised on a display. The surface sections with the highest apparent temperature are shown in yellow or, if they exceed the set temperature range, in white. The

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surface sections with the lowest apparent temperature are shown in dark purple or, if they are below the set temperature range, in black. Qualitative measurements are conducted during the inspection. A qualitative measurement is based on an analysis of thermal patterns to determine and locate abnormalities.

The thermographic images are taken with an FLIR B335 infrared camera. During the inspection, the images are stored in the test equipment and further processed on a PC afterwards.

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