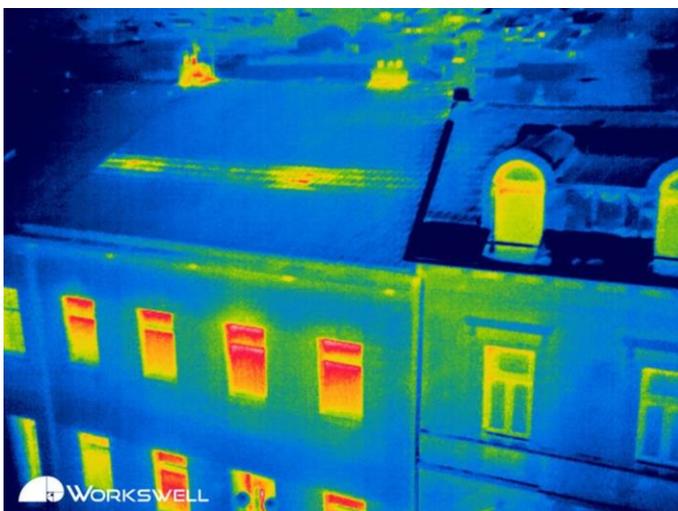


# Thermographic Diagnostics of Buildings

*Thermographic diagnostics of buildings was one of the first areas where thermography was commercially used in the 1960s. A thermal camera can discover several construction defects that cannot be seen by the naked eye at the beginning and may only become obvious after some time when the building starts to degrade. The most frequently discovered problems relate to thermal bridges, water leaks and air proofing.*

## Why thermography



**Construction roof thermal bridges. They may be signs of serious roof damage and leaks.**

Continuously increasing energy prices have brought the need for construction with permanently increased heat insulation demands. Thermography is the ideal way of finding thermal bridges and unprofessional or inadequate insulation.

Practice shows that the work of suppliers is unfortunately not always of the highest quality and their clients are cheated. The quality of the construction work is not high enough to achieve the result expected from the house. There are redundant energy losses, mould, etc. Using a 'thermal camera', things can be seen on the construction that are not visible to the naked eye.

Thermographic measurement can find errors and produce professional measurements proving conclusively where the errors are. The client receives material which can be used for successful discussions with a negligent supplier.

## When can it be measured?

The difference between the interior and exterior must be at least 10°C. This cannot be measured during heavy rain or snow. The most suitable time for measuring is autumn and winter.

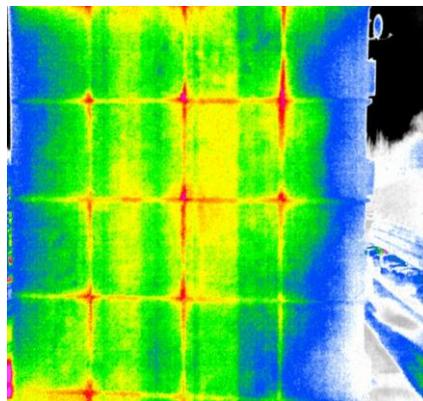
## Why use drones for the inspection?

Until recently mainly manual devices were used during thermographic inspections of buildings. They are perfect for measuring interiors. However, when measuring exteriors, the problem is to map the whole surface of the construction not only with high buildings, but also family houses where most of the roof is not easily accessible.

## Why Workswell WIRIS?

To determine the level of a defect, the measured surface temperature must be known as precisely as possible. So, the thermal camera must be calibrated. Here in Workswell we are well aware of this and, therefore, each delivered WIRIS system is manually calibrated and the declared precision is ensured. The system also includes a calibration certificate confirming the declared precision.

Moreover, Workswell WIRIS can be fully controlled from the ground by a standard RC control unit that you already use to control your drone. During the flight, the emissivity and the reflected temperature can be changed



*Thermal bridges.*

but more importantly the temperature range setting can be corrected. This is very important when searching for

defects selection which image will be produced during the flight.

Another important advantage of the WIRIS is that a traditional photo is produced for each thermal image. This is necessary in practice because it is difficult to identify from a thermal image the individual parts of the construction.

When photographing buildings, the data must be processed into the measuring report. Therefore, Workswell WIRIS stores all data as radiometric and later a measuring report can be produced which proves the conclusion of the measurement and can be used in a claim.

## Conclusion

Thermography is perfect for verifying that construction work has been correctly carried out and inspecting constructions. If a thermal camera discovers errors in the heating or construction of the building, the produced report and the calibrated camera will give you a cogent argument to make a claim. For high buildings or



when inspecting roofs (where defects are the most common) it is very difficult to check the masonry using a manual thermal camera. A good solution is Workswell WIRIS thermal imaging system for drones, which is just as convenient as manual systems. Moreover, the system is calibrated and, therefore, the results of the measurements are conclusive.

The other very important feature of the WIRIS system, which convinces people to select this application, is that the GPS coordinates can be stored to each saved image. This is important because a lot of inspections are carried out for large photo-voltaic power plants. It must be possible to determine from the

produced images where to send technicians for additional analysis of suspicious panels.

After measuring it must be possible to produce a report on notified problems. Therefore, in the SW Workswell CorePlayer measuring reports can be created.

Another important function is manually setting the temperature range. Without this the meaning of individual colours in the image will be permanently changed and you will not be sure whether the panel has a high temperature increase which indicates a problem or a minor deviation. Practice shows that this function can decrease the inspection time by up to 10 times!