

## Diagnosis of the envelope of an attic dwelling using IR thermography as a complement in the Buildings Energy Efficiency Certification

Maria C. Garcia de Viedma

Architect - Energy Auditor - Thermographer

Spain

[mariagviedma@hotmail.com](mailto:mariagviedma@hotmail.com) +34 660007781

When EU publishes the Directive 2010/31/EU, it involves the UE countries the obligation to implement a procedure to compare the energy efficiency of buildings. In Spain, it was transposed in the RD 235/2013 of April 5, which establishes the obligation and the procedure to carry out this Certification of Energy Efficiency (CEE).

When it comes to implementing the CEE buildings, it is often useful to help with Infrared Thermography as a tool that helps detect unique problems. In Spain, you can get useful information is available in the cold (winter) and warm (summer) periods because it is the periods in which greater thermal differences between the interior and exterior are obtained, allowing the detection of problems or singularities.

This study with IR Thermography in an attic dwelling in summer allowed us to detect different problems and singularities that denoted the different reforms that had been made in it, being able to characterize the thermal behavior of the different parts of the envelope. These differences affected both small areas and one or two complete rooms, significantly influencing the thermal comfort as well as the thermal performance of the house and its energy consumption for thermal conditioning.

In this case, together with the CEE, a report of the characteristics of the singularities that produced a greater thermal transmission in certain parts of the envelope was included, together with a proposal of solutions to those detected problems, improving the characterization of the envelope, transmittances calculation and the accuracy of results.

### **Keywords**

IR thermography, CEE, thermal performance, thermal comfort, qualitative thermography, building envelope, building pathology