



HEAT PERMEABILITY MEASUREMENT WITH THERMOGRAPHIC CAMERA

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ABSTRACT

Thermographic cameras are widely used for inspecting and analyzing surfaces of building external constructions. The method demonstrates a complete image of thermal spots and is suitable for giving limited conclusions about the whole surface temperature of the construction. The main problem of infrared analysis is exact temperature layout, because different heat transmission areas can be seen on the screen, but heat radiation levels are not so reliable. Such temperature differences can exceed even 50% of the real surface temperature. To explore more accurate surface point temperatures special thermal sensors and devices were applied. By point type infrared and thermo-couple device temperature distribution points on building material surface were gathered, compared and calibrated with the infrared camera output image. Also mathematical temperature curves were calculated to prove the temperature distribution on the surface. Sample for practical research was external wall construction of cold-storage, in Kuiviži, Latvia. Results were compared with manufacturer's technical information. Using thermal imaging cameras with contact measuring devices, and setting the surface temperature proxies in a wide area, heat permeability of external construction can be calculated by means of a three-temperature method, which includes the point and linear thermal bridges and other places of heat loss in constructions. The method provides an opportunity to expand the experimental use of the thermal image camera for determining heat transfer of external constructions.