

SCHOOL

Kaisariani, Athens, Greece

2009

School building

White elastomeric waterproof coating

PROJECT DESCRIPTION / NEEDS

In this case study, the impact of a cool roof application on indoor temperature, energy loads and surface temperature in a non-cooled school building located adjacent to a main road axis at the Municipality of Kaisariani, (a densely built urban area near the center of Athens) is examined through experimental testing and modelling.

The initial roof surface was covered by cement and gravel screed with an estimated solar reflectance of 0.2.



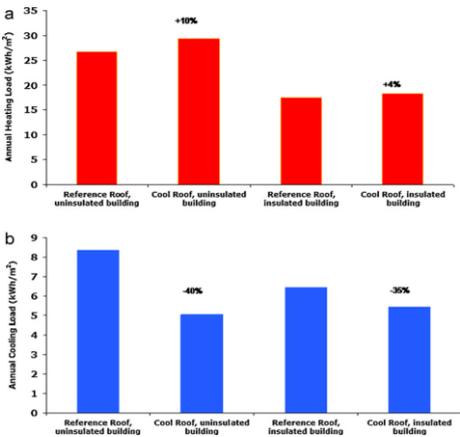
APPLICATION / UTILIZATION

An experimental monitoring campaign has been carried out before and after the application of a white elastomeric coating with a solar reflectance of 0.89 on the roof of the building. The air and surface temperature of the building have been measured and a set of meteorological parameters have been collected. An infrared camera has been used to depict the differences in the surface temperature before and after the cool roof application.

Main products / systems used:
White elastomeric waterproof coating

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CUSTOMER BENEFITS

The solar reflectance of the roof has changed from 0.2 (cement and gravel screed) to 0.89 after the application of a white elastomeric cool coating. The analysis has shown that after the cool roof application, the indoor air temperature was reduced by 1.5–2 °C during summer and 0.5 °C during winter. The annual cooling energy load reduction was 40% and the heating penalty was 10%. A significant decrease in the surface temperature, reaching 25 °C during summer, is recorded after the application. Daily fluctuations of the surface temperature are significantly reduced suggesting a longer lifespan of the material, as thermal fatigue is more likely with greater temperature swings.

