22. Development of Heat Shielding Technology for Roofs of Buildings - Part 2 Verification of the Heat Insulation Performance and Calculating the Reduction in Energy Consumption for Air Conditioning -

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Technologies for lowering the surface temperature of rooftops, such as rooftop greening, heat reflective paint, and roof sprinkler systems, are demanded to mitigate the heat island phenomenon and improve the indoor thermal environment. To respond to the demands for these and other technologies for insulating the exterior of buildings, a rooftop heat insulation system was developed for folded-plate roofs, which is less costly and easier to execute than rooftop greening and uses water retaining or heat insulating sheets. It was confirmed that the heat insulation performance in the summer was more excellent in the water retention sheet system than the heat insulation double roof and, it was confirmed that the heat insulation performance for the heat insulation sheet system is more excellent than heat reflective paint from the scale model experiment. An application of the systems to actual buildings showed that the systems lowered the indoor temperature. An equation for assessing the heat insulation performance of the systems enabled the reductions in energy consumption for air conditioning by the installation of the systems to be estimated.

Key words : water retaining sheet, heat insulation sheet, sunshade, water transpiration, reflection of solar radiation