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JAYADA BOONYAKIAT : A REDUCTION OF HEAT GAIN IN BUILDING THROUGH ROOFS. THESIS ADVISOR : ASSO. PROF. SOONTORN BOONYATIKARN, D.Arch. 171 pp. ISBN 974-584-709-7

This thesis is a research which would be able to find a method of Reduction of Heat Gain in Buildings through Roofs. This arises from the fact that Thailand is located in a hot humid climate with strong sunshine through out the year. Since Roof is a major component of a building that exposed to the direct sun, reduction of heat gain from this component will significantly reduce the amount of heat gain into the building. This heat gain reduction will surely improved the user'thermal comfort. In the Air-Conditioned Building, it will cut down the cooling load through the roof system.

At the beginning of the research, factors which effect the transfering of heat into building through roofs have been concentrated. Then only some important factors were chosen to be studied. These factors include-; Attic space ventilation, Material installation, Positioning of thermal insulation and roofing material selection. The prevent effectiveness of the above studies were used to develop a new roof system for the final investigation.

In the final stage, the new roof was constructed and compared with the conventional style. The performance of the two roofs were evaluated by comparing the inside temperature of the test-cells. It was found that the temperature profile of the new roof is much better than the conventional one. The maximum temperature of the test-cell with the new roof during the typical hotest day in April is about 5.5 c. lower than the conventional roofing system. This finding will be very useful for Architects and Designers to use as a design guideline for future roofing design development.