

Abstract

Climbing-plants on the wall are one method to reducing heat transfer through building façade. Most buildings in the tropical region installed insulation that can cool down indoor temperature, but it will increase outdoor air temperature that is the main cause of heat transfer to building, thus causing Urban Heat Island.

This thesis presents the performance of climbing-plants on solid wall for reducing heat transfer to building, and compare with external insulation finishing system. Relative humidity is also observed during the experiment. In the experimental process, selected climbing plant was grown to cover 10 cm thick brick wall which is installed on one side of the 90 x 90 x 90 centimetre of polystyrene chamber of 2 inch thick. In selecting plant "Mann Bali" was chosen from 9 randomly selected climbing-plants from their quality of leaf coverage and fast-growing.

Climbing-plants with leaf coverage of 85-95%, layer of leaves have 2-3 layers and average thickness was 10-25 cm, installed with offset at 15 cm from wall. They are effective in reducing heat transfer and help releasing heat at nighttime, with minor effect on indoor relative humidity level. In comparison with insulation, although plants have worse performance in reducing heat transfer than conventional insulation, plants yield the average temperature near that of conventional insulation which always trapped heat at night time. Beside its performance for reducing heat transfer to building, climbing-plant panel has more benefit than insulation to environment such as reducing used resources of petrochemical and energy to produce foam product, absorption of carbon dioxide, and reducing air temperature in urban area.