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Thermal insulation and cost effectiveness of green-roof systems: An empirical study in Hong Kong

Vivian W.Y. Tam, Jiayuan Wang, Khoa N. Le



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1 **Thermal Insulation and Cost Effectiveness of Green-Roof Systems:**
2 **An Empirical Study in Hong Kong**

3 Vivian W.Y. Tam^{1,2*}, Jiayuan Wang² and Khoa N. Le¹

4 ¹ School of Computing Engineering and Mathematics, Western Sydney University,
5 Locked Bag 1797, Penrith, NSW 2751, Australia

6 ² College of Civil Engineering, Shenzhen University, China

7 *Corresponding Author, Tel: +61-02-4736-0105; Fax +61-02-4736-0833; Email:

8 vivianwytam@gmail.com

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10 **Abstract**

11 Hong Kong is a densely populated city with high density of skyscrapers and the
12 population is typically concentrated on 30% of the land. The adoption of skyscrapers
13 is therefore common to maximize its capacity. As a result, the need of open space and
14 greenery in our built environment is thus often neglected. In recent years, many
15 building professionals promote green-roof systems to increase green space. This paper
16 investigates the effectiveness of using green-roof systems. Questionnaire surveys and
17 interview discussions are conducted. It is found that the questionnaire respondents are
18 interested in implementing green-roof systems and understanding their environmental,
19 economical and social benefits. Three case studies are also conducted to show the
20 effectiveness of green roofs thermal insulation. The results show that green roofs can
21 reduce the inside temperature by up to 3.4°C. However, the respondents were not
22 willing to invest a large amount of money for green-roof systems. It is suggested that
23 governments should take leading positions to promote green-roof systems. This paper
24 can provide insights on the use of green roofs in Hong Kong and around the world
25 focusing on cost effectiveness and thermal insulation effectiveness.

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