Environmental Engineering and Management Journal xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
http://www.eemj.icpm.tuiasi.ro/; http://www.eemj.eu

"Gheorghe Asachi" Technical University of Iasi, Romania

WINTER AND SUMMER THERMAL COMFORT EVALUATION OF THE SEAWEED HOUSE

Yi Liu[1], Wanxiang Yao[1*], Xin Zhao[2], Weijun Gao[1]

[1]Qingdao University of Technology, Qingdao 266033, China
[2]Qingdao City Cultural Heritage Protection Center, Qingdao 266033, China

Abstract

Examining the ecological value of traditional dwellings with a modern perspective and quantifying their potential laws using a modern approach can provide reference for the development of green buildings. This paper takes the Chinese Seaweed House in Jiaodong Peninsula as a case study. A comparative study of winter and summer thermal environments of seaweed houses in Dazhuang Xujia Village was carried out through field investigations, and a multiple evaluation model of the actual mean thermal comfort vote (AMV) of seaweed houses with humidity and temperature was established. The results show that the seaweed house has significant ecological characteristics of "warm in winter and cool in summer", but need to be further improved in comparison with the modern thermal comfort standard. Meanwhile, the thermal sensation of seaweed house inhabitants have been adjusted to the environment, and the thermoneutral temperatures of seaweed houses in summer and winter are 26.9℃ and 14℃, respectively. The results of the study enriched the database of thermal comfort studies of Chinese dwellings, provided a reference for the thermal comfort evaluation of the seaweed house.

Key words: AMV Model, Chinese seaweed house, MTS Model, Thermal comfort, Traditional dwellings

Received: April, 2024; Revised final: April, 2025; Accepted: June, 2025

* Author to whom all correspondence should be addressed: e-mail: yaowanxiang@126.com