

Abstract

This research studies natural ventilation in houses using landscape elements by investigating various environment types, which affect human comfort. From the study of thermal comfort of Thai people by Khedari, it is possible to create comfort condition by using natural ventilation. The process of research is divided into two parts: thermal comfort and air velocity induced by various landscape designs. In terms of thermal comfort as indicated by air temperature measurement, it is found that the best environment is the large tree covered environment and the worst environment is the concrete pavement. For air velocity, the experiments include simulation in a Computational Fluid Dynamics program (CFD) and temperature calculation to find the equivalent temperature reduction from Szokolay's equation. It is found that the best landscape setting is the large tree covered environment (channel breeze) which can reduce the equivalent temperature to the maximum of 7.52°C . The cooling effect is close to environments with one tree, two trees, and bushes. On the other hand, the landscape setting with the lowest air velocity and comfort level is the concrete pavement. The outcome of this research leads to the guidelines used for improvement of landscape design in order to enhance human comfort by natural ventilation.