

Natural Ventilation: A Mitigation Strategy to Reduce Overheating in Buildings under Urban Heat Island Effect in South American Cities

Palme M.

Carrasco C.

Ángel Gálvez M.

Inostroza L.

Urban heat island effect often produces an increase of overheating sensation inside of buildings. To evacuate this heat, the current use of air conditioning increases the energy consumption of buildings. As a good alternative, natural ventilation is one of the best strategies to obtain indoor comfort conditions, even in summer season, if buildings and urban designs are appropriated. In this work, the overheating risk of a small house is evaluated in four South American cities: Guayaquil, Lima, Antofagasta and Valparaíso, with and without considering the UHI effect. Then, natural ventilation is assessed in order to understand the capability of this passive strategy to assure comfort inside the house. Results show that an important portion of the indoor heat can be evacuated, however the temperature rising (especially during the night) due to UHI can generate a saturation effect if appropriate technical solutions, like the increase in the air speed that can be obtained with good urban design, are not considered. © Published under licence by IOP Publishing Ltd.