

POTENTIAL OF PASSIVE VENTILATION SYSTEMS IN THE URBAN SPACES OF BUDAPEST

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Abstract:

Passive ventilation relies on different natural elements. The air movement can be induced by the pressure difference with the rising of warm air. Passive ventilation systems use very little energy in contrast to mechanical ventilation relying on fans or other mechanical equipment. The local weather, including wind speed, wind direction, air temperature and humidity are also factors influencing passive ventilation systems. Windcatchers and wind towers in outdoor spaces were used in hot arid countries in traditional architecture. However, recently buildings appeared using these strategies in other countries with more humid climate too. Venturi-shaped windcatchers, wind towers and solar chimneys are proven to work in these regions as well and can be an alternative to wind catchers with evaporative cooling in warm-humid climates. The achievements give the possibility to use passive ventilation systems in public spaces, such as warm and arid regions do. This study investigates the potential and the possibility to use passive ventilation systems in the urban spaces of Budapest. This paper selects the target areas, chooses the right strategy based on literature to mitigate the urban heat island (UHI) effectively and looking for expected results. This work is part of the international research program "GREENQUAL" and prepares the data for future studies to simulate the selected ventilation strategies.