

Wind tunnel study on the pressure coefficient performance of different venturi shaped roof configurations for wind induced natural ventilation

ABSTRACT

Wind catchers are structures used for natural ventilation using wind induced into buildings. Recently this has attracted attention for green building features. There are limited studies on the different venturi shapes and their effects on inducing wind into buildings. This study considered three configurations i.e. the shallow ellipse, the ellipse and the hemisphere in a wind tunnel with different speeds ranging from 8 m/s to 20 m/s. The negative pressure coefficient at the lower center of the roof is considered as the criteria for higher ventilation rate. The shallow ellipse performed the best but due to construction limitations other alternatives are recommended.

Keyword: Wind tunnel; Roof configuration; Venturi effect; Pressure coefficient; Pressure coefficient; Induced natural ventilation