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Numerical and experimental performance analysis of a four-sided wind tower adjoining parlor and courtyard at different wind incident angles

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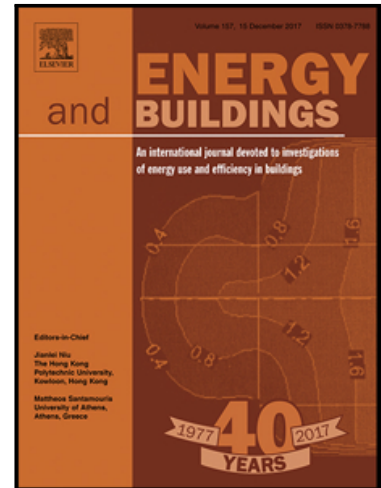
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Highlights

- " Four-sided wind tower performance combined with parlor and courtyard is analyzed experimentally and numerically.
- " Combination of wind tower, parlor and courtyard reflects typical vernacular houses in hot-arid regions of Iran.
- " At 61.5% of wind angles, the wind tower dominantly performs as an air extracting device.
- " At other wind angles, the wind tower acts as an air exchanging device (supply=extract).
- " "Air extracting" function provides passive ventilation using conditioned air from microclimates such as courtyards.
- " It is emphasized on investigating wind tower performance in combination with the whole building layout.

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