Assessment of Indoor Thermal Condition on Traditional Vernacular Masjid: A Case Study on Masjid Kampung Laut, Malaysia

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Abstract

Traditional vernacular architectures in Malaysia include public buildings such as a masjid were
designed with the tropical climate in mind and have proven as an excellent example of providing
indoor thermal comfort to the occupants. It is a naturally ventilated building being greatly influenced
by the building designs. In traditional vernacular architecture, the roof is the main building enclosure
that contributes to the total heat gain. Hence, the research aims to assess the indoor thermal condition
of Masjid Kampung Laut, Kelantan, as the first traditional vernacular masjid in Malaysia. Data were
collected using the method of field measurement to evaluate the indoor comfort level of the masjid, in
terms of indoor air temperature, air velocity, and relative humidity. The results demonstrate that the
average indoor air temperature is acceptable and Masjid Kampung Laut responded favorably to the
local climate. However, some improvements are necessary to further enhance indoor thermal comfort.
Therefore, the findings can guide further thermal comfort prediction studies for other naturally
ventilated buildings. Several other potential passive design strategies for roof design are proposed in
this study to achieve acceptable indoor thermal comfort conditions for the masjid in Malaysia. © 2023.
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Author keywords

Field measurement; Indoor thermal comfort; Traditional vernacular masjid

Indexed keywords

Sustainable Development Goals 2030 New

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Metrics

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