

ABSTRACT

PASSIVE COOLING STUDY AS AN APPROACH TO THERMAL COMFORT AT THE JAMI AL-HURRIYAH MOSQUE, SOUTH JAKARTA

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This study aims to evaluate the effect of passive cooling approach to thermal comfort at Jami' Al-Hurriyah Mosque, South Jakarta. This approach is important given the challenges of the hot and humid tropical climate throughout the year in South Jakarta. Passive cooling involves strategies such as building material selection, facade design, and natural ventilation to reduce energy consumption while improving thermal comfort. The research methodology includes the measurement of Predicted Mean Vote (PMV) and Predicted Percentage of Dissatisfied (PPD) parameters using the CBE Thermal Comfort Tool. Measurements were taken to understand how factors such as building materials and natural ventilation affect thermal comfort within the mosque. The results showed that the application of passive cooling through building design and proper material selection can improve thermal comfort. In addition, optimized cross ventilation also contributes to achieving more comfortable thermal conditions for mosque users. Other factors also affect the achievement of thermal comfort such as building orientation, materials, and vegetation. This study concludes that the passive cooling approach not only improves thermal comfort but also supports the energy sustainability of buildings in tropical climates.

Keywords: *Passive Cooling, Design Engineering, Thermal Comfort*