

Tinjauan posisi dan geometri inner courtyard terhadap kenyamanan termal pada hunian di kawasan urban tropis = A review of the influence of position and geometry of inner courtyards on thermal comfort in tropical urban housing

Aurelia Audrey Gunawan, author

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20522323&lokasi=lokal>

Abstrak

Inner courtyard merupakan salah satu strategi desain pasif dalam arsitektur tropis yang berkelanjutan. Hadirnya sebuah inner courtyard pada bangunan hunian di daerah urban dengan iklim tropis warm-humid menjadi ruang terbuka di tengah padatnya bangunan dengan keterbatasan lahan, untuk mencegah peningkatan suhu lingkungan. Inner courtyard dimanfaatkan sebagai ruang bagi pengudaraan pasif yang memanfaatkan kondisi iklim lingkungan, sehingga dapat meminimalisir konsumsi energi yang menghasilkan emisi karbon dan urban heat island. Skripsi ini akan membahas bagaimana inner courtyard dapat meregulasikan temperatur udara, kelembaban udara, serta aliran udara dalam menciptakan kenyamanan termal. Posisi sebuah inner courtyard dalam hunian berpengaruh penting dalam memberi akses masuknya aliran udara dari luar bangunan, dan menyesuaikan dengan orientasi bangunan untuk menciptakan shading terhadap cahaya matahari. Selain itu, geometri dari inner courtyard berupa bukaan pada area dinding dan atap, juga perbedaan elevasi memiliki dampak yang signifikan terhadap cross ventilation dan stack effect yang terjadi pada bangunan. Dengan menganalisis posisi dan geometri inner courtyard, penulis akan meninjau efek termal yang terjadi pada bangunan hunian dalam mencapai kenyamanan termal.

.....The inner courtyard is one of the passive design strategies in sustainable tropical architecture.

Implementing an inner courtyard in residential buildings creates an open space, especially in tropical warm-humid urban areas where buildings are dense and space is limited. The inner courtyard acts as a space that supports passive cooling by taking advantage of environmental climatic conditions. Moreover, such cooling strategy is achieved with little to no energy consumption, which averts the increase in environmental temperature while maintaining the risks for carbon emissions and urban heat islands. This thesis aims to discuss how inner courtyards are utilized to regulate air temperature, air flow, and humidity in creating thermal comfort. The first subject of scrutiny is regarding the positioning. The positioning of an inner courtyard in a housing can be exploited to allow airflow from the outside to access the building.

Additionally, by strategically considering and adjusting the position of the inner courtyard in relation to the building's orientation, shading from direct sunlight can be provided. The second aspect this thesis aims to investigate is regarding the geometry. The geometry of the inner courtyard in the form of openings and leveling have a significant impact on cross ventilation and the stack effect that occurs in the building. By analyzing the position and geometry of the inner courtyard, the author will review the thermal effects that occur in the building in achieving thermal comfort.