

**ENVIRONMENTAL RESPONSIVE BUILDING ENVELOPE
– TERRACE HOUSES FOR TROPICAL CLIMATE**

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ABSTRACTS

Being one of the main forces in national economy, construction industry plays an important role in ensure the stability and healthy development of the country. Housing development is one of the major activities in local construction industry as a shelter or dwelling is the basic requirement for every category of society.

Unfortunately the activities of housing development had becoming more and more commercialize where the rights of buyers or potential occupants had been sacrifice for the interest of investor or parties involved.

Design of the terrace houses as one of the most common housing type in Malaysia don't show any encouraging breakthrough or improvement for the pass few decades, the design of the housing mentioned playing with style and new outlook but the comfort factor seldom being discuss neither taken care of.

'Hot House' phenomenon happen in most of the mass housing due to the lack of consideration onto thermal comfort in the building design, and this ruins the occupants' health and directly this will affects the productivity of the Community. This situation happen due to the poor ventilation and high indoor temperature, and this suppose to be the main consideration while design a tropic climate house. In this case, the design of building envelope or the outer skin of the houses should be experiment in finding a solution to fulfill the level of thermal comfort that needed by the average users.

The objective of this Design Thesis is to produce a prototype of terrace houses with sustainable design to achieve thermal comfort and indoor environment that suit to equatorial climate, with the reasonable cost to make the prototype workable. Aside from the level of Thermal Comfort for indoor, design and materials of building envelope will also affects the creation of 'Heat Island' which is micro climate with higher temperature in surrounding area. The Heat Island will form heat around the building and brought the heat into internal space through air movement.

Therefore the design of building envelope shall also take into consideration its effect onto micro climate, to ensure the improvement of the architecture itself wouldn't lead to the negative effects onto the living environment of our community.

Finally the study will be emphasizing on the practicality of the design through the simulation of related software program as the reference for the theory and product that being brought forward.

ABSTRAK

Sebagai salah satu aktiviti utama dalam aliran ekonomi Negara, industri pembinaan memainkan peranan yang penting dalam menjaga kestabilan pembangunan ekonomi Negara.

Rumah teres merupakan salah sejenis pembaangunan yang paling aktif dalam industri pembinaan dan merupakan jenis rumah yang paling digemari oleh masyarakat tempatan, tetapi malangnya pembangunan ini semakin dijadikan sumber mengaut keuntungan besar dan kepentingan pembeli semakin diabaikan.

'Rumah Panas' telah menjadi satu isu yang ketara antara pembangunan perumahan seperti rumah pangsa dan rumah teres, ketidakselesaian ini menjejaskan kesihatan dan produktiviti masyarakat. Keadaan ini berlaku akibat pengudaraan yang kurang berkesan serta suhu ruang dalaman yang tinggi, di mana ini seharusnya menjadi pertimbangan utama dalam reka bentuk bangunan dalam iklim tropikal. Dalam tesis ini, reka bentuk lapisan luar bangunan dieksperimen untuk menghasilkan satu hasil yang boleh mencapai keselesaan terma yang memuaskan.

Objektif tesis ini adalah menghasilkan satu prototaip rumah teres yang bersesuaian dengan iklim khatulistiwa dan memenuhi permintaan pengguna terhadap tahap keselesaan yang minima, beserta dengan kos pembinaan yang berpatutan untuk menjadikan reka bentuk ini praktikal. Selain daripada keselesaan dalam rumah, pengaruh reka bentuk rumah ini kepada kawasan sekitar juga dipertimbangkan untuk mengelakkan 'Heat Island' daripada mengelakkan 'Heat Island' daripadaku. Di mana pengaruh negatif ini juga akan menjejaskan kepentingan penduduk.

Akhir kata tesis ini akan menitikberatkan tahap praktikal reka bentuk melalui simulasi computer sebagai data sokongan keberkesanan reka bentuk ini.