

THESIS

**THERMAL PERFORMANCE OF TRADITIONAL CHINESE
BUILDINGS IN INDONESIA**



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Judul Tesis : Thermal Performance of Traditional Chinese Buildings in Indonesia

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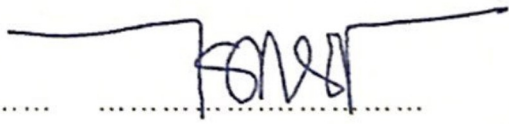
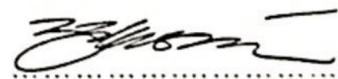
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PENGESAHAN TESIS

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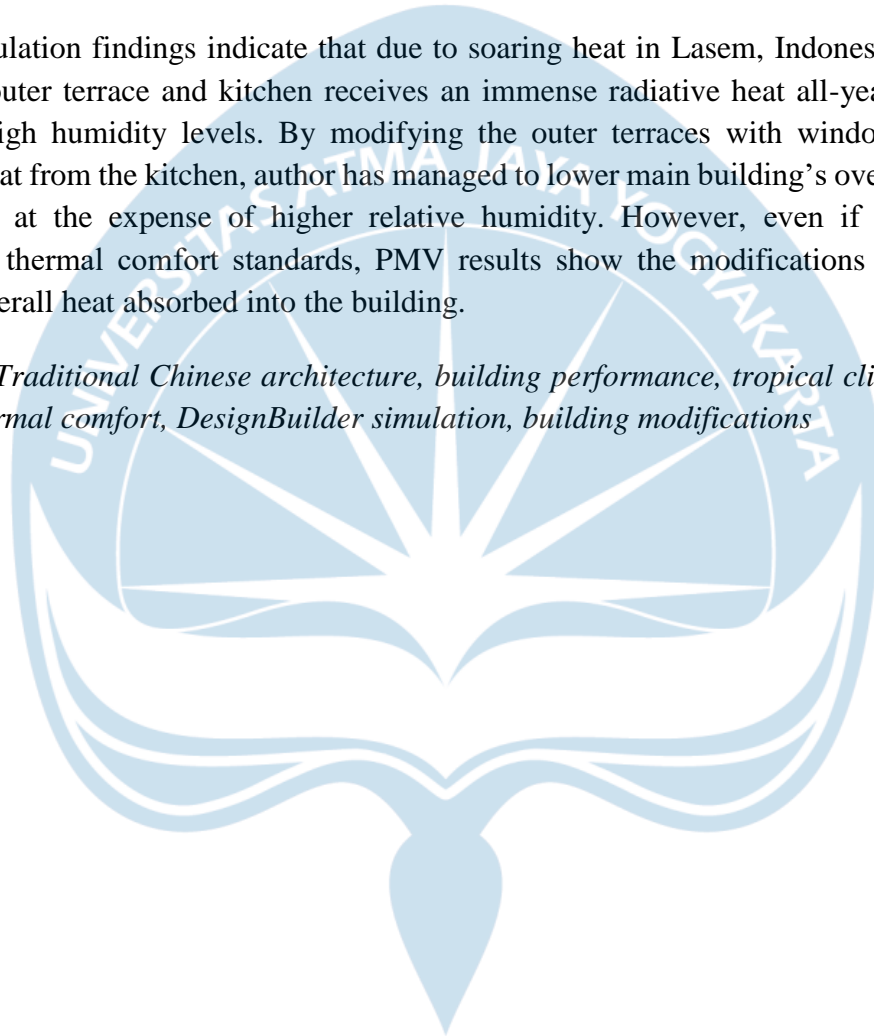

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ABSTRACT

This research aims to identify the building performance of traditional Chinese architecture style building in Indonesia's tropical climate as well as measuring whether it could withstand climate change; while verifying the claims that living in these buildings are still comfortable enough. These aims can be fulfilled through identifying key elements embedded in the building/complex that significantly contribute to how the building performs using DesignBuilder.

Simulation findings indicate that due to soaring heat in Lasem, Indonesia, both main building's outer terrace and kitchen receives an immense radiative heat all-year round with relatively high humidity levels. By modifying the outer terraces with window panes and rerouting heat from the kitchen, author has managed to lower main building's overall operative temperature at the expense of higher relative humidity. However, even if it doesn't fit Indonesia's thermal comfort standards, PMV results show the modifications succeeded in reducing overall heat absorbed into the building.

Keywords: Traditional Chinese architecture, building performance, tropical climate, climate change, thermal comfort, DesignBuilder simulation, building modifications

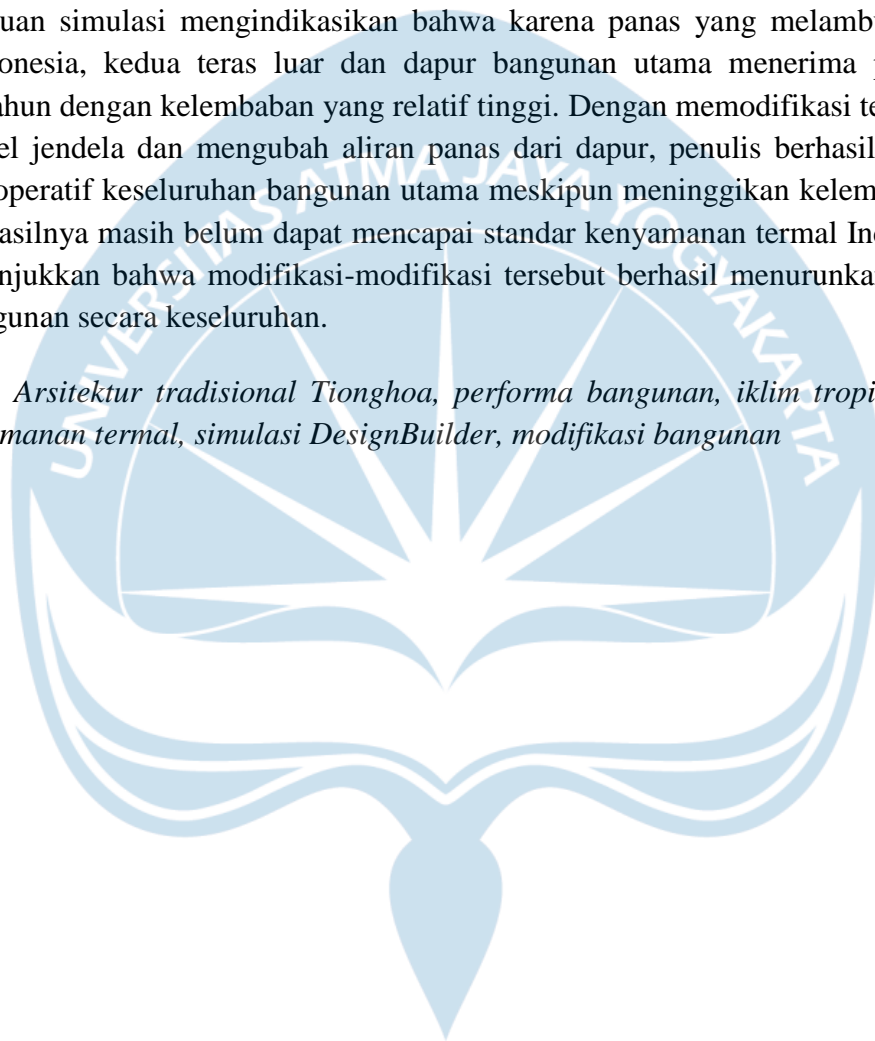


INTISARI

Riset ini bertujuan untuk mengidentifikasi performa bangunan berarsitektur tradisional Tionghoa di iklim tropis Indonesia sekaligus mengukur apakah bangunan-bangunan tersebut dapat bertahan dalam perubahan iklim; sembari memverifikasi klaim-klaim bahwa tinggal di dalam bangunan seperti ini masih cukup nyaman. Tujuan-tujuan ini dapat dipenuhi dengan mengidentifikasi elemen penting di dalam bangunan/kompleksnya yang berkontribusi secara signifikan terhadap bagaimana performa bangunannya menggunakan DesignBuilder.

Temuan simulasi mengindikasikan bahwa karena panas yang melambung tinggi di Lasem, Indonesia, kedua teras luar dan dapur bangunan utama menerima panas radiasi sepanjang tahun dengan kelembaban yang relatif tinggi. Dengan memodifikasi teras-teras luar dengan panel jendela dan mengubah aliran panas dari dapur, penulis berhasil menurunkan temperatur operatif keseluruhan bangunan utama meskipun meninggikan kelembaban relatif. Meskipun hasilnya masih belum dapat mencapai standar kenyamanan termal Indonesia, hasil PMV menunjukkan bahwa modifikasi-modifikasi tersebut berhasil menurunkan panas yang diserap bangunan secara keseluruhan.

Kata kunci: Arsitektur tradisional Tionghoa, performa bangunan, iklim tropis, perubahan iklim, kenyamanan termal, simulasi DesignBuilder, modifikasi bangunan



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Penulisan tesis ini bertujuan untuk memenuhi syarat kelulusan dalam mencapai derajat Magister Arsitektur pada Program Studi Magister Arsitektur Universitas Atma Jaya Yogyakarta.

Tesis ini dapat diselesaikan dengan baik tidak lepas dari bimbingan, dukungan, dan kerjasama dari berbagai pihak. Oleh karena itu, penulis ingin menyampaikan rasa terima kasih kepada semua pihak yang telah membantu penulis dalam menyelesaikan penulisan tesis ini. Ucapan terima kasih penulis ucapkan kepada:

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Penulis menyadari tesis berjudul “Thermal Comfort Study in Relation to Climate Difference and Climate Change: A Case Study of A Traditional Chinese Architecture Style Building in Indonesia” ini masih jauh dari kata sempurna. Oleh karena itu, segala kritik, saran, dan masukan yang konstruktif dari pembaca akan sangat bermanfaat bagi perkembangan penulis di kemudian hari. Penulis berharap dengan segala keterbatasannya, tesis ini dapat memberikan manfaat bagi para pembaca, baik untuk saat ini maupun di kemudian hari.

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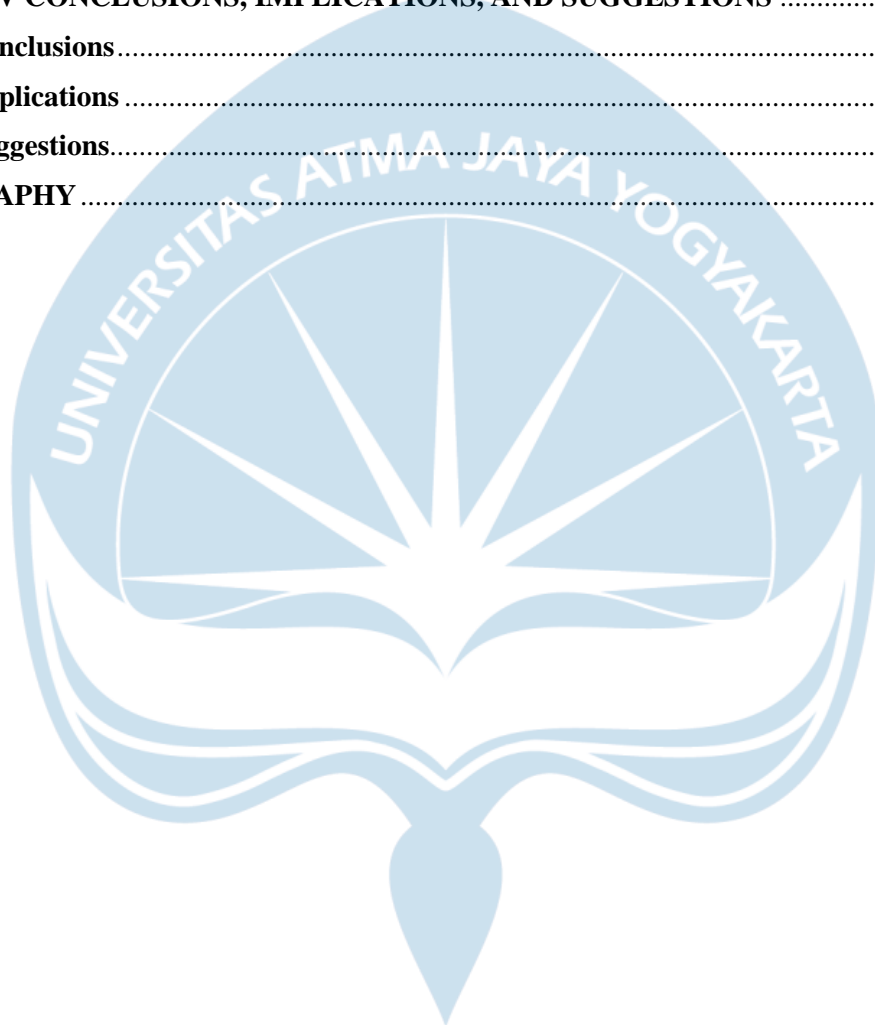
Penulis,

Ersa Sitompul

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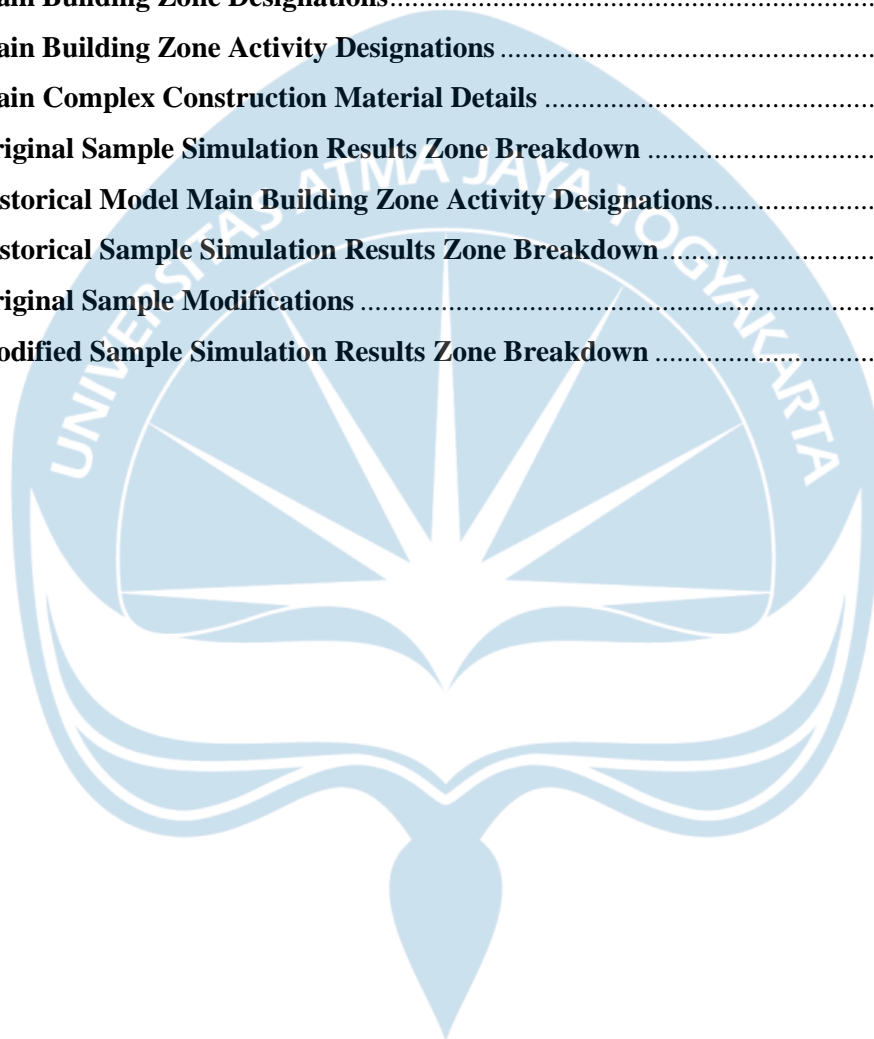
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