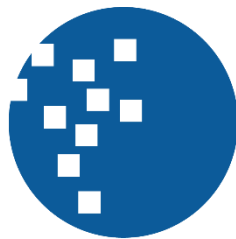


**LIGHTING SYSTEM COMPLIANCE ASSESSMENT TO
BANGUNAN GEDUNG HIJAU RATING TOOL: A CASE
STUDY ON PAKUWON MALL AND HOTEL NEW BUILDING
IN IBU KOTA NUSANTARA (IKN)**



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MBKM INDUSTRIAL INTERNSHIP REPORT

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FACULTY OF ENGINEERING AND INFORMATICS
UNIVERSITAS MULTIMEDIA NUSANTARA
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PREFACE

PREFACE

With all the praise and thanks to Almighty God who has given his love and mercy so that the thesis titled "Lighting System Compliance Assessment to Indonesian Government Rating Tool: A Case Study on Pakuwon Mall and Hotel New Building of Ibu Kota Nusantara (IKN)" can be finished well. This thesis is written as the requirement for internship fulfillment. It is undoubted that without the support and help from related parties, this paper would not be done.

Therefore, I would like to thank:

1. Dr. Ninok Leksono, M.A., as the Rector of Universitas Multimedia Nusantara.
2. Dr. Eng. Niki Prastomo, S.T., M.Sc., as the Dean of the Faculty of Universitas Multimedia Nusantara.
3. Muhammad Salehuddin, S.T., M.T., as the Head of the Study Program of Universitas Multimedia Nusantara.
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5. Ika Putri Dermawan., as the supervisor who has provided guidance, direction, and motivation for the completion of this report.
6. Assoc. Prof. Ir. Arko Djajadi, M.Sc.EE, Ph.D., as the advisor who has provided guidance, direction, and motivation for the completion of this report.
7. My family and friends have provided material and moral support, so that I can complete this thesis.

Tangerang, 29 November 2024



Nicholas Pranata

**PENILAIAN SISTEM PENCAHAYAAN DENGAN TOLOK
UKUR BANGUNAN GEDUNG HIJAU: STUDI KASUS PADA
BANGUNAN BARU MALL DAN HOTEL PAKUWON DI IBU
KOTA NUSANTARA (IKN)**

Nichola Pranata

ABSTRAK

Pentingnya pengurangan konsumsi energi dan emisi karbon mengharuskan bangunan menerapkan prinsip bangunan hijau. Salah satu standar yang mengaturnya adalah Bangunan Gedung Hijau oleh Kementerian Pekerjaan Umum dan Perumahan (BGH PUPR) yang menjadi wajib terutama bagi bangunan pemerintah untuk berkontribusi pada pengurangan sekaligus menerapkan keberlanjutan. Pelaksanaan praktik kerja di PT Ganitri Nityasa Harita berfokus pada simulasi pencahayaan sesuai BGH PUPR beserta perhitungan konservasi air dan studi EDGE. Simulasi dengan bantuan Dialux dilakukan pada bangunan baru Ibu Kota Nusantara (IKN) bernama Pakuwon Mall dan Hotel dengan acuan SNI 6197 2020. Hasil simulasi menunjukkan bahwa untuk sistem pencahayaan alami dan pencahayaan buatan tidak sesuai dengan standar. Dalam kasus iluminasi, kedua aspek menunjukkan ketidakterpenuhan sebesar 250 lux untuk toko/ritel, 150 lux untuk kamar tidur, dan ruangan lain untuk semua lantai kecuali beberapa koridor yang melebihi 100 lux. Sedangkan untuk aspek *light power density* (LPD), hasilnya sesuai karena di bawah $10,76 \text{ W/m}^2$ untuk mall dan $6,03 \text{ W/m}^2$ untuk area hotel kecuali koridor hotel di lantai 5-14. Rekomendasi untuk perbaikan antara lain penambahan jumlah lampu namun tidak melebihi standar LPD serta mengubah spesifikasi jendela dengan persentase transmisi minimal 50%. Untuk LPD, penggunaan strip LED dapat dikurangi atau diganti.

Kata kunci: BGH PUPR, Dialux, Pakuwon Mall dan Hotel, Iluminasi, *light power density*

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Nicholas Pranata

ABSTRACT

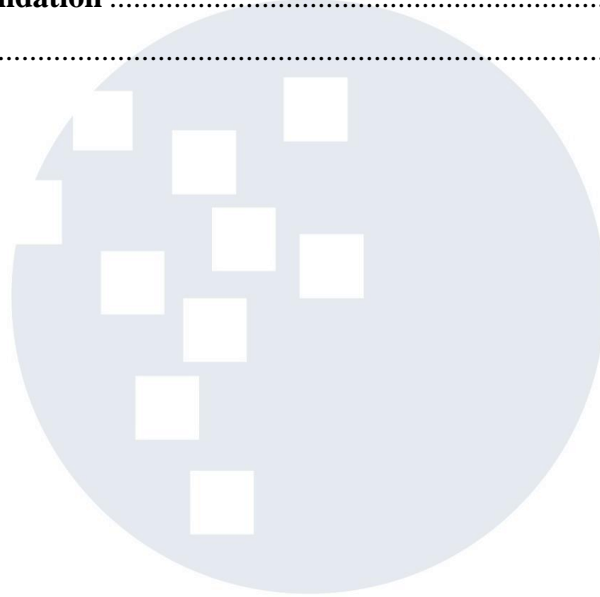
With the urgency to reduce energy consumption and carbon emissions, buildings must be constructed according to the green building standard. Notably, the rating tool by the national government called “Bangunan Gedung Hijau” from the Ministry of Public Works and Housing (BGH PUPR) becomes mandatory especially for governmental buildings to contribute to the reduction while implementing sustainability. The internship at PT Ganitri Nityasa Harita focuses on lighting simulation according to BGH PUPR along with water conservation calculation and EDGE rating tool studies. The simulation uses Dialux to determine the compliance of the results with SNI 6197 2020 on one of the government buildings in Ibu Kota Nusantara (IKN) called Pakuwon Mall and Hotel. The result of the simulation shows that the results of natural lighting and artificial lighting systems do not adhere to the standard. In the illuminance result, both aspects show unfulfillment by 250 lux for shop/retail, 150 lux for bedroom, and other rooms for all the floors except for several corridors that exceed 100 lux. Whereas for the light power density (LPD) aspect, the results comply by not reaching 10.76 W/m² for the mall and 6.03 W/m² for the hotel area except for hotel corridor areas in 5th-14th floors. Recommendations for improvement include adding the number of lamps but not exceeding the standard of LPD and changing window specifications with a minimum of 50% on transmittance. For LPD, LED strip usage can be reduced or replaced.

Keywords: *BGH PUPR, Dialux Pakuwon Mall and Hotel, Illuminance, light power density*

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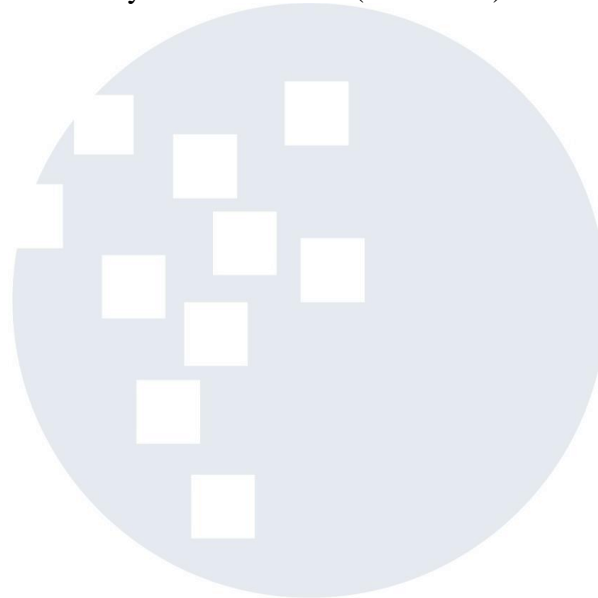
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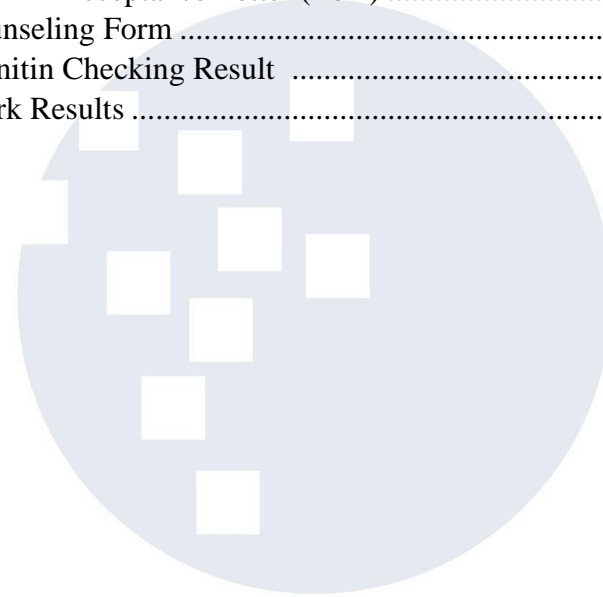
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