

Lighting Audit for Energy Conservation and Safety and Health in the Academic Office Building

Roziah Zailan^{1,a}, Mohammad Ismail Yousef Albiajawi^{1,b},
Mohd Faizal Md Jaafar^{1,c}, Norhaiza Ghazali^{1,d},
Khairul Anuar Shahid^{1,e}*

¹Faculty of Civil Engineering Technology, Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Pahang, Malaysia.

ABSTRACT

A lighting audit is an investigational process that measures conditions against standards to determine any lighting improvement measures. The objective of this study is to conduct a lighting audit to evaluate the level of existing lighting in the work environment of the academic faculty building. The lighting audit for the faculty buildings consists of a walk-through audit, lighting desktop work, field data measurement, and lighting analysis. The illuminance level cross-checks with the MS 1525:2019 and the lighting guideline from the Department of Safety and Health Malaysia. The illuminance analysis finding denotes most areas have violated the standards and are in overlit status. Few lighting conservation measures were proposed and prioritized the LED lighting installation. Economic analysis for retrofitting of LED lighting generates energy saving at 30%, a return on investment of two months, and about 6.60-tonne CO₂ emission reduction annually. The LED lighting installation shows attractive investment and has good potential at higher luminous efficacy around 40-256 Lm/Watt for the respective areas.

KEYWORDS

Lighting audit, Illuminance, Return of investment, Cost saving, Energy conservation measures.

ACKNOWLEDGMENT

The authors would like to thank the Faculty of Civil Engineering Technology, UMP, for providing technical data and information published in this work.