

INTISARI

Gedung B Fakultas Psikologi Universitas Gadjah Mada merupakan salah satu gedung tertua di lingkungan Fakultas Psikologi belum pernah mengalami evaluasi energi, khususnya pada aspek pencahayaan. Lebih jauh lagi, terdapat kemungkinan ketidakseimbangan beban yang terpasang.

Penelitian ini dilakukan untuk mencari peluang penghematan yang timbul dari penggantian jenis lampu. Analisis mencakup tingkat pencahayaan minimum, daya maksimum per meter persegi, intensitas konsumsi energi (IKE), dan keseimbangan beban. Hasilnya, pada sistem eksisting nilai daya maksimum per satuan luas dan IKE sudah mencapai persyaratan Standar Nasional Indonesia (SNI), namun belum memenuhi tingkat pencahayaan minimum. Persentase ruangan yang nilai tingkat pencahayaannya di bawah nilai minimum SNI mencapai 62%. Lebih jauh lagi, beban-beban R-S-T juga tidak berimbang.

Untuk mengatasi masalah tersebut, jumlah titik lampu dihitung ulang dengan menggunakan skenario lampu-lampu alternatif agar tingkat pencahayaan minimum terpenuhi. Penggantian lampu dengan beberapa pilihan alternatif memberikan persentase ruangan yang belum memenuhi tingkat pencahayaan minimum antara 77-99%. Sementara itu, penghitungan ulang jumlah titik lampu meningkatkan persentase ruangan yang memenuhi tingkat pencahayaan minimum hingga 100% pada semua opsi lampu alternatif. Hanya ada beberapa ruangan yang melampaui batas maksimum daya per meter persegi. Beban-beban diatur ulang sehingga tercapai keseimbangan R-S-T pada setiap lantai.

Kata Kunci: SNI, IKE, audit, pencahayaan

ABSTRACT

The Building B of Faculty of Psychology of Universitas Gadjah Mada, is one of the oldest building within the Faculty, has never been evaluated before, especially on the lighting aspect. Furthermore, there is a possibility of imbalance of installed load.

This research was done to find the opportunity of energy saving by replacing the lamp. The analysis include minimum lighting level, maximum power per unit area, energy usage intensity (EUI), and load balance. The results were, in the existing system, both maximum power per unit area and EUI have reached Indonesian National Standard (INS) requirement, however they have not reached the minimum lighting level. The percentage of the rooms those did not pass minimum lighting level reached 62%. Furthermore, the R-S-T loads were not balanced.

To solve those problems, the number of lighting spots were recalculated using the scenario of alternate lamps to fulfill the minimum lighting level. The lamp's substitution gave the percentage of rooms did not fulfill minimum lighting level ca. 77-99%, meanwhile recalculating lighting spots increased the percentage of rooms fulfilled minimum lighting level up to 100% for all alternative lamp options. There are only few rooms exceed the maximum power per square meter.. The loads were also reconfigured to achieve R-S-T load balance on each floor.

Keywords: SNI, EUI, audit, lighting