RINGKASAN

AUDIT ENERGI LISTRIK UNTUK MENGETAHUI PELUANG EFISENSI PEMAKAIAN ENERGI LISTRIK di GEDUNG PERKULIAHAN FAKULTAS TEKNIK UNIVERSITAS JENDERAL SOEDIRMAN

Wia Aprilia Khoirunisa

Seiring perkembangan zaman, diiringi dengan pertumbuhan industri Indonesia yang semakin canggih, yang hampir semuanya menggunakan alat-alat elektronik dan membutuhkan energi listrik sehingga pemerintah merencanakan banyak pembangunan pembangkit listrik agar dapat memenuhi kebutuhan listrik serta mensejahterakan masyarakat. Tetapi pembangunan pembangkit listrik saja tidak cukup, karena biaya yang dibutuhkan sangat banyak, tidak seimbang dengan pertumbuhan penduduk dan industri yang semakin meningkat. Untuk itu harus dilakukan penghematan konsumsi energi, baik itu untuk rumah tinggal, industri, atau instansi agar efisien, dengan metode konservasi energi dan melakukan audit energi. Penelitian ini bertujuan untuk melakukan audit energi listrik di Gedung Perkuliahan Fakultas Teknik Unsoed.

Metode audit energi yang dilakukan pada penelitian ini merupakan metode audit energi awal, yang mana meliputi pengumpulan data energi bangunan gedung dengan data historis pembayaran rekening listrik bulanan bangunan gedung selama satu tahun terakhir dan menghitung besarnya Intensitas Konsumsi Energi (IKE) gedung.

Dari hasil penelitian ini di dapatkan nilai Intensitas Konsumsi Energi (IKE) sebesar 82,2kWh/m²/tahun atau 6,85kWh/m²/bulan, yang mana tergolong pada gedung ber-AC sangat efisien. Beban yang paling mengkonsumsi energi listrik di Gedung Perkuliahan Fakultas Teknik Unsoed yaitu beban sistem pendingin yaitu sbesar 78,007kWh, beban pencahayaan mengkonsumsi energi sebesar 10,356kWh, dan beban peralatan listrik lainnya yang menunjang aktivitas gedung mengkonsumsi energi listrik sebesar 9,243kWh.

Kata kunci : Konservasi Energi, Audit Energi, Intensitas Konsumsi Energi, HVAC.

SUMMARY

ELECTRICAL ENERGY AUDIT TO FIND OUT THE EFFICIENCY OPPORTUNITIES OF ELECTRICITY CONSUMPTION IN THE LECTURE BUILDING OF THE FACULTY OF ENGINEERING JENDERAL SUDIRMAN UNIVERSITY

Wia Aprilia Khoirunisa

As the era progressed, accompanied by the increasingly sophisticated growth of Indonesian industry, almost all of them used electronic devices and needed electrical energy. Therefore, energy consumption savings must be made, be it for residential, industrial, or agency to be efficient, by energy conservation methods and conducting energy audits. This research aims to conduct an audit of electrical energy in the Lecture Hall of the Faculty of Engineering Universitas Jenderal Sudirman.

The energy audit method carried out in this study is the initial energy audit method, which includes collecting building energy data with historical data on the monthly electricity account payment of buildings over the past year and calculating the amount of Energy Consumption Intensity (IKE) of buildings.

From the results of this study, the value of Energy Consumption Intensity (IKE) of 82.2kWh/m²/year or 6.85kWh/m²/month, which is classified in air-conditioned buildings is very efficient. The most consuming load of electrical energy in the Faculty of Engineering Building of Universitas Jenderal Sudirman is the cooling system load of 78,007kWh, the lighting load consumes 10,356kWh of energy, and other electrical equipment loads that support the building's activities consume 9,243kWh of electrical energy. For the results of the lighting system, from the light intensity aspect in the Lecture Building of the Faculty of Engineering Universitas Jenderal Sudirman is still less than the standard SNI 6197-2011 so that it can interfere with the level of comfort while studying teaching, and from the aspect of the average power consumption of the room is still below the standard SNI 03-6575-2001, making it possible to add light points in each room. For air system or HVAC, according to COP and EER calculations, installed air conditioning is already classified in energy efficient air conditioning criteria. For the needs of BTU/h in each room based on the area of the room there are still some rooms that need the addition and reduction of pk specifications

Keywords : Energy conservation, Energy Audit, Energy Consumption Intensity, HVAC.