

Analisa Keekonomian Menggunakan Konsep Green Building pada Gedung Bertingkat dengan Penerapan Efisiensi dan Konservasi Energi (Studi Kasus Gedung Pusat Inovasi dan Pengembangan Sumber Daya Manusia Kementerian Perindustrian) = Economic Analysis Using the Green Building Concept in a High-Rise Building with the Application of Efficiency and Conservation Energy (Case Study of the Center for Innovation and Human Resources Development of the Ministry of Industry)

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Abstrak

Sebagai bahan penelitian adalah gedung Pusat Inovasi dan Pengembangan Sumber daya Manusia milik kementerian perindustrian yang merupakan salah satu gedung bertingkat di Jakarta. Mulai dibangun pada awal 2020, terdiri dari 8 lantai dengan fungsi utamanya adalah kantor dan pusat inovasi serta pengembangan sumber daya manusia. Dari segi struktur dan arsitekturnya telah diteliti oleh tim pelaksana teknis di lapangan, dimana 60% sudah memenuhi konsep green building. Sedangkan dari segi konservasi energinya beberapa perlu dikaji ulang, seperti: pencahayaan, pendingin ruangan, penghawaan dan energi terbarukan yang pasti membantu dalam proses penghematan energinya. Dari perhitungan ulang desain awal perencanaan didapatkan Indeks Konsumsi Energinya adalah 11 kWh/m²/bulan. Sesuai standar Permen ESDM No. 13/2012 sudah termasuk cukup efisien (8.5 - 14 kWh/m²/bulan). Namun dengan investasi sebesar Rp. 2,842,540,600,- yaitu dengan pemanfaatan pencahayaan alami melalui teknologi sensor cahaya dan sensor gerak, penggantian pendingin udara menggunakan Chiller, tidak menggunakan AC pada area-area tertentu seperti: lobby Lift, koridor, toilet dan tangga darurat. Penambahan dan penggantian material, instalasi dan teknologi tersebut dihitung Return of Investment nya dan dibandingkan terhadap manfaat yang didapatkan. Hasilnya nilai Indeks Konsumsi Energinya turun menjadi 7.6 kWh/m²/bulan (sangat efisien). Nilai investasi yang dikonversikan terhadap nilai keekonomian tiap tahunnya Rp. 682,676,662,- maka Return of Investment yang didapatkan adalah 4.2 tahun.

.....As research material, the Ministry of Industry's Center for Innovation and Human Resources Development is one of the high rise buildings in Jakarta. This building began to be built in early 2020, consisting of 8 floors with the main function of being an office and a center for innovation and human resource development. In terms of structure and architecture, it has been researched by a technical implementation team in the field, where 60% have fulfilled the green building concept. Meanwhile, in terms of energy conservation, several things need to be reviewed, such as: lighting, air conditioning, ventilation and renewable energy which definitely help in the process of saving energy. From the recalculation of the initial design planning, the Energy Consumption Index was obtained as 11 kWh / m² / month. In accordance with the standard Permen ESDM No. 13/2012 is quite efficient (8.5 - 14 kWh / m² / month). However, with an investment of 2,842,540,600 rupiah namely by utilizing natural lighting through light sensor technology and motion sensors, replacing air conditioning using a chiller, not using air conditioning in certain areas such as: lobby lifts, corridors, toilets and emergency stairs. The Return of Investment and the addition and replacement of materials, installations and technology are calculated and compared to the benefits obtained.

The result is that the Energy Consumption Index value drops to 7.6 kWh / m² / month (very efficient). The investment value which is converted to the economic value each year is 682,676,662 rupiah then the Return of Investment obtained is 4.2 years.