

Analisis jejak ekologis dan keberlanjutan lingkungan energi listrik pasif bandar udara = Analysis of ecological footprint and airport sustainability of passive electrical energy design

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Abstrak

Sejak dibukanya Terminal Bandar Udara Internasional Halim Perdanakusuma sebagai Bandar Udara komersial pada tahun 2014 lalu, banyak dampak sosial, lingkungan, dan ekonomi yang timbul terkait peningkatan jumlah penumpang pesawat, konsumsi energi listrik pendinginan air conditioner serta biaya pemakaian listrik yang dipengaruhi oleh perpindahan panas heat transfer melalui komponen bangunan dan peningkatan suhu heat gain. Namun demikian, Terminal Bandara Halim hingga kini masih belum dibangun dengan konsep Eco-Airport berbasis passive design. Penelitian ini bertujuan untuk menganalisis nilai jejak ekologis dan keberlanjutan lingkungan energi listrik pasif bandara menggunakan metode dan pendekatan kuantitatif dengan skala ukur rasio. Penelitian ini menghasilkan daya dukung lingkungan bandara sebesar 9.323.631 kWh. Berdasarkan aplikasi komponen passive design, dihasilkan daya tampung lingkungan energi listrik pasif sebesar 9.222.355 kWh dan jejak ekologis dengan selisih nilai sisa ekologis rata-rata sebesar 0,0042. Jejak ekologis berbasis passive design dapat meningkatkan status keberlanjutan Bandara Halim yang semakin menurun setelah tahun 2015. Kata kunci key word : konsumsi energi listrik pendinginan, heat transfer, passive design, jejak ekologis, daya tampung lingkungan energi listrik pasif.

.....The opening of Halim Perdanakusuma International Airport commercially on January 2014 has caused many social, environmental, and economic impacts such as the inclination of airplane passengers, terminal cooling load air conditioner consumption, and high electricity price resulted from the heat transfer and heat gain through the building component. Contrary to the facts, Halim Airport Terminal until this day has not been implementing Eco Airport concept concerned to the passive design method. This research is conducted with quantitative method and approach that resulted in ratio scale in order to analyzing the ecological footprint value and the airport sustainability of passive electrical energy used. As a result, airport carrying capacity contributes around 9.323.631 kWh. According to the application of passive design components, airport capacity of passive electrical energy used contributes around 9.222.355 kWh. Furthermore, ecological footprint contributes ecological remainder with average delta value around 0.0042. Application of passive design components on ecological footprint can improve the sustainability level of Halim Perdanakusuma Airport that already declined or was no longer sustainable after the years of 2015.