

## **ABSTRACT**

### **AUDIT OF LIGHT INTENSITY AND AIR TEMPERATURE ON AN INTERCITY PASSENGER TRAIN OF TANJUNGPANG - KERTAPATI ACCORDING TO THE MINIMUM SERVICE STANDARD OF PEOPLE TRANSPORTATION AND ELECTRICITY GENERATION COST SAVING OPPORTUNITY**

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Passenger trains has a minimum service standard that must be met by service providers in providing services to train passengers. In the minimum the service standard, has been set of points of light intensity and air temperature relating to the passengers comfort. The purpose of the research is to audit both points to know the condition of the installed lights and air conditioner (AC) in the passenger train, and make the planning of the lights and air conditioners to meet the requirements of a minimum service standard.

The research was done by using a lux meter, thermometer, and clamp meter. The method of light measurement in this study uses the regulation in SNI 16-7062-2004 with the addition of sample point. For measuring the air temperature is done by taking samples at the farthest point of the AC unit each coach to get the average of air temperature.

The results showed that the retrofit of light on the type of LED lights and AC changes to the type of AC inverter can reduce the active power consumption by 21.48% (for the regular Sriwijaya train sets) and 63.28% (for the regular Rajabasa train sets). So it can also improve the level of energy consumption intensity with a decrease of 11.33% (for the regular Sriwijaya train sets) and 66.31% (for the regular Rajabasa train sets). Although there is a change in the electrical load, the power plants in the train sets still have fixed specific fuel consumption (SFC) and heat rate (HR) values, but there is an opportunity to save fuel generation costs.

**Keywords :** passenger coach, light intensity, air conditioner, intensity of energy consumption, fuel consumption.

## ABSTRAK

### AUDIT INTENSITAS CAHAYA DAN SUHU UDARA KERETA API PENUMPANG JARAK JAUH LINTAS TANJUNGPINRANG– KERTAPATI SESUAI STANDAR PELAYANAN MINIMUM (SPM) ANGKUTAN ORANG DAN PELUANG PENGHEMATAN BIAYA PEMBANGKITAN LISTRIK

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Kereta api penumpang memiliki standar pelayanan minimum (SPM) yang harus dipenuhi oleh penyedia layanan dalam memberikan pelayanan kepada penumpang. Dalam SPM diatur poin intensitas cahaya dan suhu udara yang berkaitan dengan kenyamanan penumpang. Tujuan dari penelitian adalah melakukan audit kedua poin tersebut untuk mengetahui kondisi terpasang lampu dan pendingin ruangan (*Air Conditioner/AC*) di kereta api penumpang, serta membuat perencanaan lampu dan AC untuk pemenuhan syarat SPM.

Penelitian dilakukan dengan menggunakan lux meter, termometer, dan tang ampere. Metode pengukuran cahaya pada penelitian ini menggunakan peraturan pada SNI 16-7062-2004 dengan penambahan titik sampel. Adapun untuk mengukur suhu udara dilakukan dengan mengambil sampel di titik terjauh dari unit AC tiap kereta agar mendapatkan suhu udara rata-rata.

Adapun hasil penelitian menunjukkan bahwa *retrofit* penerangan ke jenis lampu LED dan perubahan AC ke jenis AC *inverter* dapat menurunkan konsumsi daya aktif sebesar 21,48% (KA Sriwijaya reguler) dan 63,28% (KA Rajabasa reguler). Sehingga juga dapat memperbaiki tingkat intensitas konsumsi energi (IKE) dengan penurunan sebesar 11,33% (KA Sriwijaya reguler) dan 66,31% (KA Rajabasa reguler). Walaupun terdapat perubahan beban listrik, pembangkit di rangkaian kereta masih memiliki nilai *specific fuel consumption* (SFC) dan *heat rate* (HR) yang tetap, namun didapatkan peluang penghematan biaya konsumsi bahan bakar pembangkitan.

Kata kunci : kereta penumpang, intensitas cahaya, pendingin udara, intensitas konsumsi energi, konsumsi bahan bakar.