

INTISARI

UPT. Balai Yasa PT. Kereta Api Persero adalah bengkel lokomotif dan gerbong kereta yang beroperasi di Indonesia. Penelitian ini bertujuan untuk mengetahui kebisingan, pencahayaan, dan termal di area *load test* serta meneliti persepsi pekerja terhadap lingkungan kerja dengan metode kuesioner. Obyek penelitian adalah lokomotif dan gerbong genset yang ada di area *load test*.

Pengukuran kebisingan menggunakan metode titik sampling. Titik ukur diambil pada sumber suara, jarak 3, 9, 15, dan 21 meter arah timur, barat, utara, dan selatan dari sumber suara tanpa ada penghalang dari sumber suara ke titik pengukuran. Berdasarkan kondisi lokasi pengukuran, terdapat 53 titik kebisingan yang memungkinkan untuk diukur. Pengukuran kebisingan diambil saat kondisi mesin dinyalakan (*start*) dan saat *load test* menggunakan *sound level meter* dan direkam menggunakan *software Audacity*. Perhitungan Leq dilakukan pada tiap titik kemudian dilakukan pembuatan peta kebisingan dengan menggunakan *software Surfer 10*. Pengukuran pencahayaan dilakukan dengan mengukur cahaya di tempat yang sering dilakukan pekerjaan yaitu di mesin generator lokomotif dan di ujung gerbong genset. Pencahayaan diukur dengan menggunakan *luxmeter*. Titik pengukuran pencahayaan adalah di bagian utara dan selatan lokomotif dan diukur dalam tiga kondisi yaitu saat pagi (08.00-11.00), siang (11.00-13.00) dan sore (13.00-16.00). Pengukuran termal meliputi pengukuran suhu dan kelembaban lingkungan menggunakan *enviromtent meter* serta pengukuran kecepatan angin menggunakan *anemometer* digital. Pengukuran suhu dan kelembaban udara diukur di tempat pekerja banyak melakukan pekerjaan yaitu di dekat mesin generator lokomotif dan gerbong genset. Pengukuran suhu dan kelembaban udara diukur saat mesin belum dinyalakan (*before start*) dan saat mesin dinyalakan (*on start*). Pengukuran kecepatan angin dilakukan satu kali di dua titik yaitu di dalam area *Final Test 1* dan di area *Final Test 2*.

Hasil pengukuran menunjukkan bahwa area *load test* terpapar kebisingan tinggi melebihi NAB. Kebisingan tertinggi terdapat pada sumber suara lokomotif D yaitu 100,5 dB. Pencahayaan di area *load test* di beberapa titik berada di bawah NAB dengan intensitas terendah yaitu 1,52 lux. Iklim kerja sudah baik karena berada di bawah NAB yaitu berkisar antara 24,5°C sampai 28,6°C. Berdasarkan kuesioner, pekerja merasakan bising, namun hal tersebut tidak banyak mengganggu aktifitas kerja pekerja dan pekerja tidak memperlmasalahkan pencahayaan serta suhu lingkungan di area tersebut karena menurut mereka pencahayaan dan suhu lingkungan sudah baik.

Kata Kunci : Kebisingan, Pencahayaan, Termal, Suhu Lingkungan, Kelembaban Udara, Lingkungan, Kecepatan Angin, *Load Test*, Lokomotif, Genset.

ABSTRACT

UPT. Balai Yasa PT Kereta Api Persero is a locomotives and train coaches workshop operating in Indonesia. This study aims to determine the noise, lighting, and temperature at load test area and examined the worker's perception of the work environment by questionnaire. The objects of research are the locomotives and genset cars at load test area.

Noise measurement was done by sampling points methods. Measuring point was taken on the source of the sound, a distance of 3, 9, 15, and 21 meters east, west, north, and south from the sound source without any barrier from the sound source to the point of measurement. Based on the location of the measurement conditions, there were 53 points of noise that was possible to be measured. Noise measurements was taken when the machine was turned on (start) and when the load test was performed. Both were using a sound level meter and recorded using Audacity software. Leq calculation was done at each point and then a noise map was formed using software Surfer10. Lighting measurement was done by measuring the exposure level on the place that was often used to work such as locomotive generator and genset coach. Lighting measurement was measured using luxmeter. Lighting measurement points were at the north and south of the locomotive and measured in three conditions : morning (8:00 to 11:00), noon (11:00 to 13:00) and afternoon (1:00 p.m. to 4:00 p.m.). Thermal measurements consisted of measurements of temperature and humidity environment using environment meters and digital anemometer for wind velocity measurements . Measurement of the temperature and humidity were measured in place where a lot of workers worked such as locomotive generator and genset coach. Measurement of the temperature and humidity were measured when the machine had been turned off (before the start) and when the machine had been turned on (on the start). Wind velocity measurement was done once in two points : Final Test 1 and Test 2 Final area.

Measurement results showed that there was an extreme noise that exceeds the threshold value. The highest level of noise was on locomotive D (100,5 dB). The lighting at some points on load test area was under the threshold value with lowest intensity of 1,52 lux. The working climate was good as the temperature was under the threshold value (24,5-28,6°C). Based on the questionnaires, the workers felt noisy yet it didn't matter and so were lighting and temperature level as the workers assumed that those were in good conditions

Keywords: Noise, Lighting, Thermal, Environmental Temperature, Air Humidity, Environment, Wind Velocity, Load Test, locomotive, Genset.