

EVALUATION OF DIESEL ENGINE NOISE LEVELS AT PT. JAYA POWER MAKMUR

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ABSTRACT

Diesel Power Plants (PLTD) generate noise that may adversely affect workers' health and the comfort of surrounding communities when it exceeds the established permissible noise limits. Previous studies have generally focused on noise levels either in occupational environments or residential areas separately, and therefore have not provided a comprehensive evaluation of noise distribution characteristics based on measurement locations and their compliance with applicable noise standards. This study aimed to evaluate the noise levels generated by diesel engines at PT. Jaya Power Makmur by analyzing noise distribution characteristics, measurement locations, and compliance with the applicable noise quality standards. This research employed a quantitative descriptive method using a field study approach. Noise measurements were conducted using a Sound Level Meter (SLM) at ten measurement points representing the noise source zone, transition zone, and residential area. The collected data were processed using Microsoft Excel and SPSS through descriptive statistical analysis and subsequently evaluated by comparing the measurement results with the occupational noise exposure limits stipulated in the Decree of the Minister of Manpower of the Republic of Indonesia No. Kep-51/MEN/1999 and the environmental noise standards specified in the Decree of the Minister of Environment No. KEP-48/MENLH/11/1996. The results showed that the highest noise level was recorded at Measurement Point 1, reaching 103.51 dB(A), while the lowest noise level was observed at Measurement Point 10, with a value of 51.53 dB(A). The noise level gradually decreased as the distance from the diesel engine increased. The evaluation revealed that Measurement Points 1 to 7 exceeded the applicable noise standards, whereas Measurement Points 8 to 10 complied with the permissible limits. Therefore, noise control measures, including routine engine maintenance, installation of sound insulation materials, mandatory use of hearing protection devices, and the establishment of buffer zones, are recommended to minimize noise exposure.

Keywords: Noise, Diesel Engine, Sound Level Meter, Noise Threshold Limit Value, Diesel Power Plant.