

OPTIMIZATION OF MEDIUM BUS FRAMEWORK STRUCTURE WITH DYNAMIC PERFORMANCE LIMITS

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ABSTRACT

In several decades, urban areas around the world are increasingly dominated by vehicles, one of which is buses. The safety and comfort factors of passengers are the main considerations for a bus driver in carrying out their activities on the highway. Researchers used an ISO-2631 curve to evaluate dynamic characteristics and predict passenger and driver fatigue limits to avoid accidents. The conceptual design stage of the bus structure is a way to meet the requirements in terms of bus performance, namely passenger comfort. Therefore, many researchers have carried out structural optimization to get the lightest vehicle weight possible without reducing vehicle performance. This study aims to obtain an optimal bus frame structure design by considering passenger comfort as a limitation of sizing optimization on the bus frame structure. The steps taken are to obtain the RMS value from the PSD Acceleration obtained from the random response analysis. The RMS value is used as a limitation when performing sizing optimization. Based on the research conducted, there was a slight change in thickness in 4 types of rods which were used as design variables, the largest percentage change occurred in the 3 mm stem, namely 0.0866%. The increase in volume was 0.007633588% from 0,1048 m³ to 0,104808 m³.

KEYWORDS: Optimization of Sizing, Human Comfort, ISO-2631, RMS Acceleration & Bus Frame Structure

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