

ABSTRAK

Tanpa disadari, aktivitas lalu lintas yang terjadi menghasilkan getaran dan mempengaruhi lingkungan sekitar. Menurut Lawrance, dkk (2011), Getaran lalu lintas terutama disebabkan oleh kendaraan berat seperti bus dan truk. Beban menghasilkan gelombang tekanan yang merambat di tanah dan menyebabkan getaran. Mobil penumpang dan kendaraan ringan lainnya jarang menimbulkan getaran. Tapi sayangnya, penelitian terkait getaran akibat pergerakan kendaraan di Indonesia masih sangat minim. Oleh karena itu, dilakukan penelitian getaran akibat kendaraan, dengan alat yang dirancang dan juga dengan aplikasi IDynamics. Penelitian dilakukan dengan jenis kendaraan, jenis perkerasan, kecepatan kendaraan yang berbeda. Dimana didapatkan, jenis kendaraan golongan 2 menghasilkan getaran maksimal sebesar 0.067 m/s^2 , golongan 5b sebesar 0.703 m/s^2 , dan golongan 7a sebesar 0.733 m/s^2 . Lalu, kendaraan dengan kecepatan 60 km/jam menghasilkan getaran lebih kecil dibanding kecepatan 40 km/jam , tetapi lebih besar dibanding kecepatan 80 km/jam . Jenis perkerasan nyatanya juga mempengaruhi besar kecilnya getaran akibat pergerakan kendaraan, dimana perkerasan kaku menghasilkan getaran paling besar 0.733 m/s^2 , dibandingkan perkerasan lentur sebesar 0.653 m/s^2 , dengan variabel kendaraan dan kecepatan yang sama. Penelitian ini juga menjawab hasil kinerja alat yang dirancang, dimana alat dapat mengukur kecepatan kendaraan, mengukur getaran pada dua titik sekaligus, dan menampilkan waktu ril secara otomatis. Tapi tentunya juga terdapat kekurangan dan keterbatasan alat yang dirancang, seperti hanya dapat mengukur kecepatan objek kurang dari 80 cm , hanya dapat hidup dengan bantuan *device* seperti laptop, dan terkadang terjadi error dan perlu *running* programnya kembali.

ABSTRACT

Without realizing it, the traffic activities that occur produce vibrations and affect the surrounding environment. According to Lawrance, et al (2011), traffic vibrations are mainly caused by heavy vehicles such as buses and trucks. The load generates pressure waves that propagate on the ground and cause vibrations. Passenger cars and other light vehicles rarely cause vibration. But unfortunately, research related to vibration due to vehicle movement in Indonesia is still very minimal. Therefore, a study of vehicle-induced vibration was conducted, with a designed tool and also with IDynamics application. The study was conducted with different vehicle types, pavement types, and vehicle speeds. It was found that class 2 vehicles produced a maximum vibration of 0.067 m/s², class 5b of 0.703 m/s², and class 7a of 0.733 m/s². Then, a vehicle with a speed of 60km/h produces less vibration than a speed of 40km/h, but greater than a speed of 80km/h. The type of pavement in fact also affects the size of the vibration due to vehicle movement, where rigid pavement produces the greatest vibration of 0.733 m/s², compared to flexible pavement of 0.653 m/s², with the same vehicle and speed variables. This research also answers the performance results of the designed tool, where the tool can measure vehicle speed, measure vibrations at two points at once, and display the real time automatically. But of course there are also shortcomings and limitations of the designed tool, such as only being able to measure the speed of objects less than 80 cm, can only live with the help of devices such as laptops, and sometimes errors occur and need to run the program again.