

ABSTRACT

The suspension system on an Off Highway Truck unit plays an important role in supporting the weight of the unit and its load, especially in reducing the impact of collisions between the vessel and the main structure of the unit. However, this system often causes the hauler unit to experience breakdowns due to miss adjustments in its suspension cylinder. This is caused by the use of inappropriate measuring instruments. Therefore, the author created a manual measuring tool that has proven to reduce the occurrence of miss adjustments in the suspension cylinder of the Off Highway Truck unit.

However, the tool still has some shortcomings, so further development is needed. One of the developments is using ultrasonic sensors such as the HY-SRF05 or the Time of Flight sensor type VL53LOX. These sensors have proven to have a very low error rate, ranging from 1% to 3.5%, making them capable of improving the previous suspension measuring tools. This system is also developed to provide notifications when the suspension adjustment process is complete and in accordance with the Operational and Maintenance Manual standards. This can certainly reduce the lead time of the work because it does not need to be waited for periodically.

Keyword: Suspension System, Ultrasonic Sensor, Time of Flight Sensor, Off Highway Truck

INTISARI

Sistem suspensi pada unit Off Highway Truck merupakan sistem yang berperan penting dalam menompang berat unit serta muatannya terutama saat dalam mengurangi pengaruh benturan antara vesel dengan struktur utama unit. Akan tetapi sistem ini sering menjadi penyebab unit hauler mengalami breakdown karena adanya miss adjustment pada silinder suspensinya. Hal ini disebabkan oleh penggunaan alat ukur yang tidak sesuai. Oleh sebab itu penulis membuat alat ukur manual yang terbukti dapat mengurangi event miss adjustment pada silinder suspensi unit Off Highway Truck Tersebut.

Akan tetapi alat tersebut masih memiliki beberapa kekurangan, sehingga memerlukan pengembangan lebih lanjut lagi. Salah satu pengembangannya adalah menggunakan sensor ultrasonik seperti HY-SRF05 atau menggunakan sensor Time of Flight tipe VL53LOX. Sensor ini terbukti memiliki nilai error yang sangat kecil yaitu 1% hingga 3.5% saja sehingga dinilai mampu meningkatkan alat ukur suspensi sebelumnya. Sistem ini juga dikembangkan sehingga dapat memberikan notifikasi apabila proses adjusting suspension telah selesai dan sesuai dengan standar Operational and Maintenance Manual. Hal ini tentu dapat mengurangi leadtime pekerjaan karena tidak perlu ditunggu secara berkala.

Kata Kunci: Sistem Suspensi, Sensor Ultrasonik, Sensor *Time of Flight*, *Off Highway Truck*