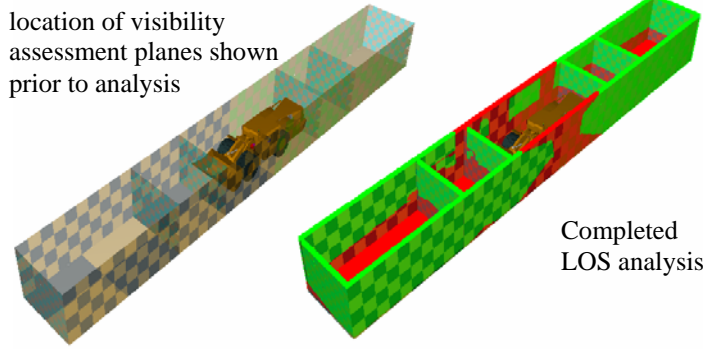


Visibility Project Fact Sheet

Computer Line of Sight Evaluation Method

OBJECTIVE:
To develop a standardized assessment method for evaluating line-of-sight associated with the operation of LHD vehicles

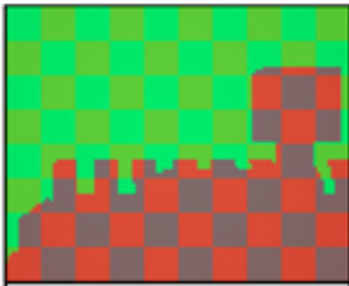
CLOSE method -
location of visibility
assessment planes shown
prior to analysis



Completed
LOS analysis

Background

Line of sight, from the operator's position of an LHD vehicle is restricted. As a result, accidents resulting in equipment damage, environmental damage and serious injury and fatality to workers have occurred. Therefore the ability to evaluate line-of-sight, associated with the operation of an LHD vehicle (and other mobile mining equipment) is important. Moreover a standardized approach is required in order to enable the comparison of vehicles and to make decisions about the benefits of retro-fit modifications.



Example output: LOS to the first forward assessment plane. LOS blockage caused by the light bracket and bucket are shown.

Methodology

The computer line of sight evaluation, CLOSE, method requires the user to have access to computer-aided drawings of the vehicle to be evaluated. A program capable of evaluating line of sight is also required. Our research team uses a computer simulation program called Classic JACK. In the general the following steps are required to carry out the analysis:

- Import the computer drawing of the LHD vehicle into JACK
- Select the articulation point of the vehicle as the reference point for establishing "visibility planes"
 - side assessment planes (21 m long, 5 m apart, 4 m high)
 - 3 front assessment planes (6, 11 and 21 m from the reference point)
 - 3 back assessment planes (6, 11, and 21 m from the reference point)
 - further divide the assessment planes in 0.5 m by 0.5 m squares
- Determine if the virtual LHD operator has LOS to the assessment planes (use coverage zone tool feature in JACK)
 - if a clear LOS is present a GREEN dot is recorded
 - if LOS is blocked a RED dot is recorded
 - the overall percentage of visible area can also be calculated

Applications

Output from a standardized LOS assessment method can be used by the mining industry and mobile equipment manufacturers to evaluate LOS associated with current LHD vehicle designs, proposed changes to LHD designs and prototype vehicle designs.

For More Information

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