Evaluation of the Lift Truck Tilt-Cab Feature in terms of Productivity and Comfort of Operators

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Abstract

The prime function of a lift truck is for lifting, inserting, extracting, as well as lowering of pallets from storage areas as high as 10.5 meters. Operators can look at 2.5 to 3 meters storage heights without straining their neck. However, most storage heights are at 5 meters to 10.5 meters high. Thus, to operate at more than 3 meters of storage height, lift truck operators have to tilt their necks to as much as 75 degrees from ergonomic neutral, far exceeding the 50 degrees safe limit. Excessive exposure to this condition can cause neck tension syndrome, an irritation of the levator scapulae as well as the trapezius group of muscles of the neck. The experiment aims to determine the effect of the tilt cab feature of the BT Reflex RR Reach Truck on operator comfort and productivity. This feature allows lift truck operators to lessen the angle of awkward tilt as the lift truck cab itself will tilt for a certain number of degrees. Operator comfort is measured using a survey of neck and back tension with a subjective rating scale while productivity is measured in terms of storage and retrieve cycle time. Results have shown that for 3 m storage height, there is no significant difference between the tilting and non-tilting cabs in terms of operator comfort and productivity. However, lift trucks with the tilting cab feature are superior in terms of both operator comfort and productivity for 5 and 7 m storage heights. Cost-benefit analysis shows that the cost per pallet decreases significantly for 5 and 7 m storage heights.