



Scientific research and business implications

Introduction

The concept of a tilting cab on a reach truck was pioneered by BT in the early 1990s and was first launched as a product in 1993. The concept was fully integrated into the BT Reflex range when first launched in 1995 and it has been a main feature of BT Reflex reach trucks since that time. The tilting cab concept remains unique to BT.

Scientific research

A key scientific project illustrates the reasons behind the development of the tilting cab system. This 'Prodergo Project' was a joint initiative, initiated in 1996, between BT Products and the Department of Industrial Ergonomics at Linköping University of Technology.

The project studied the relationship of productivity and ergonomics in forklift trucks. It centred on the 'driver-forklift system', recognising that the process of work involves man and machine working as one unit, and there was particular focus placed on measuring physical stress exerted. Other issues included measurement of time to complete a task and the 'driver feeling' – recognising the fact that a positive driver experience will lead to increased wellbeing, comfort and confidence. Musculoskeletal disorders were also considered, being symptoms of a poor driver-forklift system.

Statistics show that musculoskeletal injuries and disorders in forklift truck drivers are prevalent in the neck, shoulder and lower back. Studies indicated that in particular reach truck drivers are exposed to neck loads that put them at risk for developing neck and shoulder disorders. Part of the reason for this is the fact that the neck is at a rotated angle of more than 15° for more than 80% of work time, and an angle greater than 45° for 50% of the time – due to the posture adopted during driving. Add to this the effect of pronounced backward inclination of the neck during higher level stacking and it results in statistics that showed forklift truck drivers are 2½ times more likely to suffer from neck injuries, compared to other occupations.

Business implications

Of course there are financial risks involved if forklift truck drivers are potentially exposed to strain or injury, measured as cost of sickness or, in some cases, compensation. However aside from these obvious costs the research undertaken acknowledged the performance implications for the driver-forklift system. A driver that is under physical strain is likely to be less productive and prone to error. The consequence of this is an adverse affect on overall productivity and an increase in cost of damage.

The unique BT Reflex tilting cab addresses the risk

The Prodergo Project undertook independent tests on forklift trucks, including the BT Reflex tilting cab system. Scientists were able to measure that the system reduces maximum neck extension by 20%, and this was as a result of tests involving stacking of goods at heights of just four and six metres. The results for operations involving greater lift heights would be much more significant, given the increased amount of time taken to observe the raising and lowering of loads.

Notably the drivers' own perception of reduced exertion was even higher. The project revealed that drivers' subjective ratings of perceived exertion were significantly reduced for the tilting cab by 52%. This indicates a significant improvement in the areas of productivity, stress-related errors and potential healthcare issues.

The tilting cab system allows for programming of the tilt-back and tilt-forward function, in terms of the fork-height at which the mechanism applies, which means it can be tailored to suit driver preferences – further enhancing the workplace experience, which is key to staff performance, motivation and retention.

It is inevitable that the tilting cab concept is perceived as most relevant in higher-level applications. A significant proportion of TMHE's high level BT reach truck users specify the system. What gives greater testament to the benefits of tilting cabs is that the majority of companies using the system specify the same type of truck when subsequently renewing or increasing their fleets of equipment.

Seeing past the mast

The key benefit of the tilting cab is that it allows the operator to see the fork tips when they are elevated, when in a conventional reach truck they would be obscured by the mast, requiring the operator to move his head in order to achieve the same view.

The benefits are clear: reduced demand on the operator leading to greater speed and safety, significantly reducing the risk of accident and damage while boosting productivity.

