Summary bachelor thesis Marten van den Brink

Analysis of the New Operator Cabin for a Terminal Tractor Designed for the EU Market

This bachelor thesis, carried out at Hyster-Yale, focuses on researching the difference between the operator cabin for a terminal tractor for the US market and for the European market. Terminal tractors, also called yard trucks or spotter trucks, are critical in logistics operations for moving trailers in ports and distribution centers. Optimizing the cabin can deliver significant benefits in terms of ergonomics, safety, user-friendliness and efficiency.

1. Introduction

Terminal tractors are designed to quickly and efficiently move semi trailers over short distances. The cabin of these vehicles plays a crucial role in the productivity and well-being of the operator. A well-designed cabin can contribute to less fatigue, a better working posture and ultimately higher productivity. The purpose of this study is to examine Hyster-Yale's current cabin and identify and document opportunities for improvements to bring the cabin to the European market.

2. Ergonomics and Comfort

A major focus of this study was the ergonomics of the cabin. An ergonomic design reduces physical strain and the risk of work-related conditions. The research revealed several aspects that could be improved, such as the seating position, the layout of control panels and the accessibility of the controls. It was clear that an adjustable air suspension seat with adequate support, as well as easy-to-reach controls, is crucial for operator comfort.

The placement of the doors was also looked at. Their installation can have a major impact on daily operations and therefore increase efficiency. This study looked at the size of the entrance, the positioning and the method of opening the opening. In addition, the operator's walking path has been examined, there are possible obstacles that hinder the walking path and this can be optimized.

3. Safety

Safety is another critical factor. The cabin must protect the operator against external hazards, such as falling objects and adverse weather conditions, and internal risks, such as sudden movements and poor visibility. Recommendations for safety improvements include reinforced cabin structures, and improved lighting both inside and out. In addition, modern technologies such as camera systems and sensors can be integrated to support the operator in maneuvering on the tight platforms of ports and distribution centers.

4. User-friendliness

The usability of the cabin has a direct impact on the efficiency of operations. Simple and intuitive controls can shorten the learning curve and increase productivity. The possibility of personalizing adjustments to the interface was considered so that it can be adapted to the preferences of the

operators. This can contribute to higher satisfaction and productivity, as operators feel more comfortable and efficient with an interface that meets their specific needs.

5. Visibility

Good all-round visibility from the cabin is one of the main requirements for the operator, without which it is not possible to ensure the safety of the operation. This study made an inventory of the critical points that the operator must have insight into. It is therefore important that the operator must always be able to look ahead, to the side and behind. Possible improvements in this regard can be sought in solutions such as repositioning of the windows and a change in the possible dimensions.

Conclusion

The opportunities for improving a terminal tractor cabin for the European market at Hyster-Yale are extensive and offer significant potential for increasing operator efficiency, safety and satisfaction. Through a combination of ergonomic improvements, user-friendly designs and visibility optimization, Hyster-Yale can develop a cabin that is better suited to the needs of modern logistics operations in Europe compared to the US market. Future studies could focus on the implementation and evaluation of specific recommendations. The ultimate goal is to create a working environment that is not only functional and efficient, but also focuses on the health and well-being of the operator.