

## Public summary

### Designing a terminal tractor Dashboard

The central focus of this thesis is the specialized design of a terminal tractor cabin tailored explicitly for the European market because most of the terminal tractors are manufactured in and made for the American market. Hyster-Yale wants to know if and how a redesign of the current cabin is needed to put it on the European market.

To accomplish this objective, an extensive analysis encompassing a range of terminal tractor manufacturers (including Kalmar, Tico, Capacity, Terberg, Mafi, Autocar, Lonestar SV, Orange EV, Mol Cy, Kamag, and Gaussin) was conducted.

Multiple of these manufacturers were contacted in order to obtain a more comprehensive understanding of their terminal tractor cabins. The primary method of inquiry involved acquiring and examining the operation manuals associated with these cabins. This approach allowed access to detailed information and insights into the functioning and design of the cabins, providing a valuable source of knowledge for the research.

This analysis assessed the features and components integrated into their cabins and dashboards, with an emphasis on contrasting European and American configurations.

Furthermore, an investigation was carried out to gain insights into the operational procedures followed by terminal tractor operators in their daily tasks. Drawing from these insights, a foundational cabin design that outlines the optimal configuration of various cabin elements was formulated. These elements encompass factors such as noise levels, vibrations, comfort, convenience, accessibility, visibility, controls, and safety measures, all tailored to meet the distinct requirements of the European market.

Subsequently, the findings from this investigation were seamlessly integrated into requirements tailored for the European terminal tractor market.

In addition to the formulated cabin design foundation, a comprehensive design proposal was developed for the arrangement of components on the dashboard, considering the frequency of use and the sequence of the operator's actions. The arrangement of the buttons was also based on the reach operators would have in a seated position during operation. This phase involved creating sketches and a detailed design concept.

As part of this proposal, two displays were incorporated into the dashboard to present essential information for the operator during the operation of the terminal tractor. The design of these displays was thoughtfully crafted to provide effective support and enhance the operator's tasks and workflow.

In summary, this thesis is dedicated to creating a foundation for terminal tractor cabin design tailored specifically to the European market and for the hydrogen-powered terminal tractor. It addresses key factors such as comfort, safety, and usability. The work includes a specialized cabin design framework that optimizes elements like noise reduction, vibration control, convenience, accessibility, visibility, and operational controls to align with European requirements.

Furthermore, a dashboard design proposal was introduced, strategically organizing components to enhance operator efficiency. This design also incorporates two displays for clear information presentation, facilitating and improving the overall workflow of terminal tractor operators during their daily operation. Overall, the thesis aims to enhance the operator experience while meeting the unique demands of the European market.