

Presentation at AISS 2021

"Assisted and Automated Driving on Land and Waterways".

Considerable efforts are currently being made in the automotive industry to automate the driving task or at least to make it significantly less demanding by means of innovative driver assistance systems. The focus is on increasing both driving safety and driving comfort. A similar development is taking place in the field of inland waterway transport, where the motivation besides driving safety and comfort is also to reduce personnel costs and at the same time to attract qualified operating personnel. The guiding principle is the recognition that automation can be a target-oriented answer to the strategic challenges of inland navigation.

For the development of automated inland navigation vessels, a research strategy has been developed at the University of Duisburg-Essen and its affiliated institute DST together with other partners from science and industry, which is being implemented in several funded projects. To this end, the research facilities "Experimental and Operational Management Center for Autonomous Inland Vessels" (VeLaBi) and the Port Research Laboratory (HaFoLa) have been designed and built in recent years. In addition, there is a real test field in the Dortmund-Ems inland canal in Germany. These infrastructural facilities form an essential basis for the implementation of the intended research and development goals.

The presentation describes the development trends in the automation of motor vehicles and inland vessels as well as the similarities, but also the differences in the development of the respective systems. These differences relate, on the one hand, to the technologies available and used in land vehicles and ships and, on the other hand, to the framework conditions resulting from the different transport routes.

The presented trends and developments are illustrated by exemplary projects and applications. In particular, projects and development methods for the development of highly automated ships and the development of a novel land-based transport system are presented as examples. Another part of the presentation describes exemplary new technologies in the environment of vehicle and ship traffic when refueling and loading vehicles.