

Automation of hinterland processes: HHLA and Fraunhofer CML launch IHATEC project



As part of the IHATEC “Pin handling mR” project, Hamburger Hafen und Logistik AG (HHLA) and the Fraunhofer Center for Maritime Logistics and Services CML are researching the automation of pin handling in rail processing by means of mobile robotics. The project is supported by the German Federal Ministry of Transport and Digital Infrastructure (BMDV) as part of the initiative for innovative port technologies (IHATEC).

The objective of the “Pin handling mR” research project is to develop and demonstrate the handling of folding pins on container wagons using an autonomous mobile robotics system. Currently, these pins must still be manually fastened before trains are loaded. They are installed at various positions on the container wagons and are raised or moved according to the size of the container. This time-consuming procedure will in future be taken over by a mobile robot that will operate the pins using a gripper arm.

Alongside the Fraunhofer CML and in close collaboration with its subsidiaries, HHLA is pursuing the project goal of developing an autonomous prototype of the mobile robot and testing it under real conditions. In addition, software specific to robotics connected to the port logistics system via an interface will be developed within two and a half years. This will allow the control centre to monitor and manage pin handling.

Jens Hansen, Chief Operating Officer of HHLA, emphasises the importance of the project for the HHLA Group: “The development of automated pin handling will help us optimise terminal processes and transport costs in seaport-hinterland traffic. Furthermore, we can use the innovative mobile

robotics solution to improve the working environment and especially the occupational safety of our employees. This project is particularly exciting because it allows us to pool diverse know-how from different areas across the Group and connect several competent partners.”

Prof. Dr.-Ing. Carlos Jahn, Head of the Fraunhofer CML, emphasises: “The development of the port railway in recent years illustrates the hinterland’s importance for the Port of Hamburg. There are a lot of automated solutions in the port environment at present. The areas of application and opportunities to boost efficiency in this regard are very diverse. At the core of our expertise in mobile robotics is the design and development of application-oriented technologies. We really look forward to working together with HHLA on a project that will optimise rail handling processes.”

Subsidy approval for this IHATEC project was presented to representatives of HHLA and the Fraunhofer CML on 28 September 2022 during IHATEC’s DigiTest networking conference in Berlin.

HHLA will act as coordinator for the project and will support it with its subsidiaries Container Terminal Altenwerder (CTA), HHLA Sky, Hamburg Port Consulting (HPC), Metrans and Service Center Altenwerder (SCA). CTA and SCA will employ their technical expertise and long-standing terminal know-how to support the tests with their specialists and terminal infrastructure. HHLA Sky will contribute its specially developed IoT Integrated Control Center, which will in future carry out mission planning, monitoring and control of the mobile robot. HHLA rail subsidiary Metrans will support the project with the wagons and operational data integration. HPC will take on administrative handling of the project and, as a consulting company in the port and transport sector, will also provide support with operational questions.

The Fraunhofer CML is responsible for the development and procurement of robotics hardware and software. This also includes the selection and procurement of suitable hardware components, their integration into the overall solution, and system testing. In doing so, the Fraunhofer CML is contributing its profound knowledge of robotics.

Additional associated partners will also support the project. With their inland terminal expertise in intermodal transport, KTL Kombi-Terminal Ludwigshafen, neska Schifffahrts- und Speditionskontor and Braunschweig’s port operating company will deliver requirements to the robotics system.

The IHATEC project is being supported by the BMDV with the goal of driving port technology innovations in the area of autonomous systems and automated technologies. Moreover, the anticipated acceleration of handling at the terminals will lead to increased efficiency and cost optimisation in hinterland transport. This will reinforce the competitiveness of rail container throughput in the Port of Hamburg.

High-resolution images are available for download on the HHLA website under ‘Media’: [click here](#) for download.

Vernetzungskonferenz IHATEC/DigiTest

28.09.2022, Berlin



Handover of the IHATEC funding decision in Berlin. From left to right: Prof. Dr. Carlos Jahn (Head of Fraunhofer CML), Rebecca Vick (Executive Management in the Container Segment HHLA) and Achim Wehrmann (Director Shipping BMDV)

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About HHLA

Hamburger Hafen und Logistik AG (HHLA) is one of Europe's leading logistics companies. With a tight network of seaport terminals in Hamburg, Odessa, Tallinn and Trieste, excellent hinterland connections and well-connected intermodal hubs in Central and Eastern Europe, HHLA

represents a logistics and digital hub along the transport flows of the future. Its business model is based on innovative technologies and is committed to sustainability.

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Title: Depending on the size of a container, different pins have to be set up for locking (yellow in the picture) when it is loaded onto rail wagons. Photo: Thies Rätzke / HHLA