



Dear Readers,

In this year's last newsletter, we present our benchmarking service "Global Liner Analytics and Shipping Statistics", or GLASS for short, for the first time. This effective tool helps involved actors to analyze the efficiency of the maritime transport chain.

What is happening with current projects? Here we give you an update on Pin-Handling-mR: How can mobile robots make work in the port and at the terminal safer and more efficient? We have an answer. Finally, I would like to draw your attention to our upcoming annual event Maritime Innovation Insights (MI), which will take place on May 22, 2025. Please make a note of the date. It is well worth it!

I hope you enjoy reading this issue, but above all I wish you a wonderful Christmas season, happy holidays and a good start to 2025!

Yours sincerely  
Prof. Carlos Jahn, Head of Fraunhofer CML

## Performance check of ports and ships worldwide - Benchmarking at a new level

In the fast-moving and often intransparent market environment of global maritime shipping, access to clear key performance indicators and reliable information is becoming increasingly important. This transparency is crucial for making well-founded strategic and operational decisions.

In this context, the benchmarking service GLASS - Global Liner Analytics and Shipping Statistics from Fraunhofer CML offers a powerful tool for maritime actors. GLASS analyzes historical and current data from the Automatic Identification System (AIS) and generates precise performance indicators on terminal lay times, congestion and capacity utilization in ports and the distribution

of travel times in global liner shipping.

In this way, GLASS supports data-driven decisions that lead to optimized operations, higher reliability and more efficient supply chains.

GLASS goes beyond traditional port statistics and provides detailed insights at terminal level - worldwide. Shipping companies benefit by being able to specifically evaluate the performance of individual terminals and adapt their fleet strategy accordingly. Port operators and terminal managers can compare their services with those of their competitors, identify bottlenecks and increase terminal throughput. Freight forwarders can use GLASS to find the most reliable partners and optimize the resilience of their supply chain. Public authorities and institutions can use the data to evaluate the performance of the ports in their area of responsibility and make well-founded infrastructure management decisions.

Contact us so that our researchers can demonstrate the use and benefits of this powerful solution to you.

Contact: M. Sc. Julius Kühle  
[julius.kuechle@cml.fraunhofer.de](mailto:julius.kuechle@cml.fraunhofer.de)

### MIU - Lectures online

Enjoy the quiet days around the turn of the year - why not view one of our lectures from the year that is coming to an end? You can find the selection on our [homepage](#).

### Fraunhofer CML @ LinkedIn

We report on our developments, activities and employees several times a week on our [LinkedIn](#) channel. Follow us!

### transport logistic 2025

Visit us at transport logistic in Munich in June 2025! We will be presenting new solutions for the optimization of container logistics at the Fraunhofer stand.



Knowledge of precise data - e.g. on delivery times - can optimize operational processes.

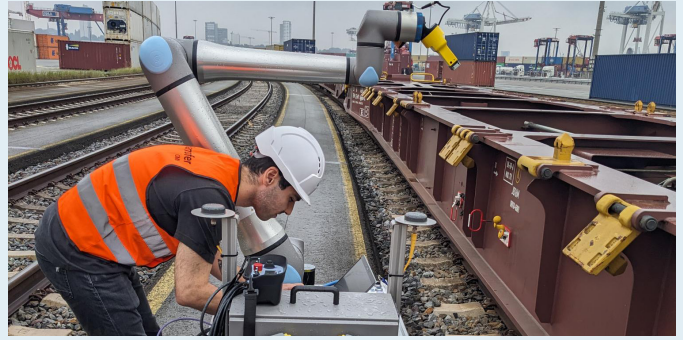
## Technology update for rail handling: Mobile robots take over pin handling

The Port of Hamburg is valued for its efficient rail connections to the European port hinterland. 2.5 million TEU (2023) are transhipped from and onto carrying wagons every year.

To ensure that the containers stand safely, the carrying wagons have pins on which containers are placed with the corner castings. Due to the different lengths of the containers, these pins have to be flipped up or down before each transhipment - depending on the loading plan. Today, employees still have to walk along the trains and adjust all the pins - a repetitive activity in a working area of high risk.

This is where a new development from the Fraunhofer CML comes into play: the Port Technologies department is working with mobile robots to make work in ports safer and more efficient.

In the [Pin-Handling-mR](#) project, the researchers, together with project partner HHLA, have developed the use of a mobile robot that can move along the container wagons and adjust the pins as required. Amongst others, the localization function of the robot must be highly precise as well as the position of the pins to be adjusted must be known reliably. The actual pin handling is realized by a robot arm equipped with a magnet gripper. Sensor data enables the arm choosing the right manipulation approach and



Mobile robotics automates pin handling at Container Terminal Tollerort in the Port of Hamburg. © Fraunhofer CML

implementing the related trajectory.

This is a highly interesting solution for rail handling terminals and technology companies from the port handling sector that are relying on mobile robotics in the face of a shortage of skilled workers, safety requirements and efficiency pressure.

**Contact:** Dipl.-Wi.-Ing. Johann Bergmann  
[johann.bergmann@cml.fraunhofer.de](mailto:johann.bergmann@cml.fraunhofer.de)



Flexible artificial intelligence adjusts truck turnaround times.

## Digitalization in combined transport: smart solutions for truck handling

The [FLEXIKING](#) research project is making progress: the focus is on implementing the collaborative and flexible Terminal Appointment Booking System (TABS) in ports, which addresses current challenges in truck dispatch in the context of combined transport and offers benefits to both terminals and freight forwarders alike. The overarching goal is to efficiently link route planning and time slot bookings in order to minimize waiting times for trucks and optimize the use of resources along the supply chain.

The development and integration of the central modules for the flexible TABS are well advanced. On the Fraunhofer CML side, these include innovative approaches to dynamic route planning for freight forwarders and an ETA (Estimated Time of Arrival) forecast for rail transport based on artificial intelligence (AI). Interfaces for the connections to the CML modules have been implemented and are now to be tested in order to ensure seamless communication and information

exchange between the stakeholders involved.

By using AI, time slot bookings at the terminal will be dynamically optimized for the first time, which should create a balance between the interests of the terminals and the freight forwarders. With the intelligent and collaborative adjustment of time slot bookings, we want to achieve both a smoothing of peak loads at the terminal and significantly improve planning reliability for trucking companies. We have thus created the basis for more sustainable and efficient terminal processes. The project is being implemented with the partners TriCon Container-Terminal Nürnberg GmbH, cargo support Service GmbH, Institut of Maritime Logistics MLS of TUHH, and SGKV Studiengesellschaft für den Kombinierten Verkehr e.V., as part of the IHATEC funding program.

**Contact:** M. Sc. Maximilian Reimann  
[maximilian.reimann@cml.fraunhofer.de](mailto:maximilian.reimann@cml.fraunhofer.de)

Save the date: Maritime Innovation Insights MII on May 22, 2025!

The special thing about our annual MII event - short for "[Maritime Innovation Insights](#)" - is that it provides information on the current status of application-related solutions. The focus is on practical applications with immediate benefits. Experience a day full of exciting presentations and fascinating demonstrations on all aspects of maritime logistics. The german-speaking event, organized by and with the Fraunhofer CML, offers you the opportunity to discover the latest innovations and trends in the industry and make valuable contacts. Join us and help shape the future of maritime logistics!

Fraunhofer Center  
for Maritime Logistics  
and Services CML

Blohmstraße 32  
21079 Hamburg, Germany  
Tel.: +49 40 2716461-1260  
[info@cml.fraunhofer.de](mailto:info@cml.fraunhofer.de)  
[www.cml.fraunhofer.de](http://www.cml.fraunhofer.de)

