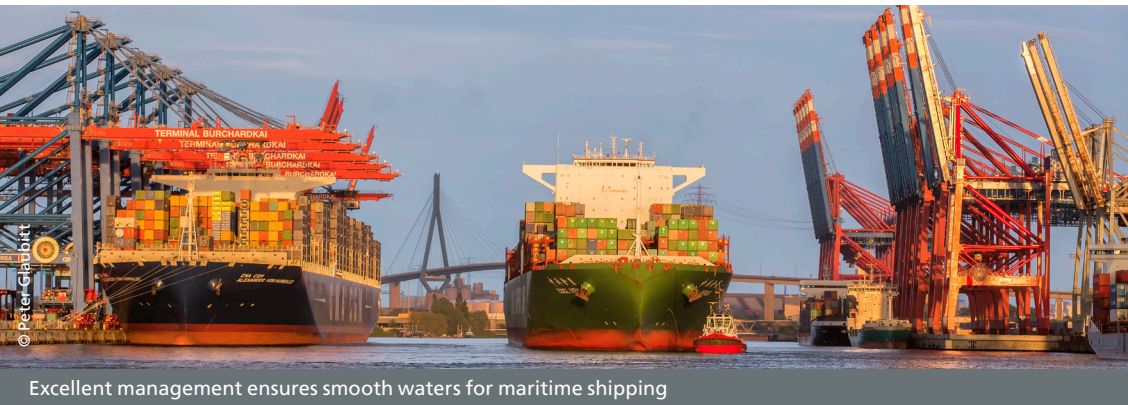


FORUM: „EXCELLENCE IN SHIP MANAGEMENT“ BIG INTEREST IN NEW SOLUTIONS



Excellent management ensures smooth waters for maritime shipping

International maritime shipping has been confronted by major challenges for a number of years. Global and sustained economic crises, changes in customer and trade relations and financial bottlenecks challenge all those involved to re-think established processes. Within the parameters of the project „EIS – Exzellenzinitiative Schiffsmanagement“ („Excellence Initiative – Ship Management“), IT pilot solutions aimed at meeting these challenges were developed from 2012 to 2015. These were now presented to over

90 guests, including Frank Horch, the Senator for Economic Affairs, Hamburg, at the EIS forum, held on September 21 at the Technical University of Hamburg. The topics ranged from technical management and financial management to maritime IT. The solutions developed were demonstrated by the project partners, including the leaders of the consortium DNV GL and MarDynamics, in the course of a parallel exhibition. As part of the EIS project, the Fraunhofer CML has developed

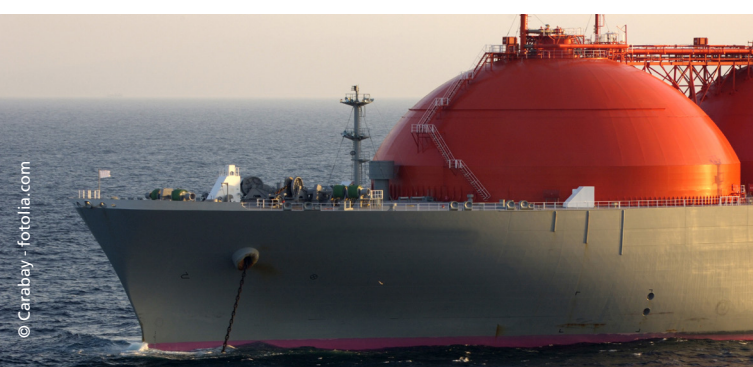
the procurement logistics and the crew scheduling tool. The Supply Chain Optimizer (SCO) assists the user in procurement processes (e.g. respective to order date, quantity, supplier and the ports of delivery for spare parts). The Crew Scheduling Optimizer (CSO) facilitates efficient crew deployment planning. This is used to define the deployment times of all sailors within a fleet, as well as to identify the ships on which the sailors are to be deployed.

LNG: THE TECHNOLOGY OF THE FUTURE CML EXPLORES POTENTIAL IN BRUNSBÜTTEL

The market for liquefied natural gas (LNG) is growing worldwide, with LNG being used as a raw material in industry and a source of energy to fuel for maritime and land transport. While many European countries are investing in LNG infrastructures and have established both import terminals and

bunker stations for ships, in Germany trucks are used to supply ships. As an industrial location and a port, Brunsbüttel lends itself to the closing of this gap and thus contribute to a diversification of the gas supply for the industrialized nation Germany. The Ministry for Economic Affairs, Labor,

Transport and Technology of the federal state of Schleswig-Holstein, the egeb: Wirtschaftsförderung (Economic Development) mbH and Brunsbüttel Ports GmbH have commissioned the Fraunhofer CML to carry out a study investigating the potentials for an LNG facility in Brunsbüttel. The initial question is: How and under which circumstances can an LNG infrastructure at Brunsbüttel be successfully implemented? To this end, the CML is examining obvious LNG sales markets and identifying LNG utilization potentials that can be developed in the medium term. Preliminary findings are expected this autumn.



An LNG tanker at anchor

FOREWORD



Dear readers,

For a number of years now, maritime shipping has faced major challenges in terms of efficiency and transparency. In the current issue of our newsletter, you will read about the innovative IT solutions on this front that have been developed within the parameters of the project EIS: „Excellence Initiative – Ship Management“ in Hamburg.

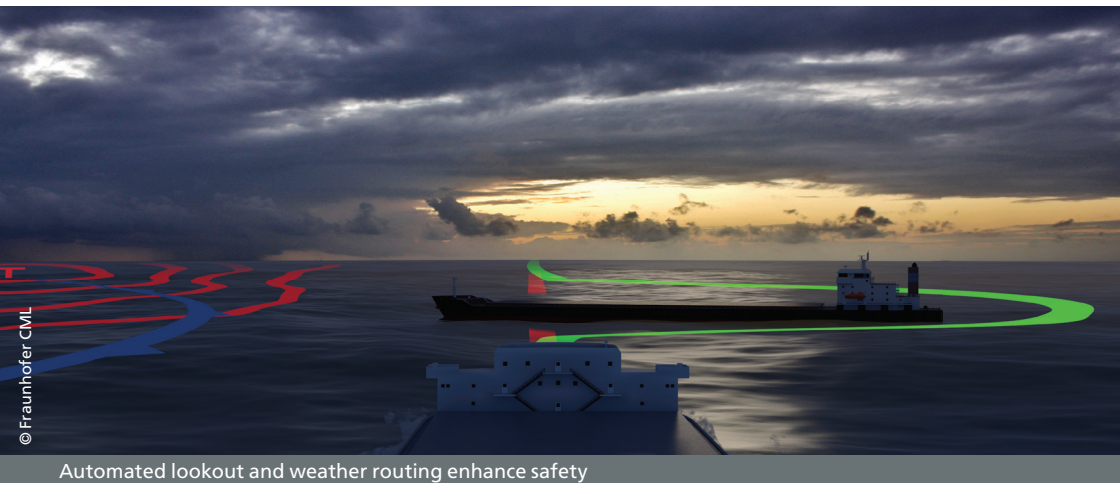
Furthermore, the CML is investigating the potentials that a liquefied natural gas (LNG) infrastructure at Brunsbüttel can offer shipping and regional industry.

And: Will the ship of the future sail without a crew? On behalf of the EU, the CML has assessed feasibility in conjunction with European partners and has developed conceptual and technology-specific fundamentals for the autonomous ship. The findings were presented at the closing event of the groundbreaking project MUNIN in Hamburg. I hope you find this an enjoyable read!

Sincerely,

Prof. Carlos Jahn
Head of Fraunhofer CML

AUTONOMOUS MARITIME NAVIGATION FINDINGS OF THE MUNIN PROJECT



Automated lookout and weather routing enhance safety

What does the shipping of the future look like? Are autonomous vessels feasible – and which technologies are required for this? It was these and further questions that the partners of the EU-supported research project MUNIN, headed by Fraunhofer CML, have been thoroughly examining over the past three years. The objectives of MUNIN consisted in the analysis of feasibility and the conceptualization of autonomous maritime navigation, followed by the development of practical solutions for an autonomous vessel. During the course of the project, various core systems of the autonomous vessel were developed as

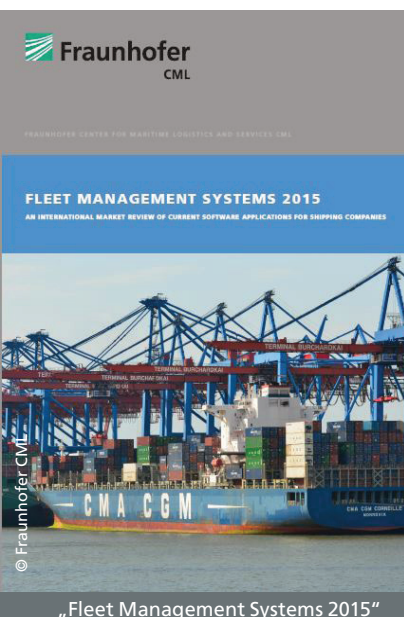
prototypes and, at the CML, a simulation environment was created to evaluate autonomous bridge technology.

The research concluded at the end of August. The project partners presented the findings and solutions obtained to more than 60 guests at the CML premises in the course of lectures and live demonstrations conducted on June 10 and 11.

In addition to a general overview, the lecture program also encompassed the discussion of legal issues and profitability forecasts. Essentially, with respect to the realization of the autonomous vessel, it is not a question of whether

but of when, according to the CML project director Hans-Christoph Burmeister. Even if the path to the autonomous vessel ship is a long one, it is accompanied with a number of significant innovations that also increase efficiency and safety on traditional ships. The findings of the MUNIN project can already appreciably ease the load on ships' crews on long sea voyages, for instance by way of automated lookout and unmanned bridges, and can make cruises safer and more efficient by means of optimized weather routing.

NEWS FROM THE FLEET MANAGEMENT CML PUBLISHES MARKET OVERVIEW



shipping industry to growing challenges. Fleet management systems help to maintain an overview in these complex fields of activity. There are now more than 50 providers worldwide offering both complete and partial solutions. The most recent study „Fleet Management Systems 2015“ provides a comprehensive overview of the market.

The areas of „crewing“ and „weather routing“ constitute a thrust area of the study, now in its third edition. The area of „crewing“ is growing in importance, since staff costs account for an increasingly major share of the ship's operating costs and since new regulations are expanding the activities surrounding staff deployment and staff planning.

The appropriate choice of efficient

IT solutions in the area of „weather routing“ plays an important role in shortening travel time, lowering energy consumption and increasing safety.

„The fact that our fleet management study is already in its third edition indicates the rapid changes occurring in the market. The current issue aims to inform companies engaged in this industry of the latest range of products available on the market and, thus, to offer an optimal decision-making tool for the selection of the appropriate fleet management system,“ says Prof. Carlos Jahn, head of Fraunhofer CML.

„Fleet Management Systems 2015“ is being published in English and can be purchased by visiting www.verlag.fraunhofer.de.

IN BRIEF

A pleasing success for Fraunhofer CML: After the research work specific to unmanned maritime shipping, carried out within the parameters of the EU project MUNIN (under the aegis of the CML) concluded at the end of August, the largest Korean shipbuilding company Daewoo Shipbuilding & Marine Engineering (DSME) commissioned the CML to develop a partially automated nautical prototype system.

At the annual conference **TOC Europe**, decision-makers, suppliers and service providers from across the container supply chain convened from June 9 to 11 in Rotterdam to discuss terminal-specific processes and to present technological innovations and operational solutions. More than 3,500 visitors enjoyed broad information during the three days of the exhibition and in the course of expert lectures on the latest developments in the industry. The CML presented its solutions for terminal planning and the improvement of energy efficiency specific to transshipment and transportation here.

+ + + DATES + + +

- **32nd International Supply Chain Conference**
28-30 October 2015, Berlin
- **Intermodal Europe 2015**
17-19 November 2015, Hamburg

IMPRESSUM

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Overcapacities, decreasing freight rates and international and domestic regulations are exposing the