Fraunhofer CML

FRAUNHOFER CENTER FOR MARITIME LOGISTICS AND SERVICES CML

AUTONOMOUS SHIPPING

Practice Solutions at MUNIN Final Event Introduced

Hamburg, 07. July, 2015. On the 10th and 11th of June project partners and more than 50 guests met at the final event of the research project MUNIN (for further information about „The Research Project MUNIN" see below), led by Fraunhofer CML. After nearly three years of research in the draught of the autonomous ship the work concludes at the end of August. The project partners introduced the achieved results and solutions in talks and live presentations at the University of Technology of Hamburg-Harburg.

The duties in the MUNIN project lay in the theoretical analysis of the subject „Autonomous Shipping" and the development of practical solution attempts which together should make the conversion of an autonomously operating ship possible.
The programme enclosed beside a general overview the presentation of the communication architecture which is necessary for a conversion, as well as the discussion of juridical questions. Beyond it, Lutz Kretschmann of the CML ventured a view on the possible economic efficiency. Additionally, possible risks of the operation of an autonomous ship were intensely discussed.
The presentations of the practice solutions took place in the rooms of the CML. The autonomous engine room showed the supervision possibilities of relevant engine functions from shore on an arrangement of multiple monitors. For the case of a predictable engine trouble servicing or repair need can be forecast by remote monitoring at an early stage.
In the „Shore Control Centre" vessels can be supervised worldwide. Their positions are shown on electronic nautical charts and their movements are supervised on a real-time basis. Critical situations are discovered not only by the so-called operator who looks at this sea segment, but is indicated, in addition, by the software.
Also the possibility of a remote control was shown, by means of which an as dangerously recognised situation can be solved by interventions from the outside.
And the „Unmanned Bridge" was not least visited with big interest. It was demonstrated in the ship handling simulator of the CML where meeting ships conduct evasive actions autonomously and according to the international regulations for preventing collisions at sea. Condition for this is the application of the „Automated Lookout System" also developed within the scope of the project which can recognise small objects on the water surface and transmits suitable warnings. The autonomous control can be complemented with a weather routing solution developed by CML. Herewith ship routes are adapted according to the predicted weather conditions, so the trip can be conducted very safely and efficiently. In addition, the system optimises the course of the ship in such a way that potentially dangerous swell influence is minimised and thus allows autonomous navigation also in stormy sea.

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At the end of the event crucial questions were discussed with the participants: when will the first autonomous ships sail, where will this happen and how could disasters like a fire be handled? Project manager Hans-Christoph Burmeister from CML points out, that the MUNIN project as a concept study answers a lot of questions about „Autonomous Shipping", but not all. The results can already relieve crews on long sea voyages significantly, for example in the form of the „Automated Lookout" and the „Unmanned Bridge". Voyages can be safer and more efficient using the optimised „Weather Routing Module". Basically, according to Burmeister, the question is not whether, but when „Autonomous Shipping" will become reality, and Wolfgang Franzelius, Head of Safety Technologies in Maritime Technology and R&D at DNV GL, complements: "The autonomous ship is feasible and useful. And as far as its operation is safe and secure, it will be accepted and realized."

The research project MUNIN

MUNIN started under the direction of Fraunhofer CML in September 2012. Eight European research and industry partners from the countries Germany (University of Applied Sciences Wismar, MarineSoft GmbH, Fraunhofer CML), Norway (MARINTEK, aptomar AS), Sweden (Chalmers University), Iceland (Marorka ehf) und Ireland (University College Cork), compiled the concept of an autonomously operating ship during the 36 month project term.
All together the main focus was on the development of the autonomous decisive systems aboard a bulk carrier which is distant-supervised in shore control centres. Further information can be found at www.unmanned-ship.org/munin/.

Innovative logistics for the maritime industry

The Fraunhofer Center for Maritime Logistics and Services CML develops and optimizes processes and systems along the maritime supply chain. Within practically oriented research projects CML supports public and private sector clients of port operations as well as from the logistics services industry and from the shipping business. Intense process analysis, dedicated planning tools and fresh ideas combined with a view to green topics help us plan and develop innovative solutions for the maritime supply chain.