



Dear Readers,

*SMM is the leading international forum for the maritime industry and as such offers us the ideal framework for presenting innovative technologies and research projects.*

*This year the Fraunhofer CML is exhibiting together with six other Fraunhofer institutes at the SMM.*

*We dedicate our current newsletter to this important event and present selected exhibits and research projects:*

*Observe innovative production robots, get to know our current developments in autonomous shipping and hear about highlights of maritime research in our daily lectures at 11 am and 3 pm at our stand!*

*We are looking forward to your visit.*

Your Fraunhofer CML

## FORUM: SHIPPING UNDER EXTREME CONDITIONS SAFE OPERATIONS IN THE ARCTIC PASSAGES

At this year's SMM 2018 in Hamburg, Fraunhofer institutes and industrial partners will present new developments in the Fraunhofer Waterborne Forum. This year's event focuses on „Shipping Under Extreme Conditions“. The forum is dedicated to the safety of people, environment and machines during use in the arctic passages and is supplemented by a discussion and demonstration of the exhibits at the Fraunhofer stand at SMM.

The reduction in the extent of the Arctic ice cap due to global warming opens up the possibility of developing the Northwest and Northeast Passage into important trade routes. Tankers were the first commercial vessels to use these routes, and ice reinforced cargo ships were subsequently developed for arctic conditions. In the summer months, even cruise ships sail the Northwest and Northeast Passage.

However, the operation of ships in these regions poses particular challenges, even if the passages are - generally - navigable. There is a risk of collision with icebergs, which creates a need for detection and warning systems. The low temperatures and icy conditions place additional demands on ship structures and systems. Safety and rescue systems must also be designed for extreme weather conditions and function reliably over very long distances.

The extensive use of the Arctic passages will therefore bring new opportunities and challenges for the maritime industry. These include:

- Ship constructions and systems that meet the requirements of use in ice, e.g. for engines and drives, rudders and other aggregates.
- Systems for navigation, including the laying out and retraction of navigation marks and route

guidance in changing ice conditions.

- Reliable weather forecasting and monitoring systems.
- An infrastructure for safety and environmental monitoring and
- a high-performance supply infrastructure.

The Fraunhofer Forum Waterborne on September 5, from 2 to 7 pm at SMM 2018, will highlight these market opportunities for the maritime industry and discuss the potential for industrial cooperation, with a focus on safe operation under arctic conditions.

All information on registration can be found on our website.

## FRAUNHOFER RESEARCH AT SMM 2018: MEET THE SCIENTISTS AND EXPERIENCE NEW SOLUTIONS

What's new in maritime research? Visitors to the Fraunhofer stand at SMM can expect a wide range of topics from seven different Fraunhofer institutes:

- The salvinia plant and its biomimetic properties for the development of a novel hull coating will be shown in two water basins.
- Interested parties can test their knowledge of IMO Standard Maritime Communication Phrases (SM-CP) using automated speech recognition.
- Visitors learn what possibilities the use of virtual maritime graphics offers from own experience.
- News for ship hull coatings will be shown on a model ship from the museum and in an aquarium.
- New solutions for maritime production will be shown by three robots, and a new solution for use in distress situations will be demonstrated by a novel radar system.

We will present these and other solutions at our stand on a regular basis. Every day at 11 am and 3 pm, the Fraunhofer scientists will talk about their latest research findings and

developments in short presentations.

Find all current information about SMM on our homepage.

We look forward to seeing you!



Visit us at the Fraunhofer booth in hall B6.319

## CREW MANAGEMENT: OPTIMIZED AND COMPLIANT

The planning of personnel requirements and deployment represents a highly complex area of responsibility for shipping companies and ship management companies:

Crew consistency and qualification have to be determined for each ship, work plans must be established and updated before and during the voyage and mandatory reports for inspection and internal control must be drawn up regularly. The responsible officers have to react promptly to changing conditions and unexpected events.

In order to ensure this variety of requirements and also to optimize the deployment of personnel, Fraunhofer CML has developed a software tool: the Crew Compliance Optimizer, or CCO for short.

Now the tool is ready for the market and will be demonstrated at SMM under the name SCEDAS.

SCEDAS consists of three modules: To determine the optimal seafarer demand for a safe navigation including safety related tasks as well as regular maintenance tasks, the Office Module takes into account all route-related details. The On-Board Module enables the ship's command to react to current changes during the voyage and to update the crew schedules. With the help of the Reporting Module, the administrative effort required to document working and rest times can be reduced.

Read more at [www.scedas.com](http://www.scedas.com)

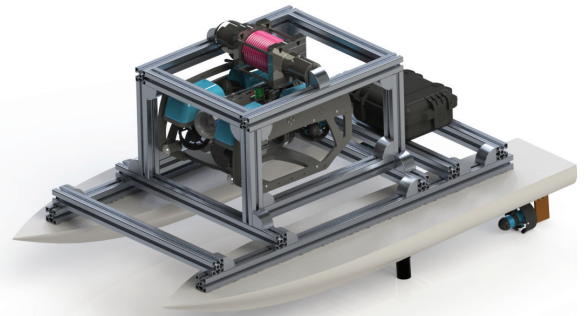
## DIGITIZATION OF MARITIME OPERATIONS IN COASTAL WATERS

Smaller unmanned surface and underwater vehicles (USV or UUV) are already state of the art, even though they mostly operate separately from shipping. The project „Robotic Vessels as-a-Service“ (RoboVaaS) aims to make maritime operations in coastal waters more efficient and safer by integrating and networking smaller USV and UUV and to offer new services for shipping.

During the three-year project period, a live data-based USV anti grounding service, a UUV inspec-

tion service for the ship hull and an automated USV/ UUV data gathering service for port areas are to be developed. Besides defining the services, a communication network with a web-based real-time interface will be developed and tested in the port environment.

The Fraunhofer CML coordinates the project, in which among others the Hamburg Port Authority and Kraken Robotik GmbH are also involved.



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Prototype of CML's carrier USV for the anti grounding service



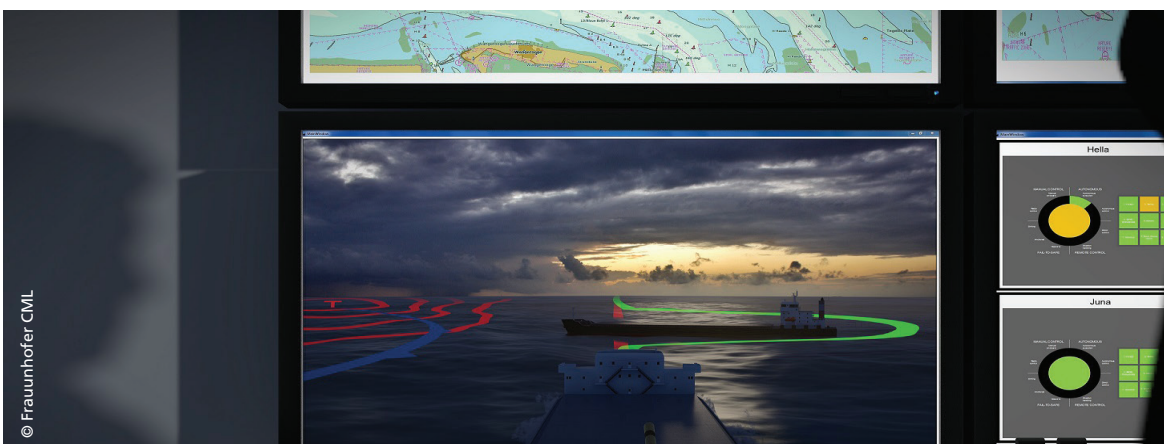
## +++SMM DATES+++

| Tuesday, 04.09.2018  | Wednesday, 05.09.2018   | Thursday, 06.09.2018  | Friday, 07.09.2018  |
|--|---|---|---|
| <b>Fraunhofer Research Lectures</b> , 11:00 am, Fraunhofer Booth, B6.319           | <b>Maritime Research Forum, Poster Exhibition</b> , 10:30 am-4:00 pm, Foyer East, 1st Floor | <b>AIRCOAT - Presentations on a New Hull Coating</b> , 10:00 am + 1:00 pm, B6.5 | <b>Career Market: Chances in Maritime Research</b> , 9:30 am-4:00 pm, B4.RD02 |
| <b>MAN SMM Forum, CML Speech on Digitisation</b> , 2:30-3:15 pm, MAN Booth, A3.200 | <b>Fraunhofer Research Lectures</b> , 11:00 am, Fraunhofer Booth, B6.319                    | <b>Fraunhofer Research Lectures</b> , 11:00 am, Fraunhofer Booth, B6.319        | <b>Fraunhofer Research Lectures</b> , 11:00 am, Fraunhofer Booth, B6.319      |
| <b>Fraunhofer Research Lectures</b> , 3:00 pm, Fraunhofer Booth, B6.319            | <b>Forum Waterborne: Shipping under Extreme Conditions</b> , 2:00-7:00 pm, B7.1             | <b>Digital Service in Shipping, CML and VDMA</b> , 3:00 pm, VDMA booth, A1.518  | <b>Fraunhofer Research Lectures</b> , 3:00 pm, Fraunhofer Booth, B6.319       |
|  | <b>Digital Service in Shipping, CML and VDMA</b> , 2:00 pm, VDMA booth, A1.518              | <b>Fraunhofer Research Lectures</b> , 3:00 pm, Fraunhofer Booth, B6.319         |   |
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## IMPRINT

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Visualization of an autonomous manoeuvre