

## FINANZIERUNG

21. HANSA-Forum  
Interview Euronav  
Schiffsbanken-Report

## SCHIFFFAHRT

Maritime Kanzleien  
Dry bulk-Markt  
Tanker-Markt

## TECHNIK

Effizienz im Schiffbau  
Nachbericht HIPER 2017  
Schwerpunkt Auto-Häfen

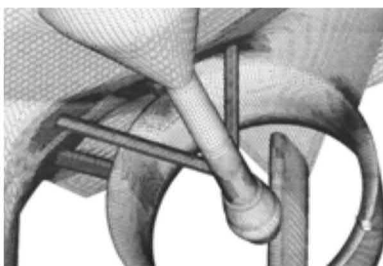


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## Future proof shipping

### Schiffstechnik | Ship Technology



Source: Thomas Hildebrandt

CFD-mesh of a ship stern

proposed to be used to support decision making on board.

Stein Ove Erikstad, from NTNU, Trondheim, describes an evaluation procedure of Big Data using next-generation digital twins capable of rendering the state and behaviour of a real asset in real time. A physics-based digital twin solution is compared with artificial intelligence and machine learning. The proposition is that while the two are fundamentally different in how knowledge and insight is generated, they at the same time offer opportunities for innovative complementary solutions based on big data sensor platforms.

The value of an accurate Digital Twin for a highly complex asset includes diligent planning of inspections and maintenance, early damage detection, access to time series for design feedback, virtual inspection support, prediction of consequences of changed operating condition,

capturing methods allow taking photos or hyperspectral images. Through an image mapping algorithm, captured photos can be displayed on the model, thereby building an updated Digital Twin.

### Autonomous Shipping

When hearing a lecture about advanced topics in future shipping from a high level administrator, we rather expect to hear why some new ideas will not work. But Stein David Medhaug from the Norwegian Maritime Directorate is very supportive of the idea that digitalisation, all the way to autonomous and remote shipping can lead to improvements in ship safety and sustainability. His belief is, if we do it right, automation and autonomous operation may lead to safer shipping in the future. In Norway, the maritime authority encourages the industry by stimulating innovative thinking, by striving to be open-minded, by facilitating ideas which seem to be sustainable and inviting the industry to participate in the Authority's international work. Their development concept includes: e-navigation, digitalisation, automation and autonomous ships.

### New materials at sea

HIPER is not all about Big Data, simulation and design software. At this con-

maintains a problem area between ship efficiency and environmental concerns and limitations. Volker Bertram describes the evolution of antifouling efforts and looks at new possibilities for the future. Currently popular self-polishing copolymers are described which are mainly based on copper-compounds and other biocides (boosters). Regulations are getting stricter. Engineers, however, have always found viable solutions to cope with fouling. Super-hydrophilic coatings, nano-coatings, surface treated coatings combined with robotic cleaning, flocked surfaces, and ultra-sound transducers are alternatives that have started to emerge.

Jan Kelling's paper Ultrasonic Technology for Biocide-Free Antifouling received the HANSA Maritime Innovator Award at HIPER 2017 for his successful HASY-TEC-procedure to prevent fouling by ultrasound excitation of the exposed surface at specific frequencies (see HANSA 10/2017). This low-energy method is very effective and environmentally sound; it is expected to be the new solution to antifouling in shipping. The HANSA Inspiring Visionary Award this year went to Kihei Matsuo for his presentation Innovative Technologies for Maritime Industry and Future Scenario. This paper will be reprinted in HANSA separately.

### Learning in the new world