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Smart Ships Are Coming

The opening of a third Norwegian on-water autonomous vessel test bed December 2017 capped what turned out to be the year that autonomous shipping became tangible.

Autonomous and unmanned ships have been under discussion for several years already, but developments in the last year showed that the future is closer than we think.

As merely one example, the *Yara Birkeland*, a project announced May 2017 by partners Yara and Kongsberg, will be the world's first fully electric and autonomous container ship, with zero emissions.

Yara Birkeland will be built to meet a very specific need in the short-sea segment: It will replace 40,000 truck journeys a year from Yara's Porsgrunn fertilizer plant in southern Norway to the ports of Brevik and Larvik, significantly reducing local NO_x and CO₂ emissions produced by haulage trucks. The vessel has an accelerated schedule; it will be delivered and operational by early 2019.

Currently, the most potential for autonomous shipping is in the short-sea segment—not because of any technology limitations but because of a lack of internationally agreed upon regulations for autonomous ships in international waters. Initiatives such as establishing autonomous vessel test beds are a good step toward building national and international relations between the stakeholders and official bodies that will be involved with autonomous vessels, and these connections will help to expand the market for smart ships.

The new vessel test bed facility in Horten, Norway, has been specially designated for autonomous trials by the Norwegian Maritime Administration and the Norwegian Coastal Administration. Kongsberg has worked closely with the town of Horten, DNV GL, FFI (Norwegian Defence Research Establishment) and the University College of Southeast Norway to establish the new test bed, which is situated adjacent to its Horten facility. The focus of testing thus far has been on collision avoidance, sensor fusion and a common autonomous control engine.

Testing in November 2017 at this facility for the SEA-KIT USV/AUV concept, based on the use of a USV as the mothership for an AUV, provided insight into the potential of unmanned maritime operations.

SEA-KIT is the GEBCO-NF Alumni Team's entry into the \$7 Million Shell Ocean Discovery XPRIZE competition. The testing in Horten was an official round of the XPRIZE, showing autonomous navigation and AUV tracking capabilities of the SEA-KIT USV enabled by the integration of custom-developed automation and software with Kongsberg's K-MATE autonomy controller system.

K-MATE has been developed in collaboration with FFI. The involvement of the Norwegian government in the development of autonomy for vessels is likely to be a catalyst that will help drive the discussions on creating international autonomous vessel regulations.

But we won't be able to achieve these international agreements without sharing and collaboration in the maritime industry itself. Momentum is building as there is already a huge amount of interest in the development of vessel autonomy.

For instance, Oceanology International 2018 (see preview on p. 15), taking place in London March 13 to 15, will have its biggest focus on maritime autonomy to date, with an Unmanned Vehicles and Vessels technical track spanning two days and featuring 24 papers presented by industry experts on the topic.

Discussion is growing on what is becoming the future of the maritime industry, and that future is not far away. **ST**