

Performance monitoring of new silicone antifouling



Fouling of the ship's hull leads to added ship resistance and thus increase fuel consumption and CO₂ emissions. In 2008, Hempel introduced the fouling release coating system HEMPASIL X3 which is copper and biocide free paint that reduces the water resistance.

In order to determine the potential fuel savings from the new hydrogel silicone coating, HEMPEL and FORCE Technology have started a project in which both model test and full-scale validation are key components. During the next 12 months, FORCE Technology's performance monitoring application, SeaTrend, is used to investigate the anti-fouling abilities of HEMPASIL X3 in order to determine the fuel savings on different ship types.

The primary new technological feature in HEMPASIL X3 is the hydrogel which is a network of polymer chains that are water-insoluble. The hydrogel is superabsorbent and possesses a high degree of flexibility due to the significant water content. The hydrogel works by forming an invisible barrier between the solid silicone coating and the seawater. As a consequence, fouling organisms perceive the hydrogel as a liquid and will not be able to attach to the hull.

Fuel savings of above 8 % are confirmed from tests applying HEMPASIL X3 to a number of different ship types with significant differences in hull shapes, wetted area and operation. Saving fuel is a big issue in the shipping industry as the cost of oil is 75-85 % of the daily running costs for a container ship operator. To give an example of the

actual value of HEMPASIL X3, a 7500 TEU container vessel and a fuel consumption of 75 tons per day could save around 1.3 million USD during a five-year docking interval, given a fuel price of 220 USD per tons. This corresponds to reduced CO₂ emissions of 18,500 tons.

HEMPASIL X3 not only saves the operator money on the bottom line, it also dramatically reduces the carbon footprint, thus securing a healthier environment. HEMPASIL X3 has been developed to cater for both operational economy and global ecology, and by guaranteeing fuel savings, HEMPASIL also guarantees a reduction in the CO₂ emissions. A reduction in a vessel's CO₂ emissions is a valuable asset as many ship owners strive to reduce their fleet's carbon footprint.



Project facts

Category: **Operation**

Emission reductions:

CO₂ 3-8 %
NO_x 3-8 %
SO_x 3-8 %

Partners:

FORCE Technology
HEMPEL

